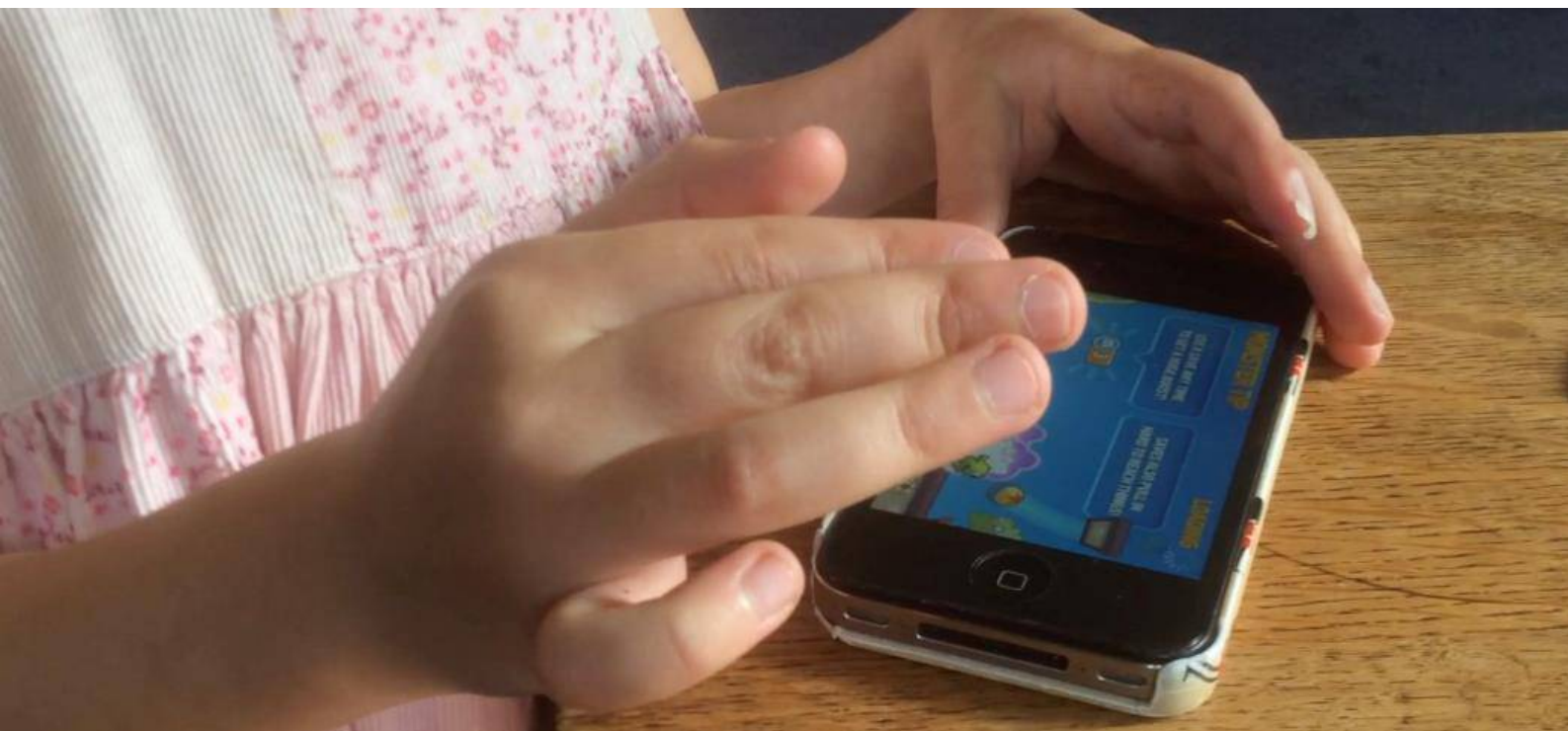


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Young Children (0-8) and Digital Technology

*A qualitative exploratory
study across seven countries*

Stéphane Chaudron

2015

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Joint Research Centre
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Abstract

Despite the growing number of very young children who go online and who are using a wide range of technologies, little is known about children's interactions with those technologies. This report presents a pilot qualitative study designed and implemented in collaboration with a selected group of academic partners in different European countries that aims at pioneering in Europe the exploration of young children and their families' experiences with new technologies. It presents its results and discuss the findings at cross-national level on how children between zero and eight engage with digital technologies such as smartphones, tablets, computers and games; how far parents mediate this engagement and their awareness on the risks-opportunities balance. The report concludes on recommendations to parents, industries and policymakers.

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Foreword

This report is the result of an intense and constructive collaboration between European researchers coming from ten research centers and universities selected for their expertise and excellence in this field of research.

The collaboration started early June 2014 when a JRC experts' workshop brought together first rank researchers with the task to diagnose issues, identify research questions and pose some ideas to define the framework and methodology of a pilot research. From the success of this workshop five universities joined JRC to design and implement a qualitative exploratory study on Young Children (0-8) and digital technology: the Interdisciplinary Centre for Law & ICT, KU Leuven (Belgium); OssCom, Research Centre on Media and Communication, Faculty of Social and Political Science, Università Cattolica del Sacro Cuore of Milano (Italy); Moray House School of Education, University of Edinburgh (UK); the Department of Media and Communications, London School of Economics and Political Science (UK); the School of Education, University of Sheffield (UK). By the end of June 2014, thanks to a dedicated workshop organized on the fringe of the EU Kids Online Network annual meeting in Milan, three more partners joined the consortium: the Outpatient Clinic for Behavioral Addictions Mainz, Department of Psychosomatic Medicine and Psychotherapy at the University Medical Center of the Johannes Gutenberg-University Mainz (UMC-Mainz), (Germany); the Institute of Children, Youth and Family Research; Faculty of Social Studies; Masaryk University Brno (Czech Republic); the Department of Personality Psychology, Faculty of Psychology of the Lomonosov Moscow State University and Foundation for Internet Development Moscow (Russia). Finally, the Faculty of Education, University of Oulu (Finland) joined the partnership early in September 2014, completing the diversity of cultural and geographical areas of this exploratory research.

The partnership, led by JRC, designed collegially the study, its protocol of observation and protocol of analysis, from June 2014 to September 2014. The partners implemented the study from September to mid October 2014. The first analysis of the data generated by the national study occurred between October and December 2014. Each partner issued a national report of their experience of implementing the common methodology after discussing and contrasting the results in a partnership meeting in Brussels on the 5th of November 2014.

This report presents in its first part the findings that emerged from the cross-national analysis of the results of the national implementations of the pilot study. It gathers in its second part the seven national reports that present in their context sample, findings, recommendations, discussion of the results and learning from the experience.

The cross-national report and the national reports share similar structure and headings to ease comparative reading. The national reports are enriched by a portrait gallery that present the ten interviewed families within anonymised short narratives. These narratives ground the findings and give a flavour of the diversity of family circumstances involved.

Partnership

This report is the result of an intense and constructive collaboration between European researchers coming from ten research centers and universities selected for their expertise and excellence in this field of research.

The following researchers are co-authors of the present document:

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Executive summary

This report presents the results of a pilot qualitative study aiming at exploring young children and their families' experiences with digital technologies such as smartphones, tablets, computers, and games. The study is pioneering in Europe. Its goal was double: testing a new methodology while collecting information on how children between 0 to 8 years old engage with (online) technologies, on how parents mediate their use, and to identify potential benefits and risks associated with their (online) interactions with new technologies. Parents and children provided very insightful information about their use of the technologies. This study touched seventy families and was simultaneously implemented in six European countries (Belgium, Czech Republic, Finland, Germany, Italy, UK) and Russia, and performed by researchers from selected universities. The environment of this research was limited to the home and family context. It focused on interviewing children that consume digital technology at least once a week, aged between 6 and 7 (just entering in September 2014 in 2nd grade of primary school and possibly with at least one younger sibling) and their family (at least one parent).

Key findings

The cross-national analysis of the data generated by the pilot study gave the following key findings.

- Digital homes. Children grow up in media-rich homes. They are daily in contact with a wide range of digital tools however this rich-media context does not lead automatically to high use from the children.
- Digital technologies are an important (but not dominant) part of children's lives. Even though children loved playing digital games or watching videos, they also enjoy performing other non-digital activities. Digital technology use is balanced with many other activities, including outdoor play and non-digital toys. Digital activities support their "offline" life interests and use them as an enlargement of those activities.
- Children are digital natives, but only to some extent. Most children acquire easily and quickly basic operational skills. Some have acquired also more advanced online competencies. Few use digital technologies not only as passive consumers but also in a creative way. Yet, they also encounter situations that they do not manage, for which they have to ask for help. Their capabilities are limited by their state of cognitive development. The reading and writing skills influence the quality of children's digital interactions.
- Children are little aware of what internet **is**, **what 'online' means**, **what risks** they can encounter or the benefits they can gain. When asked, children cannot show comprehension of what the internet is and what being online means while their favourite and main activities are gaming and video watching on a varied ranged of devices that sometimes are Wi-Fi connected. In general children this age have limited or no perception of online risks, despite the fact that some of them have already encountered inappropriate age content or problematic experiences with pop ups and in-app purchases. Few children mentioned digital activities as a help for their study.
- Children learn from observation. In most cases, children learn from observing others, parents and other family members at first, but they also learn from older

siblings and extended family members like grand-parents, or peers that usually have a more active mediation. Interestingly, parents seems in most cases not aware of their children mirroring their behaviour.

- Children use digital technology individually rather than socially, while watching video, gaming, browsing for information or being more creative with pictures or video. The shared activities reside more in communicating via online video conference (Skype) when members of the family are distant. Nevertheless, some interesting cases of shared and social use of games on tablets have been reported.
- Tablets are favourite device. When available, children show a strong preference for this device. The size of its screen, larger than a smartphone, its portability, its ease of use thanks to the touchscreen technology are the main assets of this device for child use.
- Smartphones are the melting pot devices as they are very versatile in their use. They allow to watch videos, play games, send messages, take pictures, and make video-calls and ultimately phone-calls. In most cases, children use their **parents'** device equipped with free-apps in different context and different activities but recurrently for filling gaps in the day, to keep the children occupied in waiting time or when parents need to retrieve time for themselves. Using devices that are not configured for their use increases children's risks of problematic experiences with pop ups and in-app purchases.
- Parents see digital technologies as positive but challenging at the same time in their control and regulation. On one hand, digital technologies help parent themselves in facing both household's tasks and parenting at the same time. On the other hand children's digital media use is perceived as something problematic that needs to be carefully regulated and controlled by parents.
- Parents can see risks for their children under the age of eight at different level: unwilling economic consequences, incidental inappropriate content, health or social impacts. Encountering violence and strong language seems of greater concern to parents than sexual content or unwanted contact.
- **Benefits of the children's digital activities** are less straightforward to parents than seeing the risks and reside in fostering creativity, imagination, social skills, knowledge acquisition, hand-eye coordination and educational provision for future.
- Some parents seem to underestimate the risks of the use of technologies by their children. They generally postpone worries about the risks of technologies to the future as many parents believed that robust strategies to mitigate online risks do not need to be developed until children get older, despite evidence that some children have already encountered either violent, inappropriate content or commercial risks, and that other children can bypass safety settings.
- In most cases of this pilot, parents use restrictive strategies. They set rules to limit children's access to digital technology mainly through time limits and restrictive condition of use (a short selection of games or videos, strictly off-line, passwords). Most children integrate and respect the rules quite easily although in

some cases rules seem unclear and arbitrary especially for younger children that do not have the cognitive maturity to grasp the concept and duration of time.

- Despite the safeguards put in place by parents in terms of time, access limits and remote monitoring of the children digital activities, parents seem still to have little knowledge of the actual digital activities of their children. Moreover, parent seem unaware in some cases that their safeguards (password or filters) are actually easily bypassed by their children.
- Interestingly, older siblings can be pro-active in risks-prevention of their younger brothers or sisters. This study report cases of older siblings that either play the role of tutor or controller when tailoring tools or settings of use adapted to their younger siblings.
- Some children would welcome new ideas or further guidance about how to use the devices and apps available to them. Parents would welcome advice **on fostering children's online safety**. With one or two exceptions reported in the Finnish and Russian groups, advice from schools appeared to be limited, nor did there appear to be substantive communication between schools and families on issues relating to technology.

Recommendations

There is evidence of gaps in parental knowledge relating to online risks. This report therefore recommends:

1. Development of educational materials for parents and carers on how parents and carers can support young children in learning and acquiring digital and critical thinking skills for balanced life. These should encompass basic guidelines on
 - o practical suggestions for active mediation,
 - o safety settings, passwords, privacy protection and content filters,
 - o commercial and advertising strategies, such as the difference in risks exposure between free and non-free Apps or games.

They should also assist with the mediation of unsupervised internet access by young children. Attention should be paid on finding effective ways to reach the more vulnerable children. Guidelines should be evidence-based and created in collaboration with industry representatives.

2. Development and promotion of communication strategies outlining how parents can talk to young children about managing online risks and actively mediate their use.

There is evidence of reluctance on the part of parents fully to capitalise on the benefits of children's digital technology use. This report therefore recommends:

3. Development and promotion of information materials outlining the positive benefits of engagement with digital technology, with a focus on positive content, educational, creative, communication and social outcomes.
4. Encouragement for schools to take a more active role in promoting creative and educational uses of digital technologies as well as addressing safety matters at home with parents and carers.
5. Encouragement for schools to support teachers' lifelong learning, increase their digital skills and command for integrating the subject with ease in their teaching.

6. Development and promotion of communication strategies outlining how parents and schools can together reach the objective of digital literacy of the school curriculum.

There is evidence of children's usage of technology that are not tailored for them. This report therefore recommends to address industries and public services on:

7. Development of content and services that empower children by design and support children's right online. These development should focus on
 - o positive content of quality from clearly identifiable and trustable providers,
 - o clear and child friendly quality labels for appropriate and non-appropriate content,
 - o consistent, clear and child friendly usage of pop-ups,
 - o effective profiling of actual users in a privacy friendly way,
 - o data protection and privacy.
8. Development of information materials for parents that will give them insights of the potentialities of the technology they are about to choose for their children.
9. Encouragement for dialogue with parents, schools and kindergarten to take a more active role in promoting creative and educational uses of digital technologies as well as addressing safety matters at home with parents and carers.

Additionally, children aged from birth to eight are active citizens in the digital age, yet there still remain significant gaps in knowledge with regard to their access to and uses of technology. This report therefore recommends:

10. A scaling-up of this pilot project to include larger, more representative national samples across the EU.
11. The sample should be more varied in terms of socio-economical background and age groups.
12. The development of ethnographic and participatory investigative methods to capture young children's own opinions and experiences in more detail, and allow children's voices and agency to inform the study and recommendations further.

1. Introduction: What young children (0-8) do with digital technologies?

This pilot study was conducted in the framework of the JRC's Project ECIT, Empowering Citizens' Rights in emerging ICT (Project n. 572). ECIT deals with "Identification of new threats to children by ICT besides social networks. Development of recommendations to empower children's rights by preventing and mitigating these emerging issues through education, school and community co-vigilance, as well as reconciliation of digital and personal interactions".

Research focusing on the benefits and challenges associated with children's use of the Internet has, so far, mainly targeted 9-16 years old (see, for example, the EU Kids Online research carried out since 2006). Yet, research shows that children are going online at an increasingly younger age. However, "young children's lack of technical, critical and social skills may pose [a greater] risk" (Livingstone et al., 2011, p.3). In spite of the substantial increase in usage by very young children, research seems to be lagging behind.

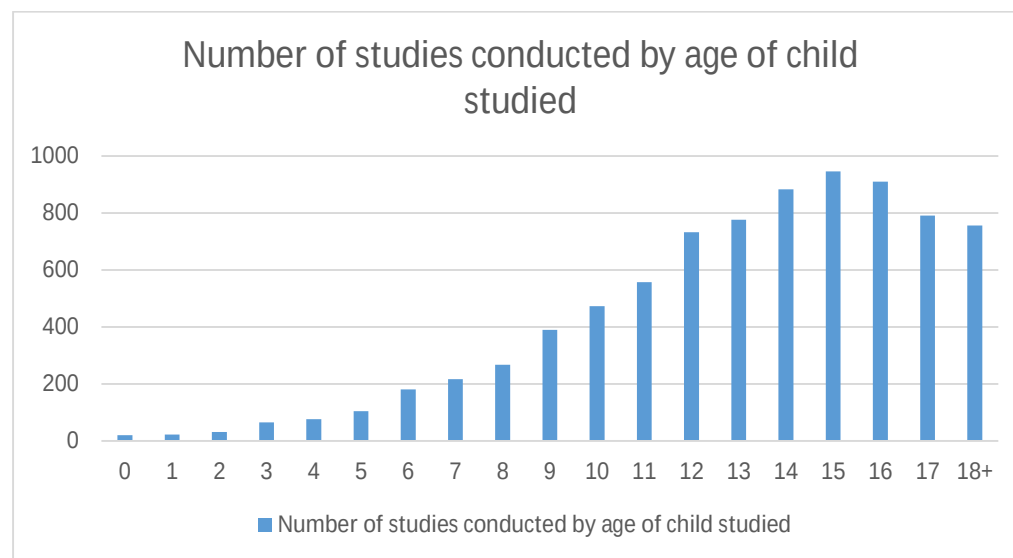


Figure 1: Number of studies conducted by age of child studied - EU Kids Online's searchable European Evidence Database (www.eukidsonline.net)

As the EU Kids Online's searchable European Evidence Database shows, only a small percentage of studies focuses on children under the age of 9 (Fig.1). Moreover, most studies are quantitative rather than qualitative and focus more on the risks associated with the use of the fixed Internet (few take into account mobile devices) and little on profit and opportunities for children. Also, little attention is paid on the role of parenting in the use of new technologies by children (Ólafsson, Livingstone, & Haddon, 2014). Finally, those studies are rarely cross-national. EU Kids Online's recent review of the available literature on children aged between zero and eight and their use of new technologies drew out some tentative findings (Holloway, Green et al., 2013; see also Marsh 2005; Marsh, Hannon, Lewis and Ritchie, in press; Plowman & McPake, 2013; Plowman et al, 2012):

- Children engage in diverse activities online using a range of internet-connected devices;
- Online activities can stimulate imagination, fantasy, creativity and play;
- Up to a certain point, these help with learning, reading and navigating information;
- Many children use devices/contents not designed for their age group;

- Children's digital footprints often begin at birth, with unknown consequences;
- Younger children are more often upset about or vulnerable to risks of harm online;
- Children can be very trusting e.g. if invited to meet someone after playing a game.

Yet many questions remain unanswered about the physical, mental, emotional and social consequences (opportunities or risks) of internet/digital engagement for young children and their families.

This pilot project "Young children (0-8) and Digital technology – a qualitative exploratory study" opens a way in research in Europe to address those questions in collaboration with a selected group of academic partners in different European countries. The study was designed to explore more in depth young children and their families' experiences with new technologies.

It focused on interviews and observations with ten families per country in home context, each with a child aged six or seven, and often including younger siblings. It is based on the assumption that for younger children, parents' mediation is the main factor of children's access to new technologies. The study took the qualitative approach, looking in depth on a limited number of cases (70), aiming to capture as many aspects of the use of technologies by children as possible. In particular, we will look at their (online) technological engagement as well as the potential benefits and risks associated to their (online) interactions with new technologies.

Through four areas of specific investigation, this pilot research generated data with the aim to address the overall question, in what ways, if any, are children and/or their families empowered by the use of new (online) technologies? In other words, what benefits or risks can be identified from the research, regarding young children's use of digital technologies at home?

This first part of the report presents the cross-national findings from this JRC-funded seven-country collaboration. It draws on findings from interviews and observations with seventy families at home, each with a child aged under eight, the majority were six or seven, and often including younger siblings. Since it is a pilot study, we also reflect on the methodological challenges of working with this age group and on recommendations for enlarging such studies at European level.

These findings have been summarized into four themes. Each will be presented and discussed in the following sections:

1. How do children under the age of 8 engage with new (online) technologies?
2. How are new (online) technologies perceived by the different family members?
3. What role do these new (online) technologies (smartphones, tablets, computers, video games, apps, etc.) play in the children's and parents' lives (separately and in relation to family life in general)?
4. How do parents manage their younger children's use of (online) technologies (at home and/or elsewhere)? Are their strategies more constructive or restrictive?

2. Findings

Although we present each question and its answer of this section separately, they are in fact strongly interconnected. Children's use of technologies is affected by the way parents introduce those technologies to them or what they allow them to do with them. Children's activities with digital technologies are closely connected with their digital skills and level of cognitive development. The ways parents choose to control the use of technologies by children are connected to their general conviction and their perception of the technologies. Last but not least, specific events that occurred when using the technologies by children affect their perception and the way they use them afterwards. Those events influence also parents in their views and mediation.

2.1 How do children under the age of 8 engage with new (online) technologies?

Digital homes. Children grow up in media-rich homes. They are daily in contact with a wide range of digital tools. However, a high level of presence of digital devices in the home does not necessarily mean ICTs are made available to the children, nor does it necessarily lead to high use. Parents tend to use technology individually for work (PC and laptop) and communication (smartphone), children mainly use technology individually or at turns for fun and entertainment across a wide range of devices (TV, Tablets, smartphones, portable and fixed game console, laptop and PC). Children's preferences towards one device or another are variable although, when available, they usually prefer tablets for their facility of use and smartphone for their multi-functionality and sense of autonomy that their ownership give them. Interestingly, children value as preferred device technology that they do not own necessarily but wish to own. The technology has then a 'magical' value of an object of high desire.

Children are digital natives, but to some extent. Most children acquire easily and quickly basic operational skills. Some have acquired also more advanced online competencies: they can control and install a wide range of applications, and they can search on the Internet. In this, young users that do not master reading yet, rely in their use on their recognition of logos and images. This strategy makes them effective in finding their way even on Asian language based website or apps as they treat Asian language pictograms as images. Some among the older have become acquainted with social networks and messengers (Skype and WhatsApp), especially if family members are distant. Few use digital technologies not only as passive consumers but also in a creative way. Yet, they also encounter situations that they do not manage, for which they have to ask for help. Their capabilities are limited by their state of cognitive development. Risks are probably higher when seven-year-old children still do not fully master reading skills or control critical thinking or distinguish easily the frontier between real and the unreal. Those considerations lead the German team to discuss¹ in its national report the concepts of Digital Native and Digital Immigrant and how far they can be applied to children. As children do not naturally learn how to use new media technology on an advanced, safe and autonomous standard, they cannot be described as Digital Natives alone nor can they be considered as such. Therefore, as in all other dimension of learning, guidance from parents, carers, and teachers is mostly needed.

¹ Please see in part II of the present document, the section dedicated to the German National report, paragraph 3.6.2 *Media education*

Children learn from observation. In most cases, children learn from observing others, parents and other family members at first. Moreover, it seems that their learning curve increases when facilitated by older siblings. In some cases extended family members like grand-parents, or cousins or young aunts or uncles play as well a role in active mediation as reported particularly in Italy, sometimes even neighbours as presented in the Finnish and Belgian reports. Interestingly, parents seem in most cases not aware of their children mirroring their behaviour. Some parents of this study discovered that their passwords were known by their children during the interview.

Children use digital technology individually rather than socially. This general trend is nevertheless contrasted in some context. In Finland, in general the use of digital technology seems much more a shared activity among family members and friends. In other countries, the shared activity resides more in communicating via online video conferencing software when members of the family are distant. Some cases of shared and social use of games on tablets have been reported as well.

Tablets are the favourite device. When available, children show a strong preference for this device. The size of its screen, larger than a smartphone smaller than a PC, its portability, its easiness of use thanks to the touchscreen technology are the main assets of this device for children. The other feature of tablets attracting children is their multi-functionality. A tablet is smaller and more convenient than an ordinary PC but has equal opportunities for kids and has much more options than a mobile phone. Although the majority of interviewed children use tablets for gaming and watching cartoons, some of them like creating something, e.g. drawing, taking photos and compiling videos. One more important feature is tablets' portability. They can be easily taken to the other room, long journey or to the countryside. Parents often use tablets when they need to keep their kid quiet and busy in the moments of long waiting. It has been noted as well a decrease of PC and TV in children's individual rooms, as reported by the UK national report. The portability of multi-function devices such as the tablet may be the cause of these phenomena.

Smartphones are the melting pot devices as they are very versatile in their use. They allow to watch videos, play games, send messages, take pictures, and make video-calls and ultimately phone-calls. In most cases, children use **their parents' device** in different contexts and different activities but recurrently across the different groups for filling gaps in the day, to get the children occupied in waiting time or when parents need to retrieve time for themselves. In this context, when children use parents' smartphone, they use a device that has not been configured for their use and that usually connects automatically to Wi-Fi once available. This creates situation that increase children risks of problematic experiences with pop ups and in-app purchases. This situation increases when in a large majority of cases, parents chose to use free-apps that embedded even more pop-ups, advertisements and in-app purchases options. Parents seem unaware of this situation nor do they really know what children do with their device, not realising sometimes that children actually are doing activities online like gaming or watching video. The individual ownership of smartphone by children varied a lot from a sample to another with a remarkable higher number of children under age of eight owning their own smartphone, although not all with internet access, in the Czech and Russian groups. The majority of Finn children were owner of traditional mobile phones. Such smartphone or phone gives a sense of independence and autonomy to its owner. At the same time it plays the role of reassuring check for parents who feel the need to know where their children are anytime. This last consideration poses questions to the parents and to the society. Are really smartphones tools of autonomy or do they play against it? What is the level of trust in our society as parents feels the need to be in control of their children's movements?

2.2 How are new (online) technologies perceived by the different family members?

Children love digital technology and show positive preconception to their regards. In some case of low use and low level of acquaintance of the children with digital technology, children confer 'magical' value to the device that they do not own but hardly desire to own.

The desirability of the digital object is reinforced when parents include its access into their 'reward-punishment' system. The right to access the device becomes incentive for other less pleasant actions (homework, cleaning and tying up) or the withdrawal of access to the device creates the frustration of its loss in case of punishment. Both strategies reinforce the desirability of the digital object.

Children are little aware of what internet is, what 'online' means, what risks they can encounter or the benefits they can gain. Children see digital technology as fun and source of entertainment. Their favourite and main activities are gaming and video watching on a varied range of devices that sometimes are Wi-Fi connected. When asked, children cannot show comprehension of what the internet is and of what being online means. In general children of this age have limited or no perception of online risks, despite the fact that some of them have already encountered inappropriate age content or problematic experiences with pop ups and in-app purchases. Two main negative views of online technologies emerged from the children's accounts, one more related to the child's direct experience with problematic experiences with pop ups and in-app purchases and the second related to adults' perceptions and beliefs. Recurrently in this study, children shared their frustrations when encountering pop-ups. Although some of them have acquired the reflex of closing the pop-up using the cross icon, they are most frustrated when this convention is not respected either because of hidden or misleading crosses or long and complex written message. The small screen of a smartphone increases those difficulties. Some children experienced directly unwanted in-app purchase as a click was enough to activate an online service. The other children's negative perception of digital technology mirrors parents preoccupations and relates to the belief that overuse of these devices is associated with negative health issues, such as sight damaged or mental retardation or behavioural problems.

Parents see digital technologies as positive but challenging at the same time in their control and regulation. On one hand, digital technologies help parent in facing both household's tasks and parenting. On the other hand children's digital media use is perceived as something problematic that needs to be carefully regulated (sometimes restricted) and controlled by parents.

Parents can see risks for their children under the age of eight at different level: unwilling economic consequences, incidental inappropriate content, health or social impacts. Encountering violence and strong language seems of greater concern to parents than sexual content or unwanted contact.

Parents can see benefits of digital activities for their children at different levels too even though their perception of benefits is less immediate than that of risks. Some parents have vague views or few ideas about which activities, sites or games they want to encourage or how they, as parents, could mediate their child's digital activities and engage positively, whether sociably or imaginatively. Other parents had quite definite ideas about what they saw as the benefits of digital activities and emphasised knowledge acquisition, educational provision for future needs either at academic level or professional level, hand-eye coordination and enhanced communication skills.

Some parents seem to underestimate the risks of the use of technologies by their children. Indeed they postpone worries about the risks of technologies to the future as they feel that their children's lack of skills (digital technologies skills but also reading and writing skills) and absence of interaction on social media yet keep them safe from risks. Therefore, many parents believed that robust strategies to mitigate online risks do not need to be developed until children get older, despite evidence that some children already encountered either violent, inappropriate contents or commercial risks, or that other children could bypass safety settings.

2.3 What role do these new (online) technologies play in the children's and parents' lives?

Digital technologies are an important (but not dominant) part of children's lives. Even though children loved playing digital games or watching videos, they also enjoy performing other non-digital activities. Digital technology use is balanced with many other activities, including outdoor play and non-digital toys, especially when those activities are supported by the parents. Parents favour off-line activities as family activities: watching TV together, out-doo, cultural or social activities.

Digital activities support children "offline" life interests and use them as an enlargement of those activities. Children look for their favourite TV program or music on Youtube, for games with their favourite movie character, or for information about their hobby or subject of interest. It has been reported also in some cases that online activities could also create or support off-line games or interest. The Finn's national report pointed out in its discussion the following. Interestingly, most of online games are actually using a combination of traditional game's actions (like dressing-up or fairy tale story making targeting girls and a range of actions and card games targeting boys) and transposed them into the virtual world. Actually, we can see here a shift of traditional games action into the virtual world.

Digital technologies help parents in parenting. On one hand they offer a calm occupation to the children during waiting time (i.e. long journeys or queues) or when parents feel the need to retrieve quality time for themselves (i.e. while cooking or working). On another hand, as already mentioned, they also offer attractive incentive for an effective 'reward-punishment' system.

2.4 How do parents manage their younger children's use of (online) technologies?

Parental mediation as identified in the research literature includes active mediation and co-use as well as restrictive strategies such as rules and limits (Livingstone & Helsper, 2008). In most cases of this pilot, parents use restrictive strategies and feel confident in mediating and controlling their children's access to digital technology.

Parents set rules to limit their children's access to digital technology giving time limits and restricting the condition of use (a short selection of games or videos, strictly off-line, passwords). In some context, the time limits are set by the few window remaining for free play in the children's activity-rich timetables, typically after school, homework and extra-curriculum activities on week-days, or mornings of week-ends. In those time window, gaming or video watching compete with traditional free play. In other contexts, rules were implemented when the digital device entered in the house or in children's hand but in most

cases, rules or restrictions appeared in reaction of what parents feel as overuse, or when encountering changing behaviour in children or changes in family dynamics. Italian families of our sample seem less inclined to set rules in reaction of children's use. This might be caused by the rather limited time available to children to interact with digital technology and for free play in general as the school days are long and generally followed by extra-curriculum activities.

Few parents feel the need to monitor their children internet use in reaction to an upsetting online experience from a child with the aim to prevent future problems. Other parents proof to be imaginative in their restriction strategies: Wi-Fi network is available only few hours a day, devices 'disappear' or get 'lost', some appear to have a very limited battery autonomy. Parents' rules tend to be fluctuant depending on the context (a rainy day, a child ill at home, parents in need for quality time for themselves...). Social rules, as banning digital activities during dinner or family visits seems more resistant if the parents themselves comply with them. Nevertheless in some families, especially when the weekly timetable follows a certain 'routine' like in the Italian sample, children integrate and respect the rules quite easily. In other cases, especially for younger children that do not have the cognitive maturity to grasp the concept and duration of time, rules seem unclearer and more arbitrary.

Despite the safeguards put in place by parents in terms of time, access limits and remote monitoring of the children digital activities, parents seem still to have little knowledge of the actual digital activities of their children. Moreover, parents seem unaware in some cases that their safeguards (password or filters) are actually easily bypassed by their children.

Even in a more active mediation, the parent has the role of tutor and fades away when the basic skills are acquired to allow the children a certain level of autonomy of use.

In this pilot, Finnish families are the ones that demonstrate to implement most active mediation while parents sit with their children when they go online, share games or online activities with them and encourage them to explore the digital world and possibilities. As reported by the Italian and Russian report, this active role could be played more by grand-parents than parents and time availability could be a key parameter to facilitate this kind of mediation.

Interestingly, older siblings can be pro-active in risk-prevention of their younger brothers or sisters. This study report cases of older siblings that either play the role of tutor or controller when tailoring tools or settings of use adapted to their younger siblings.

Evidence suggested that parents' active mediation (discovering the digital activities together, shared online and gaming experience, talk about interest risks and opportunities) tend to reduce children's exposure to online risks without reducing the opportunities. They also reduce young children's (9-12) reports of being upset when encounter online risks. (Dürager & Livingstone, 2012).

From the interviews of this study, it appears that some children would welcome new ideas or further guidance about how to use the devices and apps available to them. **Parents would welcome advice on fostering children's online safety.** With one or two exceptions reported in the Finnish and Russian groups, advice from schools appeared to be limited, nor did there appear to be substantive communication between schools and families on issues relating to technology.

2.5 Surprising findings

Surprising findings in this study seem to highly depend on the sample and the local context.

Nevertheless, a consistent finding across samples was the emergence of contradictions, or inconsistent accounts by parents and children: more specifically, parents tend to value as important experiences for the child activities and experiences that the child has not mentioned and vice versa. This is often the case with older children and young people (e.g. Valentine, Marsh and Pattie, 2005; Livingstone and Bober, 2006; Livingstone and Helsper, 2008), but since young children often had their parents or carers close by in the home, it is more surprising that this gap existed also for them.

Another finding that is present across the sample is the little use of digital technology made to support explicitly learning or education. Moreover, interviewed children who own digital educational devices seem to neglect them and forget about them quickly. Children value them as being childish and limited. The primary purpose of grown-up tablets by interviewed children is generally for gaming, in contrast to tablet use by younger children and pre-schoolers. There may be several factors at play here as reported by the UK team:

- 1) Parents of pre-schoolers may be more likely to download educational apps, such as number or spelling games, as a preparation for school. Older children saw tablets as part of leisure time, and may seek to avoid educational products.
- 2) Fewer pre-schoolers possessed their own tablets, suggesting that content is curated by adults. With the older age-group, the tablet is more likely to be for their exclusive use, meaning that they chose their games, rather than being presented with a selection by a parent.
- 3) The target age-group was three or four years old at the launch of the iPad and competitor products, meaning that they were already too old for the plethora of educational preschool products now available. They and their parents therefore did not associate tablets with educational ends, and may not be aware of the range of products

One of the most surprising finding that emerged from the pilot study locally, as presented by the Italian, Russian, is the positive role at times played by grandparents, who are actively engaged in socialising children to online technologies, selecting appropriate content for their grandchildren, encouraging the acquisition of skills and digital literacy. Grandparents are also usually more permissive and close to the child. They then provide those children who are highly regulated at home with opportunities to experiment with new technologies.

More surprisingly even, is the co-creation of rules among neighbours as reported by the Finn team. Parents in this case have decided together on rules and game days. This made easier for the parents from both families to supervise timewise their children's use. As they shared equally the same rules, children did not found much argument to fight against those rules anymore.

3. Method

3.1 Why qualitative research?

Qualitative research is used for exploration of not well investigated areas of the field. It leads to the generation of new hypotheses and deep-insights on the investigated subjects. Due to societal development, technical innovation and interaction effects between subjects and media devices the field is changing rapidly. Lack of investigations in the age group of 0 to 8 years old require family-centered qualitative investigations.

3.2 Why Thematic Analysis?

Thematic analysis covers the relevant domains that are addressed when qualitative research is discussed. These domains are: a) Flexibility, it is relatively easy and quick method to learn. Thus, it is accessible to researchers with little or no experience of qualitative research; b) Results are generally accessible to educated general public, which might support suggestions for stakeholders or policy makers. It is a useful method for working within participatory research paradigms; c) Thematic Analysis can usefully summarize key features of a large body of data, condensing extensive data sets to their essence; d) Similarities and differences across the data-sets can be highlighted, which might be of use for cross-cultural comparison of later publications; e) Unanticipated insights can be generated and in-depth characterized. It allows for social, pedagogic as well as psychological interpretations of data (Braun & Clarke, 2006).

3.3 Procedure

3.3.1 Aims and references

This study aims at exploring young children and their families' experiences with digital technologies such as smartphones, tablets, computers and games. The specific goal of the study is to collect information on 1) how children between 0 to 8 years old engage with (online) technologies, 2) how family members perceive new (online) technology, and 3) to identify potential benefits and risks associated with their (online) interactions with new technologies. The main aim of the project is to generate data to address the overall question: *In what ways, if any, are children and/or their families being empowered by the use of new (online) technologies? In other words, what benefits or risks can be identified from the research, regarding young children's use of digital technologies at home?*

As this pilot study aims at exploring children's interactions with digital media, qualitative interviews will be conducted. In total, this study will involve seventy families (10 per country) and will be simultaneously implemented in seven European countries and Russia, and performed by researchers from selected universities: KU Leuven (Belgium), Masaryk University Brno (Czech Republic); University Medical Center Mainz (Germany), Future School Research Center (Finland), Università Cattolica del Sacro Cuore Milano (Italy), Moscow State University (Russia), University of Edinburgh (UK), London School of Economics (UK), University of Sheffield (UK) (please see figure 2 for participating countries and the Annexes for the respective national reports).



Figure 2: Participating countries

The reference for making the selection of the listed countries are the EUKIDS Online Country classification for use and risk² published in 2011 and EUKIDS Online Country classification of online opportunities, risk, harm and parental mediation (Helsper et al., 2013).

The two classifications group European countries in term of similarities and differences and help in mapping and understanding the landscape of the children's (aged between 9 and 16) internet use and safety in Europe.

The first cross-national classification (2011) distinguishes four groups of countries, based on the percentage of children in each country who used the internet daily, and who encountered one or more risks: (1) Lower use, lower risk, (2) Lower use, some risk, (3) Higher use, some risk and (4) Higher use, Higher risk.

The second cross-national classification (2013) enriches and deepens the previous one with four different clusters: (1) clustering of online opportunities, (2) clustering of risk and harm, (3) clustering of parental mediation strategies and (4) overall classification of countries based on the opportunities, risk and harm, and mediation dimensions and leads to a classification of countries based on the presence of different types of children and their home environments.

As shown in table 1 (next page), the selected countries represent a large part of the different clusters, diversity of online opportunities, risks, harm and parental mediation as indeed, for this exploratory and qualitative study that targets children from 0 to 8 years old and their family, it is very important to test similarities and differences on parameters like online opportunities and parental mediation strategies and to compare the results with the older children group classification. Such comparisons would be precious for the elaboration of hypothesis regarding influential factors for country differences in internet opportunities taken up, risks and harms encountered and parental mediation like cultural differences, digital technology diffusion, and family dynamics, (Haddon et al., 2012; Helsper, 2012).

² Lobe, B., Livingstone, S., Ólafsson, K. & Vodeb, H. (2011). Cross-national comparisons of risks and safety on the internet, London: LSE, EU Kids Online.

		UK	IT	DE	BE	CZ	FI	RU
First Classification EU Kids Online Country classification for use and risk	Lower use, Lower risk							?
	Lower use, some risk							?
	Higher use, some risk							?
	Higher use, higher risk							?
New country classification of online opportunities, risk, harm, and parental mediation	Unprotected networkers							?
	Protected by restrictions							?
	Semi-supported risky gamers							?
	Supported risky explorers							?
Opportunities	Advanced							?
	Restricted learners							?
	Diversity							?
	Moderates							?
	Young networkers							?
Risk and Harm	Lower risk/harm							?
	Higher risk/harm							?
	Sexual risks							?
Parental mediation	Restrictive mediation							?
	Passive							?
	All-rounders							?
	Active mediation							?

Table 1: Participating country classification

Based on Lobe et al (2011). *Cross-national comparisons of risks and safety on the internet*. www.EUKidsOnline.net & Helsper et al. (2013), *Country Classification: Opportunities, Risks, Harm and Parental Mediation*, LSE, London: EU Kids Online

3.3.2 Observation Protocol (OP)

All interviews followed an observation protocol (Appendix A), but because of the explorative nature of the study, each research team had the freedom to adapt it according to specific interview contexts and needs (e.g. country, culture, family context, etc.), keeping in mind that the aim was to find answers to the research in a way that enables comparative analysis.

The interviews were conducted in the home of the participants, with the exception of one interview (the Iota family of the Belgian sample which preferred to discuss children's use of digital technologies at the facilities of the community service centre where the family was recruited).

The interviews had a common structure and were divided into four parts. A short family introduction took place in which the children and parents took part in a joined discussion and activity. Subsequently, parents and children got divided and they engaged into two

different activities. Parents had a short interview with one of the researchers; the other researcher discussed new (online) technologies with the child/ children supported by age appropriate tools such as card games. A conclusive session was implemented to gather the whole family and the two researchers for a conclusion.

Introduction and briefing (10-15 min): Researchers introduced themselves and explained the main aims of the research project, the procedure, and participants' rights. Researchers asked if children could show (how they use) digital technologies during the interview as well as if pictures could be taken. This section of the interviews was generally concluded by signing the informed consent forms (Appendix B) by parents and, in UK and Finland, by children from age 6 thanks to an informed consent form tailored for them.

Ice-breaker activity (25-30 min): After a short introduction, the children and parents mutually performed a short ice-breaking activity. Page 10 of the Activity Book 'Play and learn: Being online'³ and its stickers have been chosen as a way for the family to determine the activities done as a family all together in a typical day requesting to match time and activities thanks to stickers provided with the book.

Semi-structured interviews (30–60 min): Children and parents were interviewed separately in adjacent rooms most of the time although children below 4 years were generally not separated from their parents or freely 'travelled' from one room to another. Tools and activities (card game, digital tour, drawings, charts, screen snapshots) have been used to facilitate children and parents interviews by the partnership. They are described and included in the protocol of observation and will be discussed in the section dedicated to the implementation of the protocol of observation.

Closing (10 – 20 min): At the end of the interview, parents and children got together again and were asked if there was anything they wished to add to the interview. Researchers asked for basic demographic information, thanked participants and handed over some symbolical presents for the children. Some partners according to the national habits and costumes of social qualitative research choose independently to handover complementary incentives especially in an attempt to interest families from lower socio-economical background. The Edinburgh children also received a 'Young Researcher' certificate that included their name 'for taking part in research' and these were very popular.

3.3.3 The sampling procedure

As specified in the Observation Protocol, the aim of the recruitment was to select ten families in each country, seventy in total, providing a certain diversity within the sample in terms of children's ages and gender, family composition, and income (with special attempt to touch families below the national average in socio-economic status). The core of the sample is formed by families with children under 8 with at least one parent and at least one child of age 6-7 who use a digital technology regularly, i.e. at least once a week. Each national sample was constituted to try as much as possible to provide variety both in terms of habit in the use of digital technology (distinguishing user of digital device in their frequency of use: 'low users', at least once a week; 'medium users' at least two or three times a week; 'high users', at least once a day) and in terms of family structures (counting with one only-child family, one single-parent family, one family with siblings older than 7).

³ Kindly provided by the INSAFE network and available online via <http://www.saferinternet.org/activity-book> ; Italy used a printed version of page 10, other countries used a booklet, digital replicas of the children's produced activity booklets are provided as an attachment to that report and available in Appendix C.

The sampling strategies adopted by the research teams were actually largely constrained by the ambitious timing of the project and by national context such as the easiness to approach schools to request support on the selection of a sample for such research or the starting date of the academic year for primary school. As a consequence, participants were recruited via a mix of strategies including letters sent home from primary schools or via day-care or social services centres, or even through snowball sampling initiated by indirect but personal connections that provided contact with other families.

Participants were selected based on a combination of criteria. As mentioned above, we were particularly interested in families with children aged 6 or 7, ideally with one or more younger siblings. While researcher were keen on finding families from low socio-economic backgrounds, this was not always feasible due to the timescale of the project. Finally, families were also selected according to their availability to accommodate the researcher's visit.

The response rate was good: some families volunteered to take part to the study even when we had reached the sample size of 10 families as reported by the Italian, Finnish and Russian teams. Very few families had to be replaced because they dropped out after an initial interest.

3.3.4 The sample

The sample gathered 70 families and count 119 children from 0 to 8 and 38 from 9 to 20. The figure 3 presents the age repartition of the children directly or indirectly interviewed in the study.

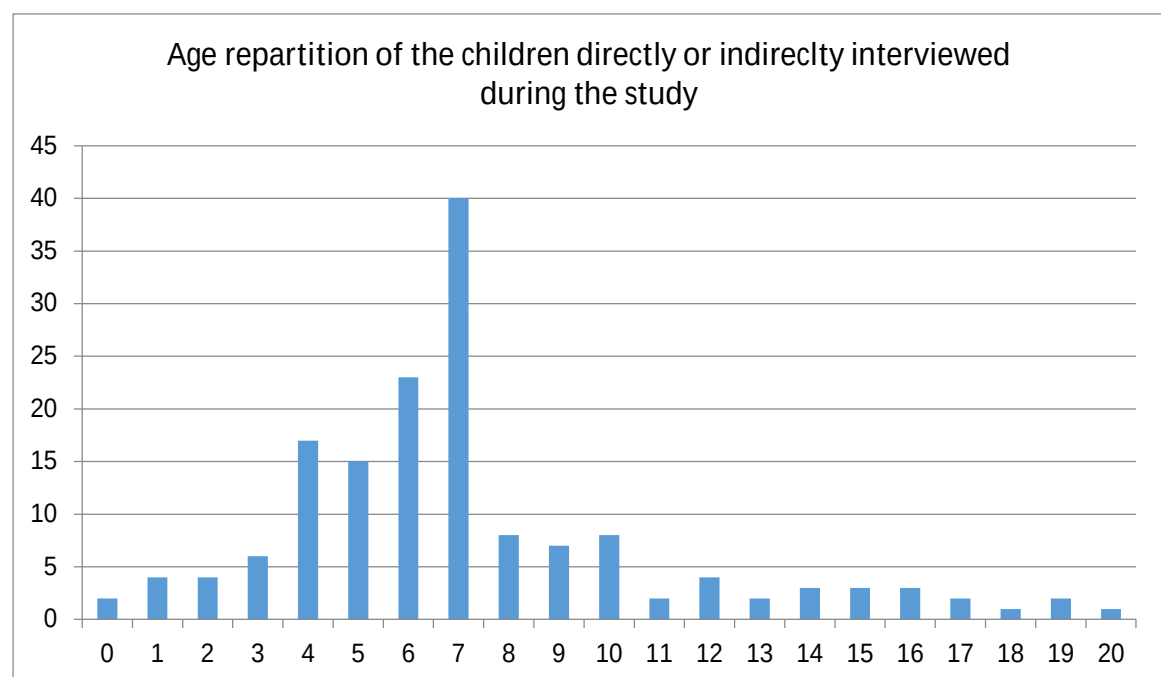


Figure 3: age repartition of the children directly or indirectly interviewed during the study

We recognise that the sampling would have benefited from a longer time frame: having short time, it was easier to approach and gain quickly trust from higher educated parents, who are generally more sensitive to research on these issues.

As a result, the national samples are largely formed by families from medium to high socio-economic status, at the exception of the Belgian sample that benefited from the mediation

and collaboration with social services to recruit families from lower socio-economical background.

Nevertheless, the sample is more diverse in other aspects: low, medium, high digital users, family constellations (the number of siblings, younger and older siblings, single mothers, etc.), the education of the parents and the sex of the child.

In Appendix E of the present document, a table gives the demographical information of the research subjects.

More concretely, each national reports annexed to this document provide a 'family portrait Gallery' section in which they present the ten interviewed families at national level within anonymised short narratives. Those narrative give a flavour of the diversity of family circumstances involved, they help to ground the findings.

3.3.5 Implementation of the protocol of observations

Interviews took place from 17 September to 29 of October, at home at one exception in Belgium as already mentioned, at the time that was most suitable for the family (usually evening, before or after dinner, and the weekend). Each family visit lasted no less than one hour but lasted in average one hour and a half to two hours.

The observation protocol and interview guides were helpful points of orientation to implement the study, although all team reported that the schedules were long and some questions were redundant. To avoid a long list of questions that may be uneasy to handle during the interviews, most researchers prepared a shorter version that could be carried during interviews and looked at when needed.

Interviewers also reported that the questions of the children's interviews in general were not children friendly and needed rephrasing or prompting for being understood. Some children, especially the youngest, found the questions too numerous and the interview too long. Their complaints or loss of interest requested creativity sometimes from the researcher for alternative strategies such as playing, searching or being creative with a digital device. The most useful and effective activity seems actually to be the observation of the children while interacting with the digital technology.

The ice-breaking activity (Activity Book - Play and learn: Being online) was very helpful and productive to some teams as it created a playful and warm climate between family members, and with the researchers; it also provided a lot of insights on the role of technologies in family life, and specific everyday life practices of media use. Some teams highlighted that the activity sheet and its stickers were incomplete and created sometimes frustration in the attempts to describe the family life accurately. Other reported that this activity was simply shadowed and skipped because of the interest generated by the card game from the beginning of the interview or spontaneously started a digital tour as to introduce the researcher to the family house. The Appendix C presents an example of use of the activity.

The card game designed for this study displays images of tablets/ laptops/ PCs/ smartphones as well as traditional toys⁴. The game was presented to the children, in some occasions to the parents as well. The researchers experienced the use of the game to highlight the children preferences and non-preferences in diverse ways, at different moment of the interview, allowing testing its efficiency and recognize its flexibility. First of all, the tool either played as a memory card or as 'I Like' – 'I do not like' rating proved

⁴ The card game used is available in the Appendix D

its efficiency in facilitating the contact and installing trust with children. It sometimes served as a so-called "warm-up" activity at the beginning of the interview and in those cases replaced the ice-breaking activity described above. The game was used to orient the interview: which devices the children know, which of them they use and what do they do with them. The pictures on the cards could serve as a springboard for conversation. When the children sorted the cards by popularity, the game helped to understand the importance of digital technologies among the other traditional toys or activities such as reading and therefore also provided a lot of insights on the role of technologies in children life. The construction of a scale of preference was too demanding for some children.

Some children were not able to recognise some of the devices illustrated on the cards. This might be because the pictures were actually illustrating digital technologies that have evolved recently and have been replaced by a new design. Another factor might be the deforming angle under which some devices or objects were presented.

Interestingly, although some children had difficulties in recognising the devices displayed on the card, it happened several times that they a priori classified them among their favourite cards for the simple fact that they looked like digital technology.

The digital tour. Whenever allowed by the parents, children showed around the house their favourite digital activities and devices, usually the tablet or smartphone. This activity proved to be efficient to identify types of devices and new technologies that the children of the household have access to (or not), use (or not) and to explore when and why they used them.

Some other tools and activities have been designed and tested independently by national teams and proved to be interesting and efficient. The Belgian team happened to be very creative and willing to test diverse strategies. Some of those ideas were shared or adopted by other teams such as the emoticons used to classify the children activities of the card game; screenshots of diverse gaming websites, email-clients, popular social networks or video to prompt children, the children suitcase that gathered the materials prepared for the children interview or the concept-cards that were used to help parents in defining what digital technologies represent to them. Regarding parent's interview, the German team developed a very interesting tool, the sheet of ICT use, that allows parents to map the evolution of usage of different digital devices over time by their child(ren). The Italian and UK teams diversified and engaged children directly while for example asking them to take pictures of their preferred activities of devices or provide the child with a researcher smartphone or tablet which increased the level of trust between researchers and children.

The separation of children and parents for different interviews was not reported as being problematic, nor for parents nor for children, who were eager to show their bedrooms and toys and be the focus of the researcher's attention. However, as already mentioned especially younger children tended to wander between researcher and parents.

3.3.6 Recording

Family visits were audio-recorded. Apart from using a recording device researchers were advised to make field notes during their visits. Some teams took also pictures and others experimented video-recordings. These were necessary to provide more in-depth background and aid the researchers in remembering salient events. Field notes contained the description of what has been observed. The descriptions were aimed to be factual, accurate, and thorough without being judgmental or cluttered by trivia. The date and time of the observation were recorded, and everything that the observer believed to be worth noting was included. Informed consent must have been obtained from participants before

any observational data were gathered. A verbatim transcript of all the interviews was carried out. Those transcripts will constitute the basis for further analysis. Finally, every participating country wrote a national report based on the analysis of the ten family visits they performed. This report mainly provides answers to the research questions stated above, plus short a 300 word case studies about each of the families' interviewed. The reader can find each of the national report in the second part of the present document.

3.3.7 Implementation of the protocol of analysis

Due to the ambitious time frame of the project, the findings reported by the national teams, and therefore in the present cross-national summary, are based on a thematic analysis of the researchers' notes, which have been integrated in most cases with partial transcripts from each interview.

Furthermore, Czech and German researchers used the full transcripts of all individual interviews with the children and their parents as they were the only ones who could manage such a task with the timeframe of the project. Based on the main areas that have been identified in the parents and children talks in relation to the research themes, the two research groups have developed a coding system which was, after a test of coding, further edited by researchers in a second stage. The following areas were encoded: type of technology/toys; time spent with technologies; property of technologies, who uses them, and where; activities of children and parents; game type (characteristics and notes), digital skills; favourite technologies; favourite offline activities; interconnection of online & offline; current perceptions; perceptions of the future; active mediation (behaviour and rules); perceptions related to mediation (opinions about parenting and values).

In the coding process, the researchers assigned the specific statements of the conversations to the above-mentioned topics. Then a thematic analysis of statement, in the context of the scope, took place.

4. Discussion

4.1 How could the study be improved?

The seven national experiences of the pilot concord on the following points. The following points can be seen as the summary of methodological recommendations for future research.

- A larger and more diverse sample would be beneficial for the research: more interviews would allow for more systematic comparisons by age (e.g., children up to 4, from 4 to 6, from 6 to 8) and socio-economic status.
- A larger time frame for the study will allow to take more time for recruitments and therefore to be able to gather a more diverse sample in term of socio-economical context.
- Multiple (at least two) visits to families would prove particularly helpful for three reasons. First, they would help researchers in taking time to gain confidence and win the trust of the family. Second, they would allow a deeper understanding of family dynamics and, especially, of inconsistencies between children's and parents' accounts. Third, they would provide the opportunity to experiment with other research tools that ensure a greater participation of the children as co-producers of the data.
- The list of research questions should be reduced and revised to avoid overlapping and to fit better with children's capacities and language levels.
- Observation of children while interacting with the devices they have access to should be emphasised.
- Observation of family members interacting together with devices would also be desirable, for it could provide better insights in issues such as the negotiation of rules, as well as providing further stimuli to be discussed during the second visit.
- An improved ethnographic approach would also help to overcome potentially problematic situations, such as researching children with cognitive disabilities, who might consequently find the interview schedule particularly demanding.
- A longitudinal study would be highly desirable.
- Further research is needed for defining some categorisation of high, medium and low digital use across the nations. This needs careful consideration as research shows clearly that high levels of ownership do not equate to high levels of use – for preschool children, at least (Plowman et al., 2012).
- Different methods are needed to capture observational data as to make optimal use of insights that family interviews offer.
- The codebook like the research question was too complex. It could be simplified in future study.

4.2 What are the future directions for research on this topic?

Research on the incorporation of new technologies into toddlers' and younger children lives is still sparse and patchy. Therefore, this pilot study provided valuable knowledge in the field and should be followed by more extensive, large-scale studies to test the validity of the findings so far achieved as well as the formulated assumptions.

While there is still need for large scale, comparative studies on younger children's and their parents' engagement with different digital media, future research in this area could address more specific research questions while adopting the same methodological approach.

Beside the need to refine some methodological approaches as listed above, four main research areas can be identified from this pilot and should be addressed more in depth:

Digital literacy

The pilot study showed that digital skills are unevenly distributed among children under 8. The age of first use, amount of use, parental attitudes and mediation as well as the presence of significant others (older siblings, grandparents) are all influential factors that may facilitate or hinder the child's acquisition of digital skills. The role of children in early primary school age in mediating their toddler siblings' socialisation with new (online) technologies especially deserves further attention. The relationship between traditional and digital literacy also needs to be further explored: in our limited sample, for example, we observed that one child who was less restricted in her media use, used new technologies more and was more skilled, had also reading difficulties. This line of research is a priority, if, as many parents perceive, digital literacy is a pre-condition of children's social inclusion.

Risks

Despite parents tend to postpone the worries and strategies against online risks to the future, younger children are already vulnerable to certain online risks, such as commercial risks and inappropriate content. More research is needed to inform awareness campaigns for parents (e.g. to promote the use of parental controls and disable the purchase of apps and services) and policy initiatives aimed at protecting the youngsters online, specifically on mobile devices (e.g. regulation or co-regulation of advertisement in apps designed for children). Awareness campaigns to inform parents should also aim to help them in identifying overuse tendencies and contrast them efficiently for a balanced life style. Research should also focus on identifying the more vulnerable children and findings way to awareness campaign to reach them.

Parental mediation

While the pilot study showed that parents tend to favour a restrictive approach to their children's digital media use, some parents had a more positive perception of technologies and valued the educational opportunities of gaming apps and pre-school apps. Prior quantitative research has already shown (Dürager & Livingstone, 2012) that restrictive mediation is effective at reducing children's exposure to online risks but it also limits online opportunities and skills. The findings of the pilot are partially supportive of this conclusion, indicating that children who are freer to experiment with online technologies have developed more advanced digital skills. However, the data collect in the pilot study suggest that in this particular age group restrictions may not be the most effective parental mediation strategy to protect children: indeed, some children who experienced a commercial risk received a significant amount of regulation from their parents. In order to draw recommendations on the most effective measure to keep younger children safe online, the relationship between parental mediation and the child's own online experiences needs

to be further investigated. Finally, the study identified the need for further research on the most effective ways to develop parents' understanding and practices with regard to the development of their children's critical digital literacy. An intervention study is required which examines the effectiveness of family digital literacy programmes in enhancing parental support of children's developing digital literacy skills.

School mediation

Research is needed to trace children's practices across home and school domains and to examine the impact of school input on online safety on family practices. Further research is also needed to study how parents and teachers could collaborate better towards the common goal of increasing children digital autonomy and critical thinking for a safe and balanced life.

5 Conclusions and recommendations

The pilot study provided an insight into younger children and their families' everyday life, with a focus on their engagement with new (online) technologies.

Digital media have become a pervasive and taken for granted presence in most of the households of the sample. Nonetheless, they don't seem central in younger children's lives, since children use technologies to pursue pre-existing interests, such as their engagement with characters of popular culture and TV programmes. Children's interactions with digital media are mainly shaped by parents' values, perceptions and own experiences with ICTs, but not only. Other factors influence children's engagement with digital technology: the proximity of older siblings, extended family, friend's even neighbours as a vector of knowledge and active mediation; the availability of time for free play in children's life; the availability of devices outside the house might matter too.

While most children possess basic operational and safety skills, and some have also developed advanced digital competencies, they lack the maturity to reflexively engage with online risks: also children who have had negative experiences - mainly commercial risks or exposure to inappropriate content - fail to recognise the possible dangers of their online media use.

Therefore, active mediation of technologies and online safety in the family context is vital. However, parents engage in restrictive mediation more than active mediation, as they are mainly concerned with potential overuse and associated health issues. They mediate children's relationship with online technologies by setting rules that limit time and online activities. By contrast, parents tend to postpone other online problematic experiences (such as exposure to inappropriate content and risky contacts) to the future, failing in this to recognise that younger children may already encounter negative experiences.

The protocol of observation and the interview schedule developed in this pilot study have proved effective at providing a rich picture of children's use of online technologies and the different role played by parents, siblings and the extended family. More can be achieved, though: in particular, drawing on the pilot we would recommend a more ethnographic approach, such as more time to observe children interacting with technologies, and the family engaging in co-use of digital devices.

There is evidence of gaps in parental knowledge relating to online risks. This report therefore recommends:

1. Development of educational materials for parents and carers on how parents and carers can support young children in learning and acquiring digital and critical thinking skills for balanced life. These should encompass basic guidelines on
 - o practical suggestions for active mediation,
 - o safety settings, passwords, privacy protection and content filters,
 - o commercial and advertising strategies, as the difference in risks exposure, between free and non-free Apps or games.

They should also assist with the mediation of unsupervised internet access by young children. Attention should be paid on finding effective ways to reach the more vulnerable children. Guidelines should be evidence-based and created in collaboration with industry representatives.

2. Development and promotion of communication strategies outlining how parents can talk to young children about managing online risks and actively mediate their use.

There is evidence of reluctance on the part of parents fully to capitalise on the benefits of children's digital technology use. This report therefore recommends:

3. Development and promotion of information materials outlining the positive benefits of engagement with digital technology, with a focus on positive content, educational, creative, communication and social outcomes.
4. Encouragement for schools to take a more active role in promoting creative and educational uses of digital technologies as well as addressing safety matters at home with parents and carers.
5. Encouragement for schools to support teachers' lifelong learning, increase their digital skills and command for integrating the subject with ease in their teaching.
6. Development and promotion of communication strategies outlining how parents and schools can together reach the objective of digital literacy of the school curriculum.

There is evidence of children's usage of technology that are not tailored for them. This report therefore recommends to address industries and public services on:

7. Development of content and services that empower children by design and support children's right online. These development should focus on
 - o positive content of quality from clearly identifiable and trustable providers,
 - o clear and child friendly quality labels for appropriate and non-appropriate content,
 - o consistent, clear and child friendly usage of pop-ups,
 - o effective profiling of actual users,
 - o data protection and privacy.
8. Development of information materials for parents that will give them insights of the potentialities of the technology they are about to choose for their children.
9. Encouragement for dialogue with parents, schools and kindergarten to take a more active role in promoting creative and educational uses of digital technologies as well as addressing safety matters at home with parents and carers.

Additionally, children aged from birth to eight are active citizens in the digital age, yet there still remained significant gaps in knowledge with regard to their access to and uses of technology. This report therefore recommends:

10. A scaling-up of this pilot project to include larger, more representative national samples across the EU.
11. The sample should be more varied in terms of socio-economical background and age groups.
12. The development of ethnographic and participatory investigative methods to capture young children's own opinions and experiences in more detail, and allow children's voices and agency to inform the study and recommendations further.

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Annexes

Young Children (0-8) and Digital Technology, a qualitative exploratory study

National reports:

- I. Belgium
- II. Czech Republic
- III. Finland
- IV. Germany
- V. Italy
- VI. Russia
- VII. United Kingdom

YOUNG CHILDREN (0-8) AND DIGITAL TECHNOLOGY

*A qualitative exploratory study - National report -
BELGIUM*

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Executive summary

Key findings

1. Kids love technology and digital technologies are an integral (but not dominant) part of children's lives. This means that even though children love playing digital games or watching videos, they also enjoy performing other non-digital activities. The latter includes practising sports, playing with their toys, going to the playground, riding their bike, going to the swimming pool, etc.
2. Young children mainly use digital technologies to have fun. Their favourite and most common activities are watching TV, watching video clips on YouTube and playing digital games. Children usually use tablets or iPads to perform these activities, sometimes they also use their parents (smart)phones or game consoles. Very few children referred to laptops or desktops. Some of the children interviewed are able to use tablets or iPads quite independently. Many are able to navigate from one screen to another, to open applications, to go back to the main menu, etc. and a few of the oldest ones interviewed were able to find new games or Apps and even to download them. Children, however, could only download free games or apps because parents usually set up account restrictions so that their children cannot buy online or have access to inappropriate content. Young children also love YouTube. They can find and watch videos on the platform and even some of the youngest ones interviewed were able to recognise the YouTube icon. Of the children we were able to observe using tablets, iPads or smartphones, most of them were able to select films from the side menu, although not all of them were able to type in words in the search field.
3. Digital literacy varies a lot among children. What remains constant, however, is the fact that, in general, young children's digital skills are low (as compared to older children or adults) and the highest skills are observed among the oldest ones. In general, children have some grasp of device and game navigation. Navigation is notably eased when young children do not have to use the mouse or other game controllers. This was particularly noticeable in the case of the youngest children (4 or 5 years-old) who had difficulties (or were unable) to play games on game consoles such as the PlayStation or the Wii. They also found it very difficult to use laptops or computers. Very few children go online to find information other than YouTube films or a favourite TV programme or digital game. The ones who do are usually 6 or older and they can read and write, although not fluently. Because of their very limited search skills many young children turn to their parents to find the information they want.
4. Several factors affect young children's uses and skills of digital technologies. These include family constitution, family/parental style, daily routine, and even the neighbourhood. Above all, kids watch and learn from parents, but also from other relatives, friends and peers. Children's perceptions of technology are highly mediated by their parents' access and use. This means that their experiences with digital technologies and also their perceptions of them are highly influenced by their parents' attitudes towards technologies, but also by their daily use. Parents, however, are not the only source of influence. Other family members, especially older siblings, but also grandparents or uncles play an important role. This is particularly noticeable in those cases where parents' digital literacy and/or their digital consumption is low.

5. Few (and only older) children refer to digital technologies as a means for learning things, for instance, learning songs (lyrics), dance steps, but also math or foreign languages (e.g. watching English TV programmes to keep up a second language). As stated above, for children the main reasons for using digital technologies are fun and relaxation, and to a lesser extent for bonding, i.e. a way of doing something together with significant others (e.g. communicating with loved one abroad). According to parents, the main reasons why they let their children use digital technologies are for fun, learning, school-related tasks, "reward-punishment" strategy, time-filler, "baby-sitter", and only occasionally, a way of doing something together with their children (bonding).
6. Only the oldest children (6-7 year olds) seem aware of communication or social media functionalities such as Facebook, e-mail or instant messaging applications. None of the children interviewed had a profile nor were they active users of any of these services, though. The ones who knew about their existence mainly did so because their parents, older siblings or other family members employed them and they had seen them using them, e.g. Facebook or e-mail. The only exception was Skype, which had been used by half of the families in our sample. In all but one of these five families Skype was used rather frequently. What all these families had in common was the fact that they had close relatives abroad (e.g. grandparents, aunts and even one father).
7. Few of the children interviewed, and only the oldest ones, were able to use digital technologies in more advanced or creative ways. For instance some (older) children can make videos, take photos ('selfies') or do homework, but creative engagement with technologies is not widespread at this young age, nor is it actively encouraged by parents.
8. As regards online risks, children have some level of awareness, especially about **commercial and "technical"** risks. Parents, on their turn, seem to trust that their young children won't get into trouble online. This is probably mainly due to the fact that parents feel that they are successful in monitoring their children's use of online technologies (e.g. by limiting the time they can spend online, or by not allowing them to download online Apps or games). Also the fact that most children of this age cannot write nor read fluently (yet) makes them less prone to encounter online risks because their digital experiences mainly happen offline. Last, some parents seem to underestimate their children's opportunities to encounter online risks. Parents, in general, seem much more anxious about the future risks their children may encounter than about current ones.

Recommendations

- Finding effective ways of reaching vulnerable children is important. In our pilot study we paid special attention to trying to reach a wide variety of families including more socially challenged ones. We were able to observe that even though, in general, young children's (online) experiences are rather safe, mainly probably because they are not online that often, still a few children in our sample mentioned (or we observed) having encountered less pleasant online experiences such as viewing "*ugly naked women*" or "*silly videos*" or being exposed to commercial information (usually targeting adults, but sometimes also children). Even though our sample of families is extremely small to make any generalizations, it is not unimportant to

observe that of the few children who referred to unpleasant online experiences of any kind, most of them came from socially challenged environments and had parents with a low (general) literacy level. In another family, economic constraints prevented children from accessing digital technologies. They did not even have access to the internet or to cable TV because they could not afford it. The mother in this family, who had a high level of education, worried that their children would become digitally excluded especially as they grow older and more digital resources are demanded from them at school. It is, therefore, essential, to invest resources in studying more vulnerable children and their families, and to explore the ways in which these less privileged groups engage (or not) with digital technologies and the consequences thereof.

- More initiatives should be developed to support parents, teachers, but also other carers (e.g. grandparents) to enhance their digital literacy and skills. As observed in our study, parents trust that their children won't get into trouble online at this young age. This is probably mainly due to the fact that parents feel that they are successful in monitoring their children's use of online technologies and they feel confident in their capacity to protect their children from risks. Nevertheless, our study shows that when it comes to protecting children online, parents usually set-up time and technical restrictions (e.g. Children cannot download Apps or rent movies unless they ask their parents for a password), however they do not seem very aware of other types of risks such as the possibility of encountering inappropriate content, being commercially targeted or privacy risks. From this we inferred that more digital literacy for parents as well as for teachers and other carers is needed.
- Initiatives directed at parents and teachers in the workplace can be worthwhile exploring because they could facilitate participation and involvement especially of parents who work full-time or who have a busy schedule. Other ideas may include setting up practice guides, short (work-based) training modules and awareness campaigns focusing on the parents and teachers of very young children. Such training should also include information on how to encourage more creative uses of digital technologies, as well as teaching parents to guide and support their children prevent and cope with (online) risks. Employing existing knowledge platforms (e.g. Mediawijs.be in Belgium) to disseminate these initiatives and reach out to parents and educators can be particularly useful.
- Schools have a major responsibility in supporting digital literacy initiatives. Since schools are uniquely positioned to reach all children (and their parents), they should take a major responsibility for supporting children and their parents in gaining or improving their digital literacy skills and knowledge, including e-safety skills. This is a major responsibility; therefore school must be supported in order to succeed with this task, especially because many teachers and educators still lack the confidence and/or the necessary competences to deal with digital technologies themselves.
- Education is crucial. Systematic curricular programs that cover digital and media education from the earliest school years are needed. This is already happening in some Flemish schools, as mentioned by one of the families interviewed, but, apparently, this is not yet a widespread initiative. It seems timely to start exploring the possibilities of

incorporating digital literacy efforts as an integral part of the study programs of very young children.

- Teachers should be continuously trained in digital technologies use and trends. This will enable them to gain confidence and become more knowledgeable as regards these matters. Higher digital skills will help teachers to be better positioned to guide and support children in more creative, empowering and safe digital experiences. Teacher training programmes should also become an opportunity to introduce teachers into these topics.
- **Most of the parents interviewed have appropriated a “discourse” about the educational value of digital technologies.** However, our conversations with them and their children indicate that most parents do not really (know how to) benefit from the educational potential of technologies. They clearly need more guidance, for instance, in order to find educational content and to use it with their children or to explore more creative uses of digital technologies. Parents would, therefore, benefit from extra schooling. In particular, training should guide parents on how to stimulate their children to take up the opportunities digital technologies have to offer (e.g. creativity, informal learning, etc.) and should also help them recognise and cope with related online risks, for instance by enhancing parental mediation strategies. As suggested above, in order to facilitate parental involvement, these initiatives could be organised at the local level, or even at the workplace.
- **Enhancing children’s digital skills is essential.** Nowadays, many (young) children are active (or proxy) users of digital technologies. Even though many of them may possess sufficient or even high technical skills for their young age, they are not cognitively or emotionally mature so as to understand the consequences of their behaviour on these types of platforms. Enhancing children’s and their parents’ digital skills, but also increasing their awareness of potential risks and how to cope with them is essential in order to encourage a positive, safe and responsible use of digital technologies from a very young age.
- Young children and their parents would benefit from more knowledge about commercial, advertising and data protection risks. Supporting them in developing adequate coping strategies to deal with such risks is also essential. Many parents experience difficulties in understanding and adequately assessing online risks, in particular “hidden” ones such as data surveillance or targeted advertising. Helping them and their children become more aware of these commercial and advertising practices is essential, even at this very young age.
- Families would benefit from the availability of more positive, educational and safe (online) content for young children. Some of parents interviewed suggested creating platforms where such content could be gathered, shared and updated, for instance, a place where safe Apps for young children could be found. This and other possibilities to provide positive, safe and engaging, child-friendly content should be explored.
- Innovation should accompany user empowerment. Technological developments (e.g. new techniques for tracking and exposing online consumer behaviour) should take

into consideration that, as observed in our study, many young children are using their parents' or other adults' devices such as laptops, tablets or even smartphones. This raises important concerns, including the risk of children encountering commercial or other types of online content not meant for, or simply inappropriate, for them.

- Industry should take steps to ensure an adequate level of enforcement of children's rights on their platforms. In particular, they should give high priority to children's rights to privacy, data protection and freedom of expression, and protect them from inadequate commercial practices as well as from other potentially harmful risks (e.g. content, contact and conduct risks).
- **Children should be empowered "by design"**. This can be achieved by adopting more socio-technological approaches such as e-safety or privacy "by design". It is also advisable that the industry explores effective mechanisms to embed digital literacy enhancing practices into the technologies they develop (e.g. tools to enhance parental mediation rather than purely restrictive parental control tools). Other areas worthwhile exploring are improving the efficiency and user-friendliness of content labelling mechanisms and reporting tools, or offering easily accessible and child-friendly information about online risks and safety on the services they offer to children and their parents.
- Industry should support social media literacy initiatives. People, including parents and teachers, turn in a natural way to the internet for practical guidance on all sorts of topics. Therefore, these channels should become incorporated in digital literacy strategies and campaigns targeting young children and their parents.
- Researchers should make efforts to gather more evidence on the less explored, and more positive aspects related to the use of digital technologies by very young children. This could include the ways in which children and young people's use of digital technologies may contribute to creativity, informal learning and active cultural participation.
- More interdisciplinary research is needed. Digital technologies can have an impact on different levels of children's lives and their families. Therefore it is necessary that we approach these phenomena from a multidisciplinary perspective.
- Research should target all ages including very young children (0-8) from whom much less research and data is available and also the most vulnerable groups of society. Even though lots of research has been published about older children and teenagers' experiences with digital technologies, very little research has focused on very young children, and especially vulnerable ones. An important challenge ahead is exploring adequate and innovative research mechanisms to reach and study these groups.

Proposal of implementations

- **Research on young children's use and perceptions of digital technologies** needs to adopt a child-centred and playful methodology. Young children, especially five or younger, find it difficult to keep focused on activities for more than a

few minutes and struggle with reasoning at an abstract level. Therefore, traditional, verbal-based interview formats are not appropriate for this young age group because they get easily bored or tired. This is particularly noticeable in cases when two or more children are being interviewed simultaneously. If the youngest ones do not get the full attention from the researcher, they simply disengage from the interview and start doing something else. Therefore, a big challenge for researchers dealing with this young target group is to develop child-friendly data collection methods which, on the one hand, keep (multiple) children engaged and, which, on the other hand, allow extracting relevant information. One example of such a strategy is to let children engage with their favourite digital activities or to use visual cues to direct the conversation to a certain topic. In this pilot study, observing children interact with digital devices, taking and discussing pictures or cards, and making use of screenshots of some of their favourite digital activities proved valuable strategies to capture, at least partially, the digital lives of young children. Given that observations are an important constituent of such a child-centred methodology, we suggest to video record these sessions in order to facilitate and enhance the subsequent data analysis process.

- **Research on young children's use and perceptions of digital technologies** needs to adopt a flexible methodology. A child faces numerous cognitive, affective and corporal developmental challenges during the first eight years of his or her life. As a result, children between and within zero to eight age cohorts widely differ in their preferences, abilities and capacities. Researchers should therefore develop flexible investigative methods that can be adjusted to the developmental stage young children are in.
- **Research on young children's use and perceptions of digital technologies** should focus on digital activities rather than on devices. While the interview protocol of this pilot study puts lots of emphasis on digital devices, we observed that young children and parents place the focus of their narratives on their digital activities. The devices they use are, in most cases, merely a means to an end (e.g. Using the tablet or the smartphone to play games or to watch videos on YouTube). Therefore, an activity-centered interview protocol may be more adequate than one focusing on devices.
- **Research on young children's use and perceptions of digital technologies** would benefit from multiple contacts with the respondents. In this study the entire interview session lasted two to three hours and was very intense especially for younger children. Multiple visits would be useful to 1) minimize the cognitive burden on young children, 2) facilitate establishing a trust relationship with the family members and 3) can serve as a limited member check procedure. The latter is especially relevant in order to enhance the internal validity of the study.
- Special efforts should be made to reach more socially challenged families and to adapt the methodology accordingly. In our case we paid extra attention to vulnerable groups while recruiting our families. We tried to reach them through social work institutions, but also through directly targeting schools in more vulnerable neighbourhoods. We also offered these families the possibility to be interviewed in places other than their own home, as this can be problematic sometimes. One of the

families welcomed our invitation and we arranged to interview them at an after-school centre which their children attend when they finish school.

Introduction

This report is part of a larger European study involving seven countries, which is funded and co-ordinated by the Digital Citizen Security Unit Institute for the Protection and Security of the Citizen in the European Commission. The observation and analysis protocol were co-designed by the different project partners and was coordinated by the Joint Research Center. Each partner, however, had freedom to adapt the interview protocol and to explore strategies and techniques better suited for the younger children in their sample.

In collaboration with a selected group of academic partners in different European countries, this qualitative study aims at exploring young children and their families' experiences with new technologies. This pilot research generated data to address the overall question: In what ways are children and/or their families empowered by the use of (new) digital technologies? In particular, the following research questions are addressed in this report:

1. How do children under the age of 8 engage with new (online) technologies?
2. How are new (online) technologies perceived by the different family members?
3. What role do these new (online) technologies (smartphones, tablets, computers, video games, Apps, etc.) play in the children's and parents' lives (separately and in relation to family life in general)?
4. How do parents mediate their younger children's use of (online) technologies (at home and/or elsewhere)? Are their strategies more constructive or restrictive?

This national report presents the initial findings from the pilot qualitative study on young children and digital technologies conducted in Belgium with ten families with children aged 6 or 7, their siblings and their parents. The study aimed to provide insights about how young children appropriate and perceive digital technologies, their contexts of use, the factors influencing their digital experiences, in particular family dynamics, as well as the strategies employed by parents to mediate their children's usage of technologies. In total ten family interviews were conducted in Flanders, the Dutch speaking part of Belgium, by two researchers who talked separately with children and their parents in their homes. The interviews were carried out in the period September-October 2014. During each interview at least one child aged 6 or 7 was present, but older and younger siblings, if present, took part as well. In 8 out of 10 families both the mother and the father were interviewed. In two families the children lived with their mothers only, therefore the fathers could not be interviewed.

Family portrait gallery

Alpha Family

Flanders, Belgium

Family members

- Dad, 40, High digital user [B1f]
- Mum, 41, medium digital user [B1m]
- Boy, 6, 1st year of primary school, High digital user [B1b6]
- Girl, 8 months, low digital user [B1g0]

Narrative

B1b6 is a 6-year-old boy who lives with his 40-year old dad, his 41-year old mum and his little 8-months old sister. Both mum and dad are Argentinean, but they have lived for 9 years in Belgium and B1b6 was born in Belgium. They live in a rather big apartment in the suburbs of a university town in Flanders. He started using technologies very young and playing videogames when he was 3 or 4 years old. He can operate several devices on his own, but he must ask for permission before using them.

B1b6 goes to a Catholic school and, at the moment of the interview, he had just started his first year of primary school. According to his parents he does very well at school. He has several friends there and he enjoys the social and extra-curricular activities organised at school. Mum works as a post-doctoral researcher at a prestigious Belgian university and dad works at his own, small-scale foundation (VZW). Both mum and dad often (have to) work from home. This means that laptops are very prominent in the home. Indeed, at the moment of the interview, both laptops were on the dining table where we held the conversation. Dad also uses his iPhone frequently for work. This is because he works a lot with Latin American institutions so he has to be available for extended hours because of the time difference. B1b is aware of this. In fact, he was one of the few children interviewed in Belgium who also assigned a work-related value to digital technologies. The fact that his parents frequently (have to) work from home has also had an impact on the frequency B1b6 uses digital technologies, especially his dad's iPad.

B1b6 loves playing games on the iPad. As we could observe during the interview, he plays and uses a wide variety of games and applications including cards games, 3D modelling and even educational games such as a math game. One of his favourite games is "Plants vs. zombies" which he also plays with his dad. He seems very skilled and is able to navigate easily from one screen or App to another without major difficulties. He is also quite aware of some technical and even commercial online risks. For instance, at a certain moment he wanted to show the interviewer how Apps were downloaded into the iPad, but he warned us that we could not look at the code he was typing on the screen because otherwise we "could steal their money". He also mentioned a few times that it was better not to use many games or Apps simultaneously because otherwise the laptop or the iPad becomes too slow.

During the interviews we showed children screenshots of common websites and (online) applications (e.g. e-mail, Facebook, Skype, children's websites such as Cartoon Network, Ketnet or Nickelodeon, etc.) and asked them to tell us what these images were. B1b6 was one of the few children in Belgium who was able to recognize several of the screenshots including services or platforms which are not typically used by children of this age such as e-mail or Facebook. Indeed, very few children in our interviews were able to recognize, let alone, explain what communication or social media platforms such as e-mail or Facebook were. B1b6's knowledge, although not skills,



of the digital world is highly mediated by his parents' use of technologies. For instance, as parents often work from home, he knows that e-mails are an important tool for work and that it serves to communicate and exchange work with other people. He is also quite aware of the devices or applications that are used for work. He refers to these spaces/functionalities (e.g. some folders on the iPad or e-mail) as "*important things*" (from dad) which he should not "*touch*". He is also aware of communication or social media tools such as Facebook. Although he is not an active nor a proxy user, he understands the basics of Facebook (e.g. that you can post pictures, or videos) because he has seen his parents use it. As regards communication applications, he knows how to use Skype. He even showed us how to get the App started and select someone to talk to on his dad's smartphone. Indeed, he uses Skype frequently with his parents because both of them use it to communicate with their families and friends abroad, and specially with B1b6's grandparents.

B1b6 also likes performing other activities such as reading books or solving puzzles (mainly with mum), going to the swimming pool with dad or practicing other after-school activities such as cycling or lately, playing tennis. He also mentioned that he likes watching TV and going to the cinema. During the interview this family also mentioned that of all the digital things they like doing together the ones they enjoy most are watching TV programmes on the laptop, specially a Spanish-speaking soap opera called "Sres papis".

Even though BE1b6's daily routine is pretty typical as compared to other Belgian children interviewed, his use of digital technologies is quite intense. For instance, he was one of the few children interviewed who sometimes watches TV in the morning before going to school and, as stated by his mother, he can sometimes spend a long time, even a couple of hours, playing videogames on the iPad, dad's iPhone or other game consoles or simply watching TV. This may also help explain why his understanding of digital technologies is quite advanced for his age. However his mum also pointed out that "*after watching television for an hour he is bored and he wants to do [other] things with us or with [his] friends*".

The fact that both parents sometimes work from home, but also the fact that they often travel for work, also has an impact on the high frequency with which BE1b6 uses digital technologies. Especially at times when dad is travelling and mum is alone at home, she feels that she is somehow obliged to let him play with the iPad or other game consoles. Even though she doesn't really like doing this, she sometimes simply has no other choice because she either has to work from home, take care of the baby and/or do household chores.

Sometimes [my son] gets bored when we have a deadline, he has to stay alone watching TV or playing with the iPad, but he cannot go outside on his own (...). So I associate the fact that he's playing with the fact that I cannot pay attention to him...so for me [playing videogames] is not something that we do together.

For dad, on the contrary, playing videogames or using digital technologies with his son is a personal option he consciously makes because, as mentioned during the interview, he is "*crazy about technologies*". He is, indeed, very positive about digital technologies and he feels very proud that his son has an advanced mastery of these technologies at such a young age.

With [dad] it's different, [dad] chooses to play with him with the PlayStation or with the iPhone. They can play together. I cannot because I don't like it, so we read a lot together, but if I have to choose between a book and the PlayStation, for me the book is better."

BE1b6 uses technologies quite often, but practically only after-school hours, during weekends or during holidays. During the week, most of his time is devoted to attending school and school-related tasks, but after finishing his homework he is allowed to watch TV, use the iPad or play with his or dad's games consoles.

B1m: "[B1b6] also spends time playing alone, not always with [dad]. He has lots of games. He can be one hour playing with the iPhone. Normally he plays every day, but sometimes 30 minutes, sometimes 15 minutes, sometimes an hour, but in the week we don't have much

time because he goes to school and he goes to sleep at 8 PM, The problem is during the weekend or holidays”

At this home the presence of digital technologies is prominent. Apart from a big flat TV screen connected to a set-top box, a DVD player and a CD player both mum and dad possess laptops. Dad also has an iPhone, a PlayStation 3 and an iPad which he usually shares with his son. Mum has a more modest, but new smartphone and cheap tablet and an e-reader which she does not use very often.

In this family we observed the biggest discrepancy in terms of values attached to digital technologies. In fact, when asked if they would define themselves as a *“technology-minded family”* both replied almost simultaneously *“there is a big difference between us” [and laughed]*. Dad even added *“I’m crazy about technologies. I love technologies”* and he showed the interviewer some of the “cool” gadgets he has such as a small beamer for his iPhone. He also explained that he uses some of these devices only with his son because mum is not interested in technologies. Mum, on the contrary explained *“I don’t hate technologies, but I don’t particularly like them. Everything you can see here are [my husband’s] possessions”*. During the interview mum frequently emphasized that *she doesn’t hate technologies*, however but she insisted that she doesn’t find them particularly attractive, either. She also emphasized the fact that technology were her husband’s possessions rather than her own: *“I have my own laptop where I work and that’s all”*. Interestingly, during the interview dad reminded her that she also had some other devices such as her smartphone or an e-reader but she explained that that she had only recently acquired the phone and only because she was living for a couple of months alone with the baby in USA *“so internet on the phone became necessary”*.

When we asked the parents if they actively teach B1b6 about digital technologies or if he learns on his own, mum replied that *“he learns on his own”*, however dad indicated that he also actively teaches him some things, for instance, when he achieves difficult levels on games or when he doesn’t know how to get through to the next level. Dad defines his son’s experiences with technologies as very positive. For instance, for school he has learned with the help of some applications because according to him they are *“more interactive (...) it helps to reflect because you get immediate feedback”*. Mum, on the contrary doesn’t associate technologies with learning. She has the feeling that the videogames *“are not really useful”*. She admits that you need to develop certain abilities to play games, but normally she doesn’t relate these abilities to intellectual ones because *“in most of the games you have to do the same”*. For her the games are repetitive, but also very absorbing. *“[B1b6] can be absorbed with playing. If you offer him to do something else he thinks that it’s boring. I think that the problem is that the PlayStation, iPad offer too many stimulus. But I don’t think in an apocalyptic way. He also plays with other children and enjoys doing other things. So I don’t associate technologies with something positive, but that’s me.”*. In spite of this, mum also recognizes some positive aspects of technologies:

B1m: “I think it’s important that [my son] has a fluent relationship with technology. Technology is part of our lives today. I don’t think you can avoid technology. I don’t think it’s a good idea to prevent children from using technologies”.

Family Beta

Flanders, Belgium

Family members

- Mum, 39, low digital user [B2m]
- Boy, 4, preschool, high digital user [B2b4]
- Boy, 8, 3rd year of primary school, high digital user [B2b8]
- Boy, 9, 4th year of primary school, high digital user [B2b9]
- Grandfather, 76, low digital user [B2gf]
- Grandmother, 72, low digital user [B2gm]

FIG. 1
KARAOKE
VIDEO ON
YOUTUBE



Narrative

B2b8 turned eight a couple of days before the interview. He lives together with his two brothers, mum, and grandparents in a medium-sized apartment (with a garden) in the city in Flanders. Mum completed high school and works as an administration officer at a university. They are a single income family but the grandparents are entitled to a state pension. B1m's brother (35) used to live in the apartment as well, but he recently moved out. He still has dinner with the family every day and sometimes picks up the children from school. The family has its roots in China, but B1m and the children grew up in Belgium. The flat is filled with children's toys and objects that reference to Chinese culture. Central to the living room is a flat screen TV with digital set-top box. The family also owns two laptops, of which, one is used by mum (but the children actually believe it is the possession of their uncle) and one by the children. The oldest siblings each have their own tablet. Mum owns a basic cellular phone.

B2b9, B2b8, and B2b4 all go to same school. B2b9 goes to the fourth grade, B2b8 to the third grade, and B2b4 goes to preschool. The children go to after school care and come home around 6PM. At home, mum checks their sons' homework; the family eats together; and afterwards the children get ready for bed (shower, brush their teeth, etc.). Consequently, there is little time to engage in media use on weekdays. Only if the children hurry up, there is time left to watch a cartoon before bedtime. On Saturdays - when the weather is nice - the family tries to engage in an outdoor activity before or after the children go to Chinese class. On Sunday, mum prefers a relaxed day and the family usually stays home. From the moment the boys wake up until noon they are heavily engaged with digital technologies, which creates some personal time for mum. The children usually spend their time before the television screen or on the computer. In the afternoon – after they have finished their Chinese homework – they either play outside or make use of media again.

Most of the children's interview was conducted with the three children present. This created the most natural dynamic because the boys often play together according to B1m. This was exemplified during the interview when the children showed us (Karaoke) music videos on YouTube and started singing and dancing together. B2b8 and B2b9 consider the computer and television as the most important devices at home, closely followed by the

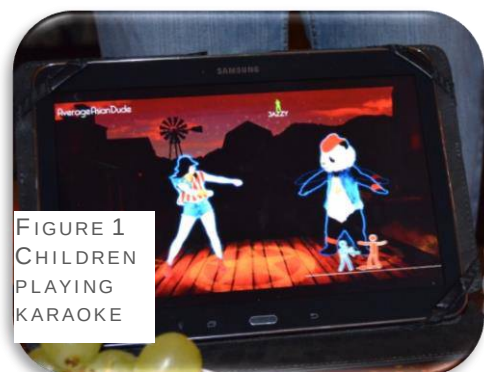


FIGURE 1
CHILDREN
PLAYING
KARAOKE

tablet. Favourite digital activities include playing digital games and watching videos on YouTube. B2b9 and B2b8 occasionally use Google to search for information. B2b4's media time is mainly invested in television or watching/playing along with B2b8 and B2b9.

In contrast to the sons' enthusiasm on digital technologies, mum is a low digital user. She mainly uses a handed-down laptop of her brother to watch Chinese series before she goes to bed. She owns a simple mobile phone and she has little knowledge on how to use the tablets of her sons. She considers herself weary towards using digital technologies in comparison to her children who she considers as more adventurous. Digital technologies are introduced into the family by mum's brother. He has spurred the boys' interest in playing games and watching YouTube videos by first allowing these activities on his tablet and smartphone. The grandparents have little digital skills and their role as regards digital technologies is confined to controlling or limiting the boys' media use whenever they need to engage in a different activity such as dinner or homework.

B2b9 and B2b8 have no problems operating the television/set-top box and can even record (and subsequently watch, rewind, and forward) television programs. They are capable of performing basic and complex activities on tablets and smartphones, such as navigating between screens, starting games, navigating YouTube, and taking and editing photos or videos. They can also take panoramic pictures. Interestingly, B2b9 uses the camera of his tablet to record some of his favourite shows on television, so he can take these with him. To some extent – with exception to B1m's brother – B1b8 and B1b9 are the most skilled family members in terms of operating media devices, especially the tablet. Mum acknowledged several times during the interview that her *"sons' tablet skills supersede [hers]"*. B2b4 digital skills are more limited, but he learns from his siblings by modelling their actions.

Mum has ambiguous views about digital technologies. On the one hand, she sees how digital technologies make life easier (e.g. Information at a fingertip, for instance when a family member is unsure about spelling or grammar) and serve educational purposes. She wants her children to keep up with technology as we live in a digital society. On the other hand, she has difficulties keeping up herself, which is exacerbated by the fast-changing and expensive nature of digital technologies.

In general, B1m does not feel the need to intervene too much in her children's media use because she feels they do not have the urge to explore inappropriate content, yet. Nevertheless, she sometimes passes by *"as unnoticeably as possible and check[s] the site the children are on"*. In general, adult family members have the power to both terminate children's media use whenever considered excessive and to use media as a reward strategy. For instance, B1b8 needs to do math exercises on the computer for 15 minutes before he can play a non-educational game and grandma interrupted the interview to encourage the children to drink their soup before showing us more content on the tablet. The children themselves did not expressed any concerns about their use of technology.

Family Gamma

Flanders, Belgium

Family members

- Mum, 37, low digital user [B3m]
- Dad, 41, low digital user [B3f]
- Boy, 6, 1st year of primary school, low digital user [B3b6]
- Boy, 4, preschool, low digital user [B3b4]



Narrative

B2b6 is a six-year old boy who lives with his 4 year-old mum and 41 year-old dad in a semi-detached small town. The home is located in a dead-end street houses lots of young families. The boys have lots of who can enter the propriety through the back yard. and mum is a teacher. The parents characterize themselves as outdoor people, which is exemplified by the campervan on the driveway. The family owns a television and a set-top box, a DVD/Blu-ray player, a laptop and music devices. Mum owns an old-fashioned cellular phone. Dad has a smartphone, but he only uses its functionalities for checking sport scores and the weather. In fact, the phone is in repair since two weeks and dad contends he “[has] not missed it at all”.

During the week, the children go to school. After school B3b6 does his homework. Afterwards, as an avid football player he goes outside to play whenever possible. Once a week he has soccer practice at a local club. B3b4 is fond of riding his bike after school and going to the playground. When it is raining, the boys love to play board games, a passion they have inherited from their parents. They play relatively complex board games such as Carcassonne and The Settlers of Catan. B3b6 tries to play chess with dad. During the week, the children only watch television before they go to bed and “only if they haven’t played outside for too long”. On weekends, the boys are encouraged to play outside as well or to engage in non-digital activities. B3m, for instance, always gets up with the boys and refuses to use the television as a means to get half an hour of extra sleep. Visiting the grandparents is also a recurrent activity in the weekend.

The most frequently used medium by the boys is the television. Before bedtime they usually watch cartoons on Nick. Jr for about half an hour. B3b6 starts to have an interest in TV programmes targeting his age, e.g. on Ketnet, a popular Flemish children’s TV channel. On weekends, B3b6 and B3b4 occasionally watch a movie. B3b6 and B3b4 use the computer to play educational (e.g. word-object pairing, word completion) and non-educational digital games (e.g. Sarah’s Cooking Class, soccer game). B3b6 also uses the computer for homework. B3b6 and B3b4 aspire to own a tablet, but it does not seem to be a desire that is always on top of their mind. The parents, for instance, thought B3b6 would ask for a tablet for his birthday, but in the end he opted for a remote controlled car. The family does not own a gaming console, yet B3B6 plays Minecraft at a friends’ house. Similar to the boys, B3m and B3f consider the television as the most important device in the house. Mum uses the laptop for work (e.g. course preparation, e-mail) and leisure activities (e.g. Facebook, casual games). Dad only uses the laptop for “practical stuff”, such as finances, checking the weather or a sports website.



FIG. 2 THE
SETTLERS
OF CATAN

Because either mum or dad sets up the media for their children and because the family does not possess a tablet, the children's digital skills are in general a bit less developed as compared to children observed in high digital families. Nonetheless, B3B6 has developed some specific skills related to his interests. He can, for instance, open a browser (with Google's search engine set as homepage) and type 'spel' [game], after which the link appears of a gaming website. On that website, he can navigate to a soccer game. Although B3b6 and B3b4 have no access to a tablet at home, they recognize a typical home screen (but not a lock screen).

The parents' main motive for restricting their sons' media use is the negative value they attach to screen time as compared to other activities such as playing outside, playing board games, etc.:

B3f: It's about what they miss out. At the moment you are doing that [sitting in front of a screen] you can't do anything. You can't get bored; you can't play; you miss out social contacts. Those are things you can't do 'alone alone'.

In addition, B3f feels that their point of view is acknowledged by experts. He watches a lot of "information programs in which scientists contend that young children who spend too much time watching television or using a computer have troubles later on to concentrate, to connect socially, ...". Specifically with regard to tablet use, B3f mainly emphasizes potential negative consequences and downplays possible educational values. He fears, for instance, that learning to write on a tablet is essentially different from writing on paper. B3m nuances that tablets can support learning and that different learning strategies can be combined.

B3m and B3f mainly turn to restrictive parental mediation strategies. They perceive little need to discuss content because the children "only see what we want them to see" and can already – to some extent – set boundaries themselves. For instance, B3B6 does not want to watch 'The Lion King' anymore because he found a particular scene too scary. Nevertheless, although B3m and B3f control what media content their boys are exposed to at home, they know little about their sons' media use outside the home. B3m for instance said that B3b6 plays Warcraft (a 18+ rated game) at a friends' house. However, during the debriefing it became clear that B3b6 plays Minecraft and not Warcraft. In any case, neither B3m nor B3f had an idea about what the game was about. They were confident that the parents of B3b6's friend would not let their son engage with games not appropriate for their age. Another important family rule is that the children need to agree when using digital technologies and whenever they fight, B3m or B3f stop the activity.

Family Delta

Flanders, Belgium

Family members

- Dad, 34, medium digital user [B4f]
- Mum, 35, medium digital user [B4m]
- Girl, 7, medium digital user [B4g7]
- Boy, 4, medium digital user [B4b4]
- Girl, 4, medium digital user [B4g4]

Narrative

The family lives in an urban area in a row house with a garden in one the suburbs of a large city in Flanders. The living area is filled with a variety of toys, such as Playmobil toys, dolls, books, modelling material, etc. Both parents have completed college education. governmental organization and mum teaches Dutch half Flemish and half American and she mainly children. In the past years, B4m has been a working her master's degree in Educational Sciences in

addition, she is active as a politician, representing a left-wing party at the local policy level. Because of work, the pursuit of a master's degree, a political mandate, and their three children, including twins, B4f and B4m perceive their life as very hectic, *"although it is getting better as the twins get older"*. The family owns a television (but has no cable subscription), two laptops, a tablet (extra-legal benefit as a politician), multiple MP3 players, and a kids computer. Both parents make use of iPhones. The family possesses cultural and economic capital.

During the week, days are packed. In the morning children get dressed, eat breakfast and go to school. As both parents work full-time, children go to after school care. The family arrives home between 6pm and 6.30pm after which the children occupy themselves by doing homework or non-digital activities. After dinner, children get ready for bed. Bedtime is around 7.30pm. In the weekend, life is not as frantic. There is time for grocery shopping, going to the playground or visiting grandparents. On Sunday, B4g7 goes to the youth movement by bike (6km) together with dad.

As regards the use of digital technologies, mum and dad both need computers professionally. At home, they use digital devices for work purposes (e.g. e-mail, course preparations, etc.) and leisure activities (e.g. browsing news sites, watching television series, etc.). Dad considers television an *"outdated technology because [he] can easily find the same shows on the Internet"*. Both mum and dad prefer using media according to their time schedule and preferences. Although the children genuinely enjoy digital technologies such as watching television programmes or playing digital games, they are not very engaged in digital activities because there is just no time on weekdays. The children like almost all activities presented to them. When asked to pick their top three favourite activities, B4g7 chose Playmobil, swimming and playing digital games such as Angry Birds on the iPad; B4b4 talked about dolls and the computer; B4g4 did not enjoy the card game and wandered off to play with Playmobil or to read a book. Because of her young age and because it proved to be very challenging to keep 3 young children's attention and focus, the interviewer let her engage and disengage from the interview as she wished.

On weekends, the parents prefer to keep digital devices for moments when they cannot engage in their children's activities. The children then browse YouTube or play casual games on the iPad.



FIG. 3
ENJOYA
BLE
ACTIVIT
IES
ACCORD
ING TO
B4G7

At

their

grandparents' house they usually watch a movie. About once a month, mum uses "corners", which means that every child engages in a different activity for a certain amount of time and when the time goes off, they rotate and move on to the next activity until each of them has performed the three activities. For instance, one child goes to the tablet 'corner' and uses the tablet to watch YouTube videos or to play a Lego game while another child plays with plasticine and one child sits with mum at the computer. Mom sits together with the child using the computer because it is the most challenging medium to work with, especially because the children need to use the track pad since there is no computer mouse available. They use the computer for educational games.

The children have little understanding of online activities or applications, such as Google, Facebook, or e-mail. The children know Skype because they use it "to share [their] feelings" with relatives living in the USA. We observed large differences in terms of B4g7's knowledge and digital skills as compared to the younger twins. B4g7 already has a much more "abstract understanding" of digital technologies and how they work. She can, for instance, browse through different menus on the tablet independently, while the twins need help to perform basic activities such as going back to the previous screen when a YouTube video finishes. The children do not know the password of the tablet or smartphones, but B4g7 knows you do not need it to take pictures. The children are taught how games must be played and mum or dad usually stay nearby because "*the children in general don't have much respect for physical things yet*". The children themselves did not identify any risks associated with digital technologies. However, B4g7 mentioned that she did not enjoy commercial content nor *silly videos*.

Interviewer: Have you or has a friend or anybody you know ever seen something that is not so nice on the computer. Or is it always nice and fun on the computer?

B4g7: On the computer sometimes we look big people, and we don't like it

Interviewer: And why don't you like when you see big people on the computer?

B4g7: Big people we don't like because they...because big people they are not interesting for children because they only say things about things that you can buy in a store. Or sometimes they put silly films on computer, like this.

B4f and B4m identify both opportunities and risks related to digital technologies. On the one hand they acknowledge how digital devices make life easier and are an indispensable part of modern life. On the other hand they fear that digital devices can be very time-consuming and addictive because of the instant gratification they offer. B4m, therefore, wants her children to prioritize other skills first, such as being able to play socially offline. B4m is scared that she may not be able to keep up with the fast-evolving nature of digital technologies. One of the reasons why she purchased a smartphone was to remain up-to-date with digital technologies that her children would appropriate in the future.

In this family there are no strict rules regarding the use of digital technologies. Whether and when the children can use digital technologies at home mainly depends on whether there is time. The children are nevertheless strongly encouraged to pursue non-digital activities. The parents are strongly involved in their children's media use because they feel children need guidance while interacting with media and because they fear children might break expensive devices. The parents usually choose and set up the media and its content, especially for B4g4 and B4b4. The children are in general compliant, but sometimes they "*go into hysteria*" when they are asked to put down a digital device. The parents therefore use a "time-timer" to allow the children to visualize the time that is left to spend on the activity. B4m and B4f are adamant that media literacy for children should be a combined effort of both parents and the school. The parents would welcome initiatives for a platform that lists safe apps and that is kept up to date.

Family Epsilum

Flanders, Belgium

Family members

- Dad, unknown, low digital user [B5f]
- Mum, unknown, low digital user [B5m]
- Boy, 6, 1st year of primary school, medium digital user [B5b6]



Narrative

B5b6 is a 6-year old only child who lives with his dad and mum in the Flemish part of Belgium. Both his parents are Asian, but they have lived for several years in Belgium. As a matter of fact, B5b6 was born in Belgium. They live in a medium-sized apartment with a garden. At the moment of the interview, B5b6 had just started his first year of primary school. He knows B1b6 quite well because they used to be school classmates. Once in a while they get together to play.

The interview was conducted in Dutch. However, as this was language of the family, at times, this hindered a fluent communication.

() the second

At home this family possesses a TV, a laptop, a PlayStation2 and a tablet. B5b6 uses all the digital artefacts that are present at home. He even possesses his own tablet. Unfortunately, at the time of the interview the tablet battery had not been charged so we could not observe him using it. His parents also have a smartphone where he can play and download games. During the interview we showed him pictures of digital and non-digital devices, games and activities and we asked him to classify the pictures according to the things he liked a lot, the things he liked a bit and the ones he did not like. Of all the pictures, B5b6 chose the PlayStation Portable (believing it was a Nintendo DS), the MP3 player, tablet, and game console as the ones he liked most. Interestingly, he does not have a Nintendo DS, however his friend B1b6 does. They have played together with it and this is why, according to him, he would like to have one, too. Indeed, during the interview he spontaneously made a drawing of the Nintendo DS and, as he gained more confidence, he asked the interviewer if he could keep the card displaying the portable gaming device. He promised that he would return the card to us as soon as he gets a real Nintendo, normally on his next birthday, as promised by his parents.

As regards his favourite activities, B5b6 watches Rox, a Flemish TV series for children, on TV as well as searches for movie clips of the show on the Internet. He also likes to play games, including fighting ones, on the PlayStation2, on his tablet and on his father's smartphone, where he is also allowed to download (free) games. Interestingly, at his young age and in spite of never having learned English, he already knows the meaning of words such as "free" or "download". His parents also mentioned that he likes to watch Mister Bean on TV, but B5b6 said that he didn't really like it. As regards, digital skills, B5b6 can turn on the PlayStation, but he is not able to start games without his parents' help. During the interview, however, the family did not succeed in making the PlayStation work until one of the researchers helped them to get started. He can also use Skype on his own but only if one of his parents opens the

programme for him. He can turn the TV on and change channels and he can play and download videogames, mainly on his tablet and on his dad's telephone. Apart from digital technologies, B5b6 has other hobbies. For instance he goes to dancing school and he likes playing football. His parents also said that he frequently watches Kung Fu videos online, and that afterwards he imitates what he has watched. Probably because of his passion for football he also enjoys playing FIFA games on the PlayStation2.

B5b6's online searching skills are rather limited. This is probably because he is just starting to read and write at school which limits his searching capabilities to short and simple terms such as "Rox" (one of his favourite Flemish TV programmes). Nevertheless, as observed during the interview, he sometimes also succeeds in finding more complex information with the help of the autocomplete feature of some search engines. This process, however, is less straightforward as it requires him to check and visit a few websites, usually the first ones suggested by the engine, before finding the desired website. This trial and error process is not exempt from risks. On the contrary, because most of the devices he uses to connect to the internet are family devices which are also employed by his parents, the possibility that he encounters commercial or other types of online content not meant for children or directly targeting an adult audience are high. This potential risk is illustrated by the pictures below which were taken while B5b6 was showing us how he typically used the internet on his dad's laptop.

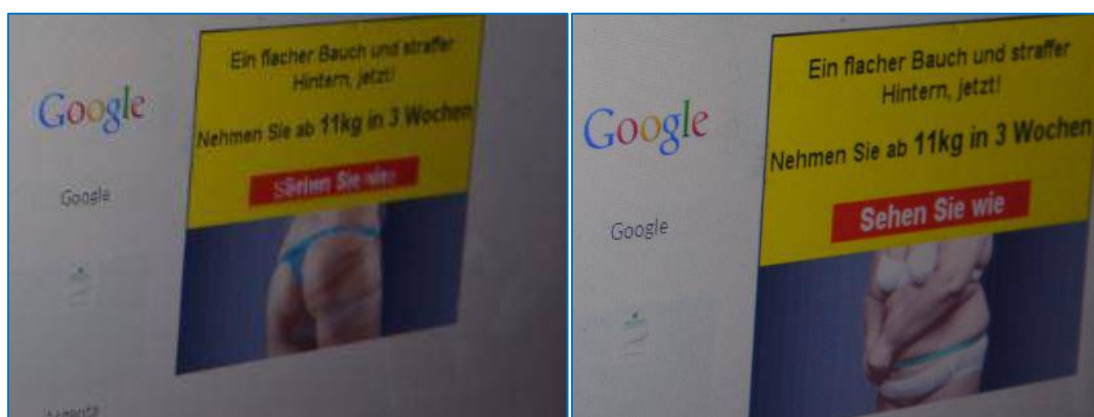


FIG. 4 PICTURES TAKEN WHILE 6-YEAR OLD CHILD BROWSES FOR INFORMATION ON HIS FATHER'S LAPTOP

Even though B5b6 gets some help from his parents to use the computer or the PlayStation it is also apparent from the interview that he learns a lot on his own, but also from his friends and from the school. His parents do not seem very knowledgeable nor aware of digital technologies and potential associated risks. For instance, this is the only family where none of the parents uses e-mail, so all our communication with them before the interview had to be done via the telephone. Probably because of their rather low digital literacy level, B5b6's parents are also less aware of potential online risks and let their son explore the digital world quite freely. In spite of this, they do set time limits as regards the use of digital technologies. For instance, they do not let him spend more than 1 or 2 hours a day in front of screens because they disapprove of excessive computer use. They also have strict rules as regards when it is possible to play computer games, for instance, not before doing his homework. According to his parents, B5b6 is obedient and follows these rules. In spite of being rather strict about the time spent with digital technologies, B5b6's parents, especially the father, admit that technologies

can also be educational because they can help children learn new things. They also value the fact that he has computer classes at school.

When asked if B5b6 has ever been confronted with negative experiences, B5b6 expressed no concerns at all. His parents only referred to the fact that when playing B5b6 uses sometimes *“dirty words”*, but he clarified that these words are learnt at school, via his friends, rather than through the use of specific media. In sum, apart from the use of inappropriate language and excessive time exposure to technologies, no other worries or concerns related to digital technologies were expressed by this family. Still, as explained above, we were able to observe B5b6`s exposure to potential online risks.

As opposed to B5b6`s parents, digital technologies play a prominent, although not exclusive, role in his life. He uses them mainly as a way to relax and have fun, but he also learns things from their use, for example Kung Fu moves. For his parents, on the contrary, digital media use is much more limited. They mainly watch TV and use their laptop or smartphone to be informed about the news and to keep in touch with their family abroad. The family watches a Dutch soap opera together. Besides its entertainment, the parents explain that the relatively simple vocabulary is excellently suited to improve their Dutch. Interestingly, in spite of being low digital parents, they encourage their son to use digital technologies because they believe that through them he will be able to learn more. Finally, no conflicts nor tensions were observed as regards the use of digital technologies at home. There are only a few rules in place especially related to time, and everybody respects them.

Family Zeta

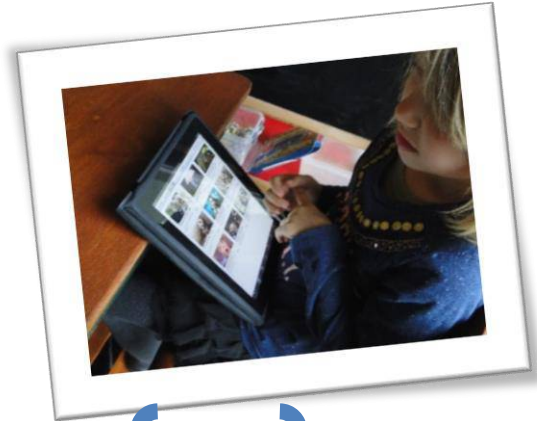
Flanders, Belgium

Family members

- Dad, 41, medium digital user [B6f]
- Mum, 37, medium digital user [B6m]
- Girl, 6, 1st year of primary school, high digital user [B6g6]
- Boy, 2, low digital user [B6b2]

Narrative

B6g6 is a 6-year-old girl who lives with her mother, her father and her 2 year-old brother. At the interview both parents and B6g6 were present. The little the day care centre. They live in big house with a very big residential area. Mum and dad own a shop and they work there almost every day including Saturdays and, sometimes, Sundays before noon. Because of their busy schedule, the children usually go to the shop after school or sometimes they go to their grandparents` house, also in the weekend, if necessary. At the shop they have a dedicated and nicely furnished room for them where they can do their homework, eat, watch TV and relax. Because of their constant mobility the family iPad has become an important entertainment gadget for B6g6. Both sister and brother have lots of toys and digital technologies to play with both at home and at their parents` shop.



At home B6g6 mainly uses the TV, the iPad and the laptop. Indeed, during the interview she mentioned that the TV was her favourite technological device and she watches TV more than other children we observed. She is one of the few children interviewed who is allowed to watch TV in the morning before going to school. She can use the TV on her own and is able to swap between channels and chose the ones she likes. Because they have digital TV at home, she is also able and allowed to order free movies. For paid movies she needs to ask her mum for the password. Apart from the TV, she likes the iPad a lot. Not surprisingly, she mainly uses the iPad and the laptop to watch films on YouTube, but also to play games. In particular, she likes watching films from the movie “Frozen” as well as other “funny” films, for instance, about animals doing “silly” things. At home they also have a Nintendo DS which she uses to play games (e.g. Super Mario bros.). She also mentioned that she doesn`t possess a smartphone, but that she would like to have one of her own because one can play lots of games there as her dad does. She is sometimes allowed to use her mum`s phone to play. Her dad does not let her use his smartphone very often because when she was a little child she was playing with it and it fell so it almost broke.

As observed during the interview, she can use the iPad quite independently. She is able to navigate from one screen to another, to open applications, to go back to the main menu, etc. and even to download free Apps. During the interview, B6g6 explained to us how she had downloaded the free app “Talking Tom”:

Interviewer: What do you do if you want to play a new game [on the iPad]?

B6g6: When I found the dog [referring to the “Talking Ben” App], there was something like this [pointing to an ad] and when I clicked there it was this game [referring to the “Talking Tom” App]

Interviewer: So, you first found the dog and then, you clicked somewhere on the dog game

and so you found Tom [meaning the “Talking Tom” app]?

B6g6: Yes. Do you see? Like this [pointing at the “free” cat icon (Tom) on the upper right corner of the “Talking Ben” screen]

Interviewer: Ah, where it says “free”

B6g6: That is a kitty and there I clicked and then I got this game.



FIG. 5 A 6 YEAR-OLD CHILD SHOWING US HOW TO DOWNLOAD A FREE APP ON THE IPAD

Her parents confirmed during the interview that B6g6 is able to find games on her own. However, her mother explained that she cannot simply download Apps to the iPad because first she must type in a password which she does not know.

B6g6 is also aware of some technical risks:

B6g6: You must not click there (pointing to a banner with an advertisement on her iPad), because you can find something dangerous.

B6g6: Something dangerous?

B6g6: Yes, and then the iPad won't work

For paid games she needs to ask for her parents' password. If she wants to watch videos or a movie on YouTube her parents have to help her to type the name of the film. Once this has happened she simply continues clicking on the videos suggested by YouTube. As observed during the interview, her selection of videos is simply based on what, at first sight, seems funny. Sometimes she also recognizes videos that she has watched before and she clicks on them because she knows those are funny. According to her parents, she finds it difficult to use the mouse and they believe that she can deal much better and faster with the touch screen. Apart from using technologies, B6g6 likes drawing, playing with dolls, reading books, going to the playground and to the swimming pool. She also goes to dance classes.

As most children interviewed B6g6 has learnt to deal with technologies in a very intuitive way via a “trial and error” process. The only formal learning process mentioned during the interview was the use of smart- or digi-boards at school. Apart from that, her parents believe that she is very fast at learning to deal with technologies, especially the iPad which she commands quite well. It is quite likely that she also learns by observing others engage with

technologies (e.g. her parents, other relatives and probably friends) as well as by trying on her own.

B6g6's digital skills and knowledge are rather broad as compared to other children of her age. However, as observed with the other Belgian children interviewed, her digital skills and literacy level are still quite limited in the sense that she is only able to use a reduced set of functionalities, mainly watching (and finding) videos on YouTube and playing games. Her level of awareness of potential (online) risks is almost inexistent with the exception of an incipient knowledge of technical and commercial risks. She is, in fact, still unable to recognize many, probably most, of the icons on the home screen (e.g. e-mail, Skype and other communication or social media apps, etc.). B6g6 seems to enjoy technologies quite a lot and she did not express any fears or concerns related to her experiences with technologies. Her parents do not express any concerns either and they do not think that her daughter has been confronted with any unpleasant experiences online. The mother mentioned, however, that she is worried about the future, for instance, when her daughter grows up and starts using Facebook or Instagram. She knows some girls (e.g. friends' daughters) who post pictures which she believe are not really appropriate for their young age or who send and accept friend's requests from people they do not know. In particular she worries about social media and this is why she believes that children should be made more aware of the things they should be careful about online.

B6g6's parents spend a considerable amount of time with digital technologies. Both of them have an iPhone, but they do not use them intensively. B6g6's mother mainly plays games such as Candy Crush on the iPad, she uses Facebook and she reads the newspaper. The father mainly checks his e-mail and looks for second hand cars which is his passion. In this family the parents mainly perceive digital technologies as useful for work, to be updated from the news, but also as a useful tool that helps "entertain" their children when they are both working at the shop, but in general they, as a family also spend considerable time doing things that are not technology-related such as biking or going out.

In terms of family rules, there aren't really many nor strict rules when it comes to using digital technologies at home. The only concrete rule mentioned during the interview was that B6g6 is not allowed to know the code of the App store nor of the digicorder (set-top box). By doing this she is prevented from downloading games or Apps onto the iPad and her mother's iPhone and she cannot rent paid movies on her own. Her parents believe this measure is effective because it allows them to be informed about and to control what her daughter does online or the TV content she is exposed to.

Family Eta

Flanders, Belgium

Family members

- Mum, 34, medium digital user [B7m]
- Dad, 31, high digital user [B7f]
- Boy, 7, 2nd year of primary school, medium digital user [B7b7]
- Boy, 4, preschool, medium digital user [B7b4]



Narrative

These 4- and 7-year old boys live with their mother and father in a row house with garden in a relatively small town about 15 minutes from a large city in Flanders. Their living room is filled with (digital) toys, but also DVDs and dad's comic books collection. The father completed high school and is a store manager of a discount supermarket. The mother has a bachelor degree and works as a midwife in a regional hospital. We observed a lot of technologies at the home, including multiple televisions, a DVD/Blu-ray player, an advanced Dolby Surround system, a desktop computer, a laptop, a tablet, music players, smartphones, multiple V-Tech kids computers, a Wii gaming console, and a Nintendo DS. As a DJ and technology enthusiast, dad follows the latest technological trends. He owns DJ devices and installed a home network so that media content can be accessed in all rooms.

During the week B7b7 and B7b4 go to school. After school, there is time for homework and mostly non-digital leisure activities, such as playing outside, riding their bike, reading (B7b7) or playing with friends at the nearby playground. School requires B7b7 to read at least 10 minutes a day. Sometimes the boys watch television while mum is cooking (and dad is still at work). Before bedtime, B7m and B7f allow their sons to watch television because *it calms them down*. On weekends, the boys engage in a variety of non-digital and digital activities. B7b7 and B7b4 enjoy watching television and playing games on the Nintendo DS, Wii, or smartphone. When mum and dad have to work on Saturday, they play on the Wii with the babysitter. At home, mum uses digital devices to relax (e.g. watching television, social media, etc.). Dad is passionate about music, but also watches television and uses the Internet to inform himself before making significant purchases.

In this family, the parents mainly choose and set up the media and its content for their children. The focus is usually on television or digital gaming on the Nintendo DS or Wii. It is only very recently that B7b7 is allowed to operate the television and Nintendo DS on his own. He cannot operate the Wii or DVD-player. B7b4 can only operate the Nintendo DS independently. The children are only occasionally allowed to play with the tablet or smartphone because the parents fear that the boys might break these expensive devices. As a result, in comparison to other children interviewed, these boys have relatively low digital skills related to touch screen devices. They also seem unfamiliar with applications such as Skype, the camera, or YouTube. B7b7, however, knows that Google serves as a portal to go to other websites, such as the school's digital platform.

In general, the parents consider digital media as “a *surplus*”; they want their children to acquire other skills first. Not all digital technologies are considered equal. B7f perceives little value in watching television and considers it a rather brainless activity. B7m nuances this point of view by adding that “*television programmes now are more complex*” than two decades ago and emphasizes that interactive television programmes such as Dora the Explorer require at least some cognitive effort. Dad – a former game enthusiast himself - nevertheless prefers that his sons play digital games instead, because at least gaming has a positive effect on hand-eye coordination. B7f wanted to show the effect of gaming on hand-eye coordination by letting the interviewer race against B7b7 in Mario Kart. The interviewer, a gamer himself, lost the race. Both parents acknowledge the potential opportunities (e.g. information value) and dangers (e.g. privacy) related to using the World Wide Web, but their children’s Internet use is mainly limited to the B7b7’s digital school platform. In general, digital technologies are not often used for family bonding. Occasionally, when the boys behaved during the week, the family eats pizza together while watching a movie.



FIG. 6
B7b7
PLAYS
MARIO
KART ON
THE WII

As a result of their ambivalent perceptions of digital technologies, parents have introduced rules for technology use. The most important rule relates to access. The boys can only use digital technologies if they have permission and most often mum or dad sets up the media. The television and gaming consoles can, in general, be used without the explicit supervision of mum or dad, but expensive or less user-friendly devices such as the tablet, computer and smartphone must be used together with a parent. Because dad is not always home for dinner, he does not let the children use digital devices at the table (although he sometimes breaks this rule himself).

Theta Family

Flanders, Belgium

Family members

- Mum, 37, low digital user [B8m]
- Girl, 7, 2nd year of primary school, medium digital user [B8g7]
- Girl, 4, preschool, low digital user [B8g4]

Narrative

B8g7 is a seven-year old girl who lives with her 37-year old mum and her four-year old sister in a small terraced house in the outskirts of a large city in Flanders. The ground floor of the plan and houses a lot of toys and drawing material. Mum college education and has two part time jobs. Her main physiotherapist. The family is characterized by high economic capital. Mum worked for a non-profit aid organization in Namibia where she met the father of B8g7 and B8g4. The father still lives in Namibia, but B8m has contact with him on a weekly basis via e-mail. The children seldom speak with dad because the family does not have an Internet connection at home and because of the language barrier. Mum, however, encourages dad to send postcards which make B8g7 and B8g4 very happy. As a single mother, B8m welcomes help of her parents. On Tuesdays, B8m works late. Her parents pick the children up from school and they stay there for the night. At least on one other day in the week, the family visits the grandmother (B8gm) and the grandfather (B8gf). B8g7 and B8g4 enjoy these visits very much amongst other reasons because of the presence of cable television and an up-to-date computer.

The family owns an old CRT television but no cable subscription, a DVD-player, and a “very slow computer that is unable to connect to the Internet”. Mum does not possess a smartphone, but an old-fashioned Nokia mobile phone. At home children’s media use is limited to watching DVDs which they rent from the public library. During the week, B8g7 and B8g4 take turns in choosing one or two short videos to watch before going to bed. Occasionally, mum puts on a DVD when they are very tired after school and she needs to cook. On weekends the children sometimes watch a DVD in the morning while mum sleeps for an extra half an hour or goes to the bakery (which is about five minutes from their house). The weekend is packed with activities. B8g7 is engaged in rope skipping, goes to the local youth movement and occasionally goes to birthday parties. B8g4 goes to ‘Multi-move’ classes in which she gets familiarized with different sports. The whole family does the shopping and they usually visit B8gm and B8gf.

B8g7 and B8g4 talk enthusiastically about a variety of technological devices, in particular the tablet and an up-to-date computer. B8g7 plans “to buy an iPad when she’s taller”. Despite having little access to the latest home and mum’s digital use is low, B8g7 is among the most knowledgeable and skilled children as regards digital technologies we interviewed. She is familiarized with cable TV because she



FIG. 7
SELECTION
OF
DVDs
CHILDREN
WATCH

can watch it once or twice a week at her grandparents' house, she also has computer class at school, and she plays on iPad with a friend or with her older cousin. She is also aware of the different functions of a smartphone, can make use of Google as well as explain the functionality of Skype and even Facebook, which very few children knew. B8g4's media reality is centred around the television, but she also loved to play games on a kids computer which sadly broke down. The girls did not mention any negative experiences with media during the interview, however B8g7 indicated that she did not like games in which *"you have to shoot characters or light them on fire"* which may indicate some exposure to violent content. B8g7 finds it unfortunate that digital devices are expensive because she aspires to own an iPad and an up-to-date computer to do her homework but she is aware that they cannot afford it, yet.

B8m seldom uses media at home, with the exception of occasionally watching a news program using an antenna that allows her to capture two stations of the public broadcasting service. The antenna is so loud however that she needs to make use of subtitles. Mum's reluctance to buy more digital devices can be attributed to financial constraints – *"there is just no budget at the moment"* – and to her negative perceptions of digital technologies. As a physiotherapist she complains about the sedentary nature of technology use and she does not associate digital devices with social or *"cosy activities"*. B8m sees benefits in educational programs on television such as Karrewiet and in some educational games for intellectual development, but she doesn't *"think [her] children are more stupid in comparison to their peers just because they don't have an iPad or a computer"*. Instead, she believes that her children *"are flexible enough to catch up later"*. Despite dominant negative perceptions B8m feels that she *"will need to succumb one day [to buying a new computer]"* because the children will need a computer for school purposes. At the moment, B8g7's school already makes use of a digital platform for additional exercises, but the school is thinking of installing a similar platform for mandatory homework as well.

B8m uses both constructive and restrictive parental mediation strategies. She believes these strategies will become more important when her daughters are older. B8g7, for instance, chooses children's DVD in the library as her reading skills are not developed sufficiently to read subtitles at the required pace. The children can only watch one or two movies a day before bedtime, but exceptions are possible in the weekend or when the children are very tired. Mom either chooses DVDs in the library herself or she checks the choices her children have made. The grandparents impose less temporal limits. Whenever something scary happens, in a Disney movie for instance, mum discusses the event. As the media use takes place in the open-plan ground floor, mum always has an eye on her children.

Iota family

Flanders, Belgium

Family members (interviewed)

- Mum, 30, low digital user [B9m]
- Step father, 50, medium digital user [B9f]
- Girl, 5, preschool, medium digital user [B9g5]
- Girl, 7, 1st year of primary school, medium digital user [B9g7]



Stepsiblings not present during the interview

- Girl, 10 [B9g10]
- Boy, 10 [B9b10]
- Boy, 15 [B9b15]
- Male youngster, 19 [B9b19]

Narrative

B9g5 and B9g7 are the youngest sisters of this seven children. They live with their 50-year old their 30-year old mum. They have four other (step) three of them live at home with them. During the interview the children mentioned that their 15-year old brother lives at a boarding school. This low income family was the only family in Belgium who chose to be interviewed at the after-school day-care the 2 girls interviewed attend rather than at their home.

Even

stepfamily with stepfather and siblings, but, only

In spite of their low socio-economic status this family possesses lots of technologies at home, including two TV sets, a PlayStation3 and a Nintendo Wii. Except for the TV and the games consoles, there are not many family devices. On the contrary, most devices are either the children's or the parents'. The latter cannot be used by the children. The parents own very modern and expensive smartphones as well as a laptop. The mother owns her own tablet. The children have their own computer which they share. However, as described by the parents and the children themselves, this computer is old and slow, so the children use it mainly to play online games. Older siblings in this family own their own cell phone and the 15-year old brother has his own smartphone, tablet and laptop which he got from his grandmother. B9g5 and B9g7 have "inherited" their older siblings' old cell phones. They use them to play games but they cannot use them to make phone calls because they, purposefully, are not equipped with a SIM card.

Both B9g5 and B9g7 enjoy watching TV as well as playing with the computer and the PlayStation. They also mentioned that they liked the tablet, however they are not allowed to use it. The mother explained that the children broke the previous family tablet so they are forbidden from using the new one. Regarding their online activities, these two girls usually visit the gaming websites www.spelen.nl and www.funnygames.nl. On the TV they usually watch the Nickelodeon Junior channel and TV programmes such as Hot Wheels, Chica Vampiro, a Colombian teenagers TV series, and Sam and Cat. They also play fighting and car

racing games on the PlayStation. Even though the family has a Nintendo Wii console the children did not mention it during the interview. The parents confirmed that it was not really used.

According to their mother and stepfather, these two little sisters have acquired a number of digital skills by observing older family members use them, but depending on the activity they engage in, they sometimes need an older sibling or their parent's help. Both girls can find their favourite TV channels, go to online gaming sites on their own and play computer games on the PlayStation. In the specific case of B9g5, she has learnt to use the tablet with her foster family so she can also find and take pictures with the tablet and also play games and watch videos there. The mother emphasized that in general, their children know much more about technologies than she does.

Apparently, B9g7 and B9g5 do not have any specific hobbies apart from watching TV very intensely and playing online computer games. As their mother indicated during the interview, the TV is always on at home, even as background when they are having dinner or in the morning when the children get ready to go to school. The mother also explained that the youngest daughter is more active and she prefers playing online games on the computer, while the older, and quieter sister prefers watching TV. This distinction was not really evident during the children's interview. Indeed, when asked which activities, toys and devices they liked most, both sisters mainly chose technological devices. This was particularly noticeable in the case of B9g7 who placed traditional games and activities such as Legos, books and even the playground among the things she did not like. Dolls and the swimming pool were the only non-digital devices she placed among the things she liked most. Her youngest sister favourite options were more diverse and she did place the playground, Legos and riding her bike among the things she enjoyed a lot together with several technological devices such as the TV, computer tablet, MP3 player, smartphones, etc. Interestingly, this is the second family where we observe that the oldest sibling chooses the PlayStation as a favourite device while the youngest one does not. We believe that the PlayStation, and other similar controller-directed game consoles, are too difficult for younger children (aged 5 or below) to use and this is why they do not like them.

In general, these two girls perceive digital technologies as something positive. They enjoy using technological devices for different purposes, for instance for listening to music, watching series or videos or to play videogames. Their step-father also has quite a positive view of digital technologies. He thinks that these are important tools that have facilitated many aspects of everyday life, for instance, communication is much faster thanks to services such as the e-mail, or you can organize lots of information in your computer and find what you need quickly and easily. He also refers to very practical uses of technology such as withdrawing money from bank machines, as well as to entertainment aspects such as gaming. In spite of this he worries a bit about the future and the extent to which technologies may replace human beings, for instance in construction work, which he currently performs. He also expresses some concerns as regards the digital divide because he feels that more and more people are pushed towards using technologies, however not everybody is prepared or has the necessary skills to deal with them and this can cause problems: *'if you are looking for a job in ten years, it will be something with technologies'*. The girls' mother, on the contrary, has a negative vision of digital technologies and media. She summarizes her views by saying that technologies *'make people stupid (...) and lazy'*, but also *anti-social*. In spite of this, she believes that it is important that children use technologies as much as possible *'because the world advances too fast'* and they need to be able to catch up.

The mother and the stepfather in this family do not seem worried about their youngest children's use of digital technologies (B9g5 and B9g7), however they do express considerable concerns about their older children and, in particular, their 15-year old boy, who, according to them, uses technologies excessively and has had some bad experiences online.

B9m: With the 15-year old boy we don't have any control about what he does [online].

B9f: And we've already had a bad experience with him. With those 'special' sites.

This 15-year-old boy is also the child within this family who possess more mobile technological devices. The parents explain that by keeping the old computer in the living room they are able to "keep an eye" on their youngest daughters' internet use, however this approach is ineffective with their 15-year old who possess his own laptop, smartphone and tablet, all given to him by his grandmother. When asked about existing rules at home, both parents mentioned that they do not have any and that they let their children use these technologies as free as they want. However, they did mention that there are obvious time limits, for instance, they can only use technologies in their free time, after having dinner and before going to bed which means less than an hour during week days. They also mentioned that they keep an eye in what they do, and that because they discovered their 15-year old son visiting websites which were not really *appropriate* for children of his age, they set up Google in such a way that they are now able to trace from their own tablet and smartphones the history of everybody who searches the internet at home. By doing this they can control somehow what their children do online and take some actions if deemed necessary. Interestingly, as the extract below shows, even though the parents in this family feel that their youngest children's online experiences are quite safe, the interview with the children showed that they have been confronted with less pleasant, and possibly risky online experiences, particularly having seen images of naked women online and having the intention to contact a "beautiful lady" they did not know in person once.

B9g7: [my 15-year old brother] always looks at pictures of pretty girls

Interviewer: And you look at those pictures with him?

B9g5: Real naked women and so, that's what he looks at. To see if he can get a girlfriend

Interviewer: Ah, ok. And those are really naked women? What do you mean by that?

B9g7 They sometimes wear a bra and panties and sometimes they are completely naked.

(...)

Interviewer: And are these ladies pretty?

B9g5 and B9g7: No, ugly!

Interviewer: And what did you think about seeing these naked women?

B9g7: But one of the naked ladies was pretty, I thought.

(...)

Interviewer: And the others? You didn't find them pretty?

B9g7: No, but once I also saw a very pretty lady with clothes and that. And I found her pretty to become my friend. But I didn't tell anyone about it. I didn't want to.

Interviewer: So you wanted to become friends with the lady?

B9g7: [nodding] I kept it to myself

Interviewer: And did you get in touch with the lady?

B9g7: What do you mean?

Interviewer: Did you talk to her or send her a message?

B9g7: But I've never seen her! I never see her. I live in [name of town] and I don't know where she lives.

Interviewer: Ah, OK. So you don't know where she lives, but you would like to meet her anyways?

B9g7 [nodded].

Interviewer: And if you get to meet her, do you think that would be safe?

B9g7: No.

Kappa family

Flanders, Belgium

Family members

- Dad, 38, medium digital user [B10f]
- Mum, 38, low digital user [B10m]
- Girl, 6, 1st year of primary school, medium digital user [B10g6]
- Boy, 9, 3rd year of primary school, medium digital user [B10b9]



Narrative

The Kappa family consists of mum, dad, their six-year old daughter, and their nine-year old son, and row house with a movement, which is a neighbourhood. The university town in Flanders. Both mum and dad enjoyed higher education. B1f has a master in audio-visual arts and in informatics. He works as a computer scientist for a private company, but in his free time he still tries to focus on his artistic interests by reading comic books, making drawings, etc. During the week he only arrives home around 7.30 pm. Mum works part-time at a university college where she teaches students to become professional teachers. The children engage in a wide variety of activities. Both of them go to art school as well as to the youth movement. B10g6 has dance practice on Saturdays and B10b9 plays soccer. Attesting to the creative interests of the family are the various drawings and little artworks found throughout the house. The family possesses a television without cable subscription, a DVD/Blu-ray player, a desktop computer, a laptop, a tablet, a radio/CD player, iPods, a smartphone (dad), and a cellular phone (mum). The children own music players, a Wii and kids photo cameras.

The most important device for mum and dad is the radio, which is always on. Mum considers herself to be *“allergic to digital technologies that involve screens”*. Her computer use is limited to work purposes, checking e-mails, or very deliberate search actions such as finding a present for Christmas. Now that the family possesses an iPad she *“notices [she] is checking e-mails more often because it is faster”*, but in general she still considers her exposure to screen technologies in her leisure time as *“very minimal”*. Dad, as a computer scientist, used to follow the latest trends including Twitter, blogging, etc., but not anymore. Before he met his wife, he was *“quite addicted to watching television”*, which partially explains why they currently do not have a cable subscription. When the children are in bed and household chores are done, mum and dad read books, watch an episode of a series or listen to the radio. If dad is alone, he sometimes browses the Internet.

The children in the kappa family like to occupy themselves creatively, but especially B10b9 would like to spend more time on the tablet or the computer to play games. “Screen time” in this family is restricted and related to a reward system. If B10b9 does his homework in an orderly fashion, he earns half an hour of screen time to be used only on Fridays or the weekend. B10b9’s screen time is directed towards gaming. At the time of the interview, his favourite activity was playing Minecraft. B10b6’s screen time is usually allocated to watching DVDs, videos on YouTube or playing games on the tablet. She prefers games with girly themes, such as dressing up princesses or feeding Furby.



FIG. 8 PICTURE TAKEN WHILE 6-YEAR OLD GIRL PLAYS A MAKE-UP GAME

When the siblings use the tablet together, B10b9 is usually in control of the game, but B10b6 is equally absorbed and cheers him up and actively gives him instructions or suggestions on what to do. The children have their own iPods to listen to music and photo cameras to play with. These types of activities are much more encouraged by their parents than interacting with screen technology. On Wednesday, B10g6 and B10b9 go to their grandparents where they are allowed to watch television. There is one activity that gathers the family around the laptop. Whenever the red devils play [Belgian national soccer team], they watch the game via a live stream and support the team enthusiastically. Family life is little affected by digital technologies, but the fact that digital devices could have an impact is an important reason to impose restrictions.

Both children understand the uses of different digital devices. They know for instance that the iPad functionalities go beyond playing games and include possibilities such as messaging, browsing, map reading, etc. B10g6 has only basic skills in operating digital devices. She can browse menus on the iPad, open the (simple) game she wants to play, and navigate the YouTube app by clicking on videos in the side menu. As a nine-year old with reading and writing skills, B10b9 skills in operating technological devices are more advanced. He can play more complex games on his own, operate the television and Wii console, make use of search engines, etc. Parents trust B10b9 with the password of the iPad, but B10g6 is considered to have insufficient skills to operate the iPad without problems. Parents say that their children are *“fast learners who often only need to watch an operation once, after which they get the hang of it”*. The children's expertise does not only come from the nuclear family or by trial and error. At school, they are confronted with Internet applications and services (Skype, Google,) and B10b9 uses a digital platform for exercises. B10b9 explores games together with friends.

Parents have positive perceptions of radio, music players, and books, and have - in general - (very) negative perceptions of digital technologies that involve screens. Nevertheless, both parents acknowledge that digital skills are an important competence to obtain in today's society and perceive educational value in some digital activities (e.g. searching for information on YouTube, Google). They, therefore, sometimes struggle to balance this view with their strict approach regarding screen time. For instance, B10b9's time devoted to school exercises on the school's digital platform is included in the screen time he earns during the week and is a point of discussion. B10m and B10f's negative perceptions of digital technologies outweigh perceived benefits. Interacting with technology is considered as asocial and harmful, especially for

B10b9's development as he already struggles with making social contacts. Mum and dad are also concerned about the addictive nature of screen technologies and have experienced that B10b9 "*becomes agitated after screen time*". Finally, mum attributes the deterioration of her eyesight to exposure to computer screens and therefore finds it wise to restrict her children's screen time as well.

Findings

1. How do children under the age of 8 engage with digital technologies?

In line with previous research (Holloway, Green, & Livingstone, 2013) our results show that young children are not only surrounded by digital technologies, but are also actively appropriating them. For instance, as the figure below shows, children engage in a wide variety of digital and non-digital activities. They embrace digital technologies with enthusiasm and consider them an important, although not a predominant part of their everyday lives. Indeed, in most of the families interviewed young children performed a wide range of digital as well as non-digital activities including practicing sports, playing outside, and performing social activities with families and / or friends.



FIG. 9 6 YEAR OLD BOY'S PREFERRED ONLINE AND OFFLINE ACTIVITIES

In general, digital technologies and activities are perceived as entertainment. This is because younger children's use of digital technologies centres mainly around playing games and watching videos, TV programmes or films. Indeed, YouTube was one of the preferred services employed by very young children together with playing games on iPads, smartphones or game consoles. Even though children perceive digital technologies as fun, some parents referred to the educational value of these technologies as well. Indeed, one of the children interviewed had learned the basics of additions and subtractions by using a math App on the iPad, while in another family parents valued the fact that certain TV programs available on YouTube were useful for children to keep up their second language.

Some children, especially older ones, are also able to recognize other uses of digital technologies, for instance as a working tool or as a means of communication. However, the former was only observed among children whose parents employed technologies for work or for communication purposes at home. These children could, for instance, recognize an e-mail

interface and explain very basically what this was. Sometimes they even referred to the fact that certain devices at home such as their mum`s or dad`s laptop could not be employed by them because they contained “*important information*” or because dad uses it for work. In terms of communication functionalities, in 5 out of the 10 families interviewed children mentioned that they knew Skype and that they had used it once or more to talk to relatives abroad. Some children were also aware of social media services such as Facebook. Nevertheless, none of the children were active users of social media and their knowledge of these platforms, if any, was very limited. Their incipient knowledge of the existence of these platforms came mainly from having observed their parents or other social media users (e.g. older siblings, aunts, uncles, etc.) using these services.

In terms of access to technologies, all families interviewed have at least one television set, although three families do not have a cable subscription. In the Delta and Theta families, the absence of such a subscription is partially attributed to financial reasons, but also to family values such as favouring outdoor activities and sports or having a conception that the TV or other digital technologies can lead to a sedentary lifestyle which could be detrimental for their children. Interestingly, even though the Theta family did not have a cable subscription, the children still had access to their favourite TV programmes through renting DVDs from the public library. They also watched TV when visiting their grandmother or other relatives so they were quite knowledgeable about current popular children`s TV programmes. In Kappa family, the only reason for not letting the children watch TV was the parents` educational strategy with regard to media. They restrict their children`s use of digital technologies because they consider digital technologies as a waste of time in comparison to other non-digital activities such as playing with friends or tinkering as well as perceive health hazards related to excessive use.

Children mainly use the television for entertainment purposes. In Belgium, which is characterized by a strong public broadcast service that encourages local content, children embrace globalized cultural texts as well as local productions. Their favourite television channels include Nick Jr., Cartoon Network and the Belgian public broadcaster TV channel Ketnet which is especially dedicated to children. Younger children (up to five) like programs such as Dora the explorer or Diego on Nick Jr., while older children prefer programs aired on Ketnet, such as Rox, a superheroes series, or Broodje Kaas, a children`s cooking programme.

All families own at least one laptop/computer, but in one of the lowest income families the computer is 11 years old and cannot connect to the Internet because of an outdated operating system. Children engage in a number of digital activities on the laptop/computer, but children who have access to tablets and younger children use them less often, probably because they are more difficult to operate than tablets. Playing games and watching videos on YouTube are clearly the preferred activities performed by children on laptops/computers. Other digital activities include doing homework and searching for information (often images) on Google and in four of the ten families, communicating via Skype with relatives abroad was also a rather common activity.

Seven families own a tablet, but only in five families the tablet is regularly used by the children. Indeed, in two of these families children own their own tablet, while in the other three it is a family possession (such as the TV), and therefore, they feel free to use it whenever they want. Children love tablets and the ones Children`s tablet use is mainly centred around entertainment purposes: playing games, watching YouTube videos and sometimes taking pictures and videos, especially among the oldest children (6 years old or older). In some families

such as the Alpha and Delta family the tablet is also used for educational games or as tool to teach children (e.g. math, English, etc.).



FIG. 10 YOUNG CHILDREN LOVE TABLETS

In eight of the ten families at least one parent owns a smartphone. Smartphones are considered as personal devices by parents and, as some parents mentioned, they are fragile and expensive. Consequently, children are occasionally allowed to use their parent's smartphone and if that happens it is normally under close parental supervision. In the Iota family, children can use parents' old smartphones –not equipped with SIM-card - to play games and go online via WiFi.

Interviewer: Can you use your mum's [i-] phone whenever you want?

B6g6: I can use it sometimes

(...)

Interviewer: And can you use your dad's [i-] phone?

B6g6: Yes. I can play sometimes, but usually I cannot.

Interviewer: Why not?

B6g6: Because once I was playing with and I let it fall. I was very little, as little as [my 2-year old brother] is now. So, I didn't know it was made of glass.

In half of the families interviewed a (portable) gaming console was present. While the PlayStation3 and xbox360 are perceived as adult devices and are only used by three children (together with dad in the case of B1b6, alone or together with siblings in the case of B9g5 and B9b7), the PlayStation2 and the Wii are perceived as devices targeted at children. Boys seem to be more invested in gaming on consoles for TV, while a portable device such as the Nintendo DS is considered fun by both boys and girls. With the exception of a few cases, such as Angry Birds or Super Mario, game preferences tend to be highly gendered. For instance, girls would typically play games that feature princesses, make-up or Barbies while boys would rather choose racing or fighting games. A few families possess 'kids computers'. These are mainly used by children under the age of 5 and seem to have lost importance due to the increased popularity of tablets. Indeed, as illustrated below, almost all the children interviewed aged 6 or above explicitly mentioned that they did not like these toys because they were for "little children".



FIG. 11 DEVICES AND TOYS A 6-YEAR OLD BOY DOES NOT LIKE

As regards digital activities, young children's favourite ones are watching television programs, watching YouTube videos, and playing digital games. While the consumption of games and Apps is centred around global, popular (online) content (e.g. Angry Birds or Minecraft) available in many different countries, the consumption of television programs and preferences on YouTube are centred around a combination of local (e.g. Ketnet TV series in the case of Flanders) and global franchises (e.g. Dora the explorer). Digital activities are performed across different devices (e.g. tablets, iPads, smartphones). Both older (e.g. television) and newer devices (e.g. tablet, smartphone) are liked by children. However, devices with touch screens have a stronger appeal for younger children than devices which must be controlled through a mouse or game-controller. One possible explanation is the intuitiveness of touch screen interfaces which responds to the direct stimuli of the user as opposed to mouse or controller-based devices which require more advanced cognitive and fine motor skills, as well as significant hand-eye coordination. For instance, in one of the families, the youngest brother (4-year old) placed all technological devices among the things he liked except the PlayStation controller. When asked why he didn't like it he replied that it was difficult for him to play with it.



FIG. 12 ACTIVITIES, TOYS AND DEVICES A 4-YEAR OLD BOY DOES NOT LIKE

Interviewer: Why don't you like this [pointing at the picture of the PlayStation controller]

B7b4: because I sometimes...because I sometimes don't like it

Interviewer: Why?

B7b4: Because sometimes I cannot play

Interviewer: And why is that? Why can't you play sometimes?

B7b4: Because, because it is... [He doesn't seem to find the right words]

Interviewer: Is it maybe because it's difficult?

B7b4: Yes and then I fall and they kill me.

1.1 Factors affecting digital use and perceptions

There are several factors affecting the ways young children perceive, make sense and interact with digital technologies. These include primarily the influence of their nuclear family (parents and siblings), but also their extended family, friends and peers, as well as the school they attend, the neighbourhood where they live and the literacy level and income of their family. In terms of family styles, we observed, for instance, that children of parents who value outdoor or physical activities (e.g. Gamma family – Delta family – Theta family) tend to spend less time using digital technologies and more time playing outside or socializing with other children in children`s clubs, etc. On the contrary, children of parents who must work while their children are around (e.g. Alpha and Zeta families) tend to use digital technologies more often and, consequently, are more knowledgeable and skilful than other children of their age. Some families simply do not see a great added value of digital technologies. These tend to limit their children`s encounters with technologies by restricting the amount of technological devices at

home, by limiting the time their children can watch TV or use other digital devices, but also by providing alternatives such as board games, books or outdoor activities children can engage with. The reasons for using or not using digital technologies vary a lot from family to family and even between parents.

Even though the nuclear family has a clear impact on children's use of digital technologies, it is not the only factor affecting children's digital literacy. This is clearly illustrated by B8g6, a 6-year old girl living in one of the most digital deprived families interviewed, but who, nonetheless, is one of most digitally knowledgeable children we observed. Unfortunately, we were not able to observe her while using any digital devices (except the photo camera from the interviewer which she really enjoyed and commanded without any difficulties). Therefore, we can only make claims about her awareness and knowledge of digital technologies rather than of her skills.

The analysis of our interviews revealed at least four important contexts beyond the nuclear family that affect somehow children's uses and perceptions of digital technologies, namely the neighbourhood, the extended family, peers and the school children attend. Also more structural constraints, such as low family income or the low presence of digital devices at home, may also restrict children's access to digital media, as was the case in the Delta family and Theta family.

1.1.1 Neighbourhood

Families who live in houses with gardens and/or in child-friendly residential areas (i.e. no busy streets, neighbours with children, squares, playgrounds, etc.) talk more about playing outside and with their neighbours' children. A playground in the vicinity also encourages outdoor play. In the case of the Gamma family, because neighbours knew each other quite well and the neighbourhood was very safe, children could walk in and out of their houses quite freely to visit their friends in the neighbourhood. By doing this, the Gamma boys were able to play videogames and use game consoles which they did not possess at home.

1.1.2 Extended family

Although children's access to some digital technologies (e.g. iPad or tablet) is non-existent or restricted in some families, many children still get (less restricted) access to them somewhere else, for instance, at their grandparents' homes. In Belgium, because schools are closed on Wednesday afternoon, it is very common for children of full-time working parents to spend the afternoon at their grandparents. During the interviews, many children indicated that they enjoyed visiting their grandparents, among other reasons, because they could watch lots of TV or play with their grandparents' tablet or computers. This was especially noticeable in the case of families who did not own a tablet or a cable TV subscription (e.g. Delta family, Theta family). In one extreme case, access to digital technologies at the grandparents' is a necessity for school-related tasks (Theta family). In the case of the Beta family, even though the two oldest children possessed their own tablet, the mother's digital literacy level was rather low, so it was the uncle who introduced the children to the latest digital devices, Apps and games, for instance by letting them play with his smartphone, which their mother did not possess. Finally, for children who have relatives abroad Skype offers a way to keep in touch and to *"talk about your feelings"* (B4g7). Grandparents mainly socialize children with television, and in one case also with the iPad. Peers and (young) uncles introduce children to touch screen

technologies such as the tablet or smartphone. As mentioned before, virtual worlds are often explored together with peers or siblings.

In families with more than one child, older siblings sometimes take over the role of parents in familiarising younger children with digital technologies and activities, especially because younger children are curious about their older siblings' media use and because media are used for shared activities. This was especially noticeable in the Beta family in which siblings gather around the tablet to search for music videos to sing-along or dance. In other families such as the Iota and Kappa family, children around the age of six are interested in and learn from the gaming practices of their older siblings. While B10g6 mainly watched and commented on B10b9's play, B8g7 & B8g5 also play the fighting games their adolescent brothers play.

1.1.3 Peers

Technology use is sometimes instigated at a friends' house. Children refer to watching a movie or playing games together. These shared activities are usually centred on the television, tablet, or gaming consoles. Especially with regard to gaming children explore together the possibilities of the controller and virtual world. Peers' possession of technology also makes children aspire the technology themselves, as shown by B5b6 whose favourite digital device is the Nintendo DS whom he does not have yet, but whose friend's B1b6` posses.

Interviewer: Of all these things [showing him the pictures of devices he identified as the ones he liked most] which one do you like most?

B5b6: Nintendo.

Interviewer: Aha, Nintendo.

B5b6: Actually, B1b6 [his friend] has one like this [pointing to the picture of a PSP but actually meaning the Nintendo DS]

Interviewer; Ah, That`s true! He has one. And have you played with him?

B5b6: Yes!

Interviewer: And because B1b6 has one, you know the Nintendo. Or did you learn about it from someone else?

B5b6: Mmhh from B1b6.

Later during the interview, B5b6 spontaneously made a drawing of the Nintendo DS and, as he gained more confidence, he asked the interviewer if he could keep the card displaying the Nintendo DS. He promised that he would return the card to us as soon as he gets a real Nintendo, normally on his next birthday, as promised by his parents.



FIG. 13 B5b6 ASKING US IF HE CAN KEEP THE CARD UNTIL HIS BIRTHDAY

1.1.4 School

Compulsory education is mandatory for children aged six and older in Belgium, but most children start school at the age of 3. Schools run from Monday to Friday, usually between 8.45AM and 3.45PM. On Wednesday school finishes at 12. Consequently, children spend more than 30 hours a week at school, thereby making it a very important factor in shaping children's knowledge, and sometimes use, of digital technologies. Schools enjoy considerable freedom when implementing digital technologies in their study programs and curriculum. Therefore, digital literacy policies differ greatly from one school to another. In spite of this, one common technological device in almost all classrooms in primary schools is the interactive smart board which allows the teacher to display presentations, browse the Internet, show YouTube clips, watch (educational) TV programmes, etc.

Teachers play an important role as they are the ones who ultimately incorporate (or not) digital activities into their classes. Most of the families interviewed mentioned that their children watched movie clips or specific TV programmes in class. The smart board, for instance, is usually used in class to show *Karrewiet*, a television news program presented by children for children. In addition, the school plays an important role in stimulating families to adopt digital technologies. Many schools in Belgium use textbooks from publishers who also offer an online platform (e.g. *Bingel*) on which children can do exercises or play mini-games related to the content seen in class. In some schools, these exercises are even printed in the school diaries (also made available by the same publisher). What is more, children's activities on these digital platforms are forwarded to the teacher who can, in turn, recommend a pupil to do some additional exercises whenever he or she feels the pupil has an insufficient understanding of the course material. All parents are positive towards these initiatives although the extent to which the platform was actually used by children differed.

The nice thing about it [Bingel] is that it works with the same things [curriculum] there [at school]. There is a whole feedback system and, let's say if they make the same mistake again and again, they are suggested more exercises with that type of problem. (...) She has only gone on it [Bingel] one time though. (B4m)

It is, however, important, to also consider the consequences of pushing all pupils to do homework online or to use these platforms outside school, especially among digital and economic deprived families who may not be able to afford up-to-date technologies at home. A single mum from one family that has no access to an up-to-date computer or Internet connection at home (because of economic reasons) fears that encouraging or enforcing children to do homework on the computer will increase the digital divide. At the school her daughters attend they are seriously thinking about strongly encouraging pupils to do all homework on the computer.

B8m: There has been a [teachers'] seminar, and I suppose we'll get the results on how it will work soon. On what they are going to do, what they are going to offer to children who don't own a computer at home.

Interviewer: Aah.

B8m: I think the platform is called 'Ik weet het'.

Interview: In other families, they talked about a Bingel platform.

B8m: Yes Bingel, that was already possible last year. You can do different exercises on it. But now it would be like – well they haven't taken the decision yet – that their actual homework would be on the platform.

Interviewer: So children would only able to do homework on the computer?

B8m: Well, not exactly...

Interviewer: Or pupils can print it and then make it on paper?

B8m: They do know that there are children who do not have access to a computer at home. But from the moment [B8g6] knew [of the possibility to do homework on the computer] she said she would not make homework on paper anymore. (...) So, then I will have to drive to granny every day so she can do her homework.

Finally, at least in one of the schools attended by the children interviewed, they already include computer class in the first year of primary school curriculum, i.e. 6-year old children. In these classes, children are familiarised with the computer and after successfully completing certain tasks, children have time to use the computer for entertainment purposes.

Every Thursday we go on the computer. And then the teacher says on what thing [to press]. And if you get three crosses, then you're free to play. (B8b6)

1.2 Children's digital knowledge vs. actual skills

In order to examine children's understanding and skills we used a three-step approach. First, children sorted out cards with technological devices, toys and free-time activities such as swimming and grouped them in three piles ranging from what they liked most to what they did not like. Only children 6 or older were able to group all the cards into three groups. Younger children usually only managed to select the cards they liked most or, at most, to group the cards into two big groups of the things they liked and the things they disliked.

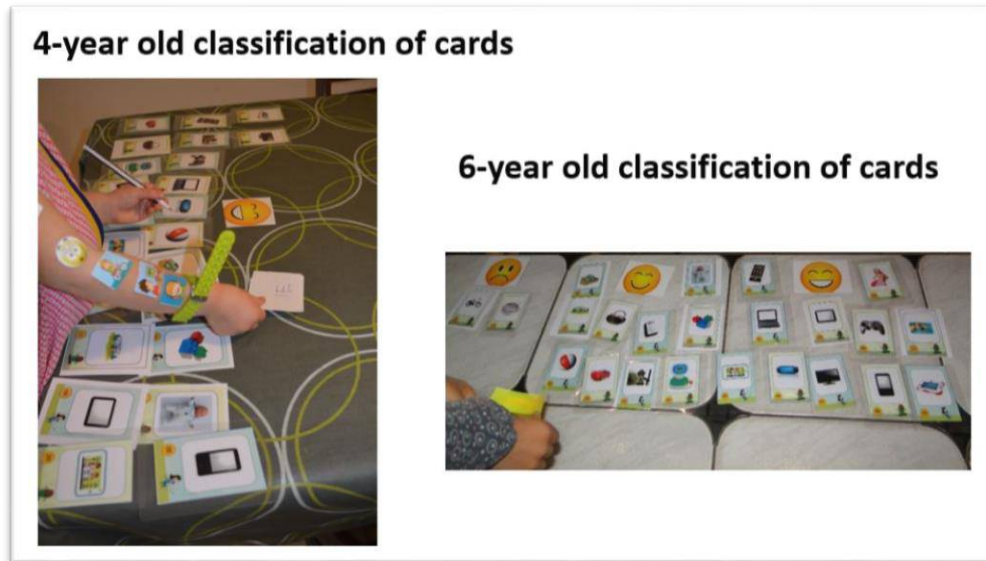


FIG. 14 A 4-YEAR OLD CHILD VS. A 6-YEAR OLD CHILD GROUPING CARDS

Whenever possible, children showed and used technological devices in front of the interviewer. Third, we used screenshots structured around five categories (TV remote controls; Android and iOS interfaces; websites targeted at children; Internet applications; and digital games) to probe children's understanding and skills of digital activities.



FIG. 15 EXAMPLES OF SCREENSHOTS

The interview data shows that use, knowledge and skills do not always happen simultaneously. Some children, for instance, have a notion of what an e-mail client or social media are, but have not yet acquired the skills to be able to use them. Likewise, some children have little access to technological devices, but are nevertheless very knowledgeable and up-to-date as regards digital technologies, at least as compared to their peers interviewed.

Almost all children, aged 4 or older, were able to recognise and name the pictures we showed them with common technological devices (e.g. the television, the remote control, the laptop/computer, the tablet, the radio/CD player and the smartphone) even if they do not have access to these devices at home. Not all children were able to identify the kids' computer, MP3 player or the PlayStation Portable (PSP). These devices have probably lost some of their popularity due to the rise of tablets and smartphones and the popularity of the Nintendo DS, a portable gaming console. Interestingly, even though many children, especially the youngest ones, were not able to recognise the PlayStation Portable (PSP) in the picture, most of them still picked up this card and placed it among the pile of things and activities they liked. When asked about why they liked that device they usually replied because it has a screen and it looks as something you can play with.

When we showed children screenshots of websites, applications, web browsers, etc., the majority of older children were able to point out that iOS and Android interface can be found on tablets or smartphones. Most children, however, were familiar with a limited number of icons/pictograms on tablets such as YouTube, Google and sometimes Skype. Almost all children were able to recognise screenshots of games such as Angry Birds while Minecraft was mentioned by a few children and was played by at least two boys. As regards children's websites, we showed children screenshots of popular websites (e.g. Cartoon Network, Nickelodeon, etc.). We asked them if the picture we were showing them was a picture of the TV or of the computer. All children younger than five replied that it was a picture of a TV, while older children were able to recognise it was a screenshot from a website. Independently of this, practically all children could identify the most popular cartoon figures depicted in our screenshots, which may indicate that children usually watch these programmes on TV, but they do not necessarily visit the channel or the TV programme's website. This can also mean that older children have a wider online experience which allows them to easily distinguish between a TV and a computer interface. One notable exception was the Flemish website Ketnet, which most children, independently of their age, were able to recognise as a website. This may indicate that children may be active users from this website, probably because they use it at home and also because several families mentioned that children watch the Ketnet news website Karrewiet at school (through the Ketnet website).

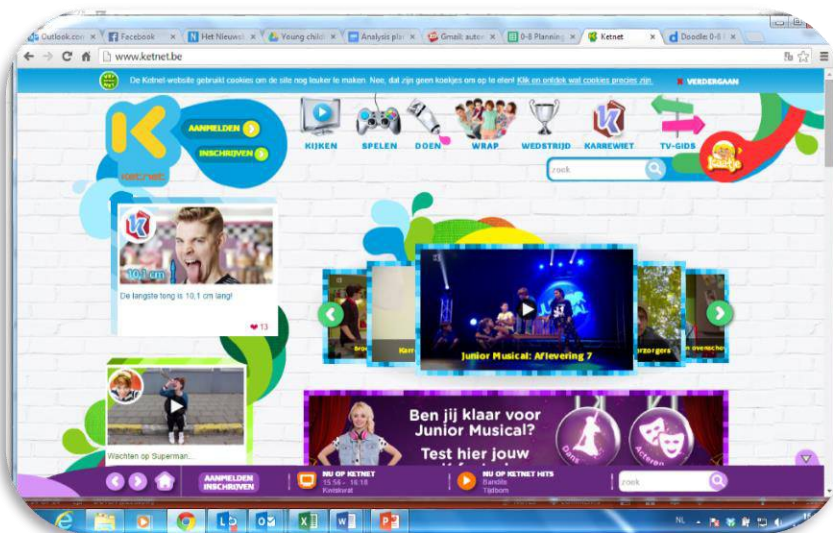


FIG. 16 SCREENSHOT FROM THE KETNET WEBSITE

Internet applications such as e-mail clients or Facebook are not recognized by most children under the age of seven. Occasionally, children made (correct) attempts to explain the function of Internet applications or web pages. Google and Skype, which is used by children with relatives living abroad, are recognized most. Some children have basic notions of e-mail but children in the sample do not use e-mail on their own.

Children's knowledge of digital technologies (i.e. being able to recognise and name digital devices, services, applications, etc. and explain what they are) is much broader than their actual skills (i.e. their ability to actually use these digital devices, services, applications, etc.). Not surprisingly, young children's digital skills vary greatly. What remains constant, however, is the fact that, in general, young children's digital skills are low (as compared to older children or adults) and the highest skills are observed among the oldest ones. In general, children have some grasp of device and game navigation. Navigation is notably eased when young children do not have to use the mouse or other game controllers. This was particularly noticeable in the case of the youngest children (4 or 5 years-old) who had difficulties (or were unable) to play games on game consoles such as the PlayStation or the Wii. They also found it very difficult to use laptops or computers. Very few children go online to find information other than YouTube films or a favourite TV programme. The ones who do are usually 6 or older and they can read and write, although not fluently. Because of their very limited search skills many young children turn to their parents to find the information they want.

As regards television, all children age six and older who are allowed to operate the television and remote control have basic operational skills such as turning on the TV and choosing a channel. Parents believe that their children have acquired these skills in a natural way. *"You show what button to press, you say it once and then they know..." (B9m)*. A 6-year old girl's mother also explains that:

B6m: If she wants something, she'll figure it out.

B6f: Yes, she knows more about it than I do. Because I always use 'Back' [button]. And you have to press this button at least four times before you exit a movie. But she knows another button which directs her immediately back to the television screen. So, she only needs to press two [buttons].

B6m: And then we are like [surprised], ohh, that's also possible!

High digital children are aware of and can sometimes execute a complex series of actions including ordering (free) films, recording and replaying television series or navigating the on-demand video service. The results regarding operating the DVD player are mixed, depending on how integrated the DVD player is in the media diet of the family.

While portable gaming consoles such as the Nintendo DS or digital toys (e.g. V-Tech devices) can be turned on and operated by most children who have access to one, gaming consoles for television often requires parental support, usually from dad or another male adult such as the uncle in a single mother family.

B7b7: Can I show the Wii?

B7m: Yes, but you can't turn it on and neither can I.

Interviewer: You can't?

B7m: Dad can.

Young children in general, but especially those younger than 5, find it more difficult to operate the laptop or computer (without touch screen) than a touch screen device. Nonetheless even very young children can play simple games on the computer or laptop, such as Sarah's Cooking Class, if a parent or older sibling assists in starting the game. This inability to successfully operate the laptop or computer can be attributed to their yet not fully developed fine motor skills and lack of reading abilities, as the mother of a 6-year old girl explains:

She is not as good with that [the computer] because... She is good with touch screens. And with the TV, she can operate that one as well. But in the shop, we need to use the mouse to start YouTube. Once we've done that, she can click, but turning it on is difficult. She doesn't know how to click that. (B6m)

Likewise, touch screen devices' operating systems are much more centred around visual cues (e.g. icons) than most operating systems found on the computer. The latter therefore require more detailed notions of the alphabet and readings skills.

Almost all children older than 4 have basic operational skills to operate touch screen devices, in particular the tablet, even if they don't have regular access to these devices. Children are able to confidently scroll through different menus, start and play games, and start and watch videos on the YouTube App. Some children, especially the oldest ones or younger ones with (the help of their) older siblings can even take picture or make videos. More complex actions, such as unlocking the device (if children know the password), accessing the App Store or Play Store, downloading games, and making use of photo-editing possibilities were only observed among children aged six or older who had high digital skills. We noticed similar skills when children used or talked about smartphones. However, children appeared to be a bit less confident in using smartphones, probably because they were less frequently employed by them because parents consider these devices as personal, but also too expensive and fragile to be used as toys.

Children under the age of six in general are not very skilled when it comes to the World Wide Web, unless the required actions are narrowed down to clicking. Young children's online searching skills are very basic. This is probably because of their limited reading and writing skills which seriously reduces their searching capabilities to short and simple terms. Nevertheless, as observed during the interview, they sometimes succeed in finding more complex information with the help of the autocomplete feature of some search engines. This process, however, is less straightforward as it requires them to check and visit a few websites, usually the first ones suggested by the engine, before finding the desired website.

Interviewer: Google, yes. And what do you do on Google? What do you type?

B5b6: Yes, R O X.

Interviewer: Ah, Rox.

B5b6: And then, here is the Rox song.

Interviewer: And can you type something else or just Rox?

B5b6: Just Rox.

Interviewer: Just Rox, you don't look for anything else?

B5b6: Yes, B E N, Ben10.

Interviewer: Ben10? What is Ben10?

B5b6: A cartoon.

The next step in navigating the Internet, observed with older children who start to (or can) read and write, is to actively search for information on the Internet related to their interests. For example, one of the 6-year old boys could type in ‘spelletjes’ [games] or ‘soccer’ [to play soccer games].

Searching for information online is a trial and error process that is not exempt from risks. On the contrary, because most of the devices children use to connect to the internet are family devices, which are also employed by older siblings or parents, the possibility that children encounter commercial or other types of online content not meant for very young children or directly targeting an adult audience are high. Some children, however, are made aware of existing commercial risks by their parents who try to teach them basic strategies to avoid or minimize these types of risks, such as closing pop-up commercials and choosing free Apps/games to avoid additional costs. As a 6-year old boy explains:

B5b6: If it says ‘free’ you can click and otherwise you can’t click.

Also the mother of a 6-year old girl adds:

They can press all kind of stuff. Not that we have secret things on it [the tablet], but well, they just press everywhere. And with those games as well, you can buy things in these games. And that costs money. They don’t know what they are pressing, so, if you are not there with them... Therefore, they can go on it [the tablet] but only when we are there with them. (B7m).

2 How are new (online) technologies perceived by the different family members?

2.1 Parents

Digital technologies are an important part of many parents’ life and are used for work, leisure activities, searching for information, and communication purposes. Central to many adults’ occupation is the use of the computer and (Internet) applications for purposes as diverse as writing, communication (e-mail, reports), calculations, graphical design, scheduling appointments, networking, IT services, etc. A number of parents consider the computer and (Internet) applications as indispensable tools that help them to accomplish professional goals.

I don’t think I could envision my work without a computer, even though it is teaching. But I do a lot of preparations on the computer, make tests, pages [students] work on. (B4m)

At my work, I see technology as something that should help me. In particular for tasks such as text editing and basic website stuff that is just like writing. It is an advanced form, a ‘technologized’ form of writing. (B4f)

A second important use relates to leisure activities, but large differences exist among parents depending on their perceptions of new media and digital technologies. While for some parents digital activities, such as browsing the Internet or watching television, constitute a large part of evening and/or weekend activities (e.g. Zeta, Iota family), other parents, who often possess less digital technologies, value non-digital activities, such as reading or listening to the radio

(e.g. Theta, Kappa family). In some cases, parents move away from using digital technologies at home because they already use the computer a lot at work. In spite of the different nature and frequency of use, all families use some type of digital technology. Low digital parents still use digital technologies to catch up with the news (B8m) or to watch TV series.

I read a lot. And, yes, you know, if there is something interesting such as Koppen [Flemish news program], for instance, then I might watch it. (B8m)

A number of parents use social networking sites and telecommunications application software (e.g. Skype) to keep in touch with friends and family members. Interestingly, high digital parents often mention the value or gratifications found in using social networking sites such as Facebook, while low digital parents mainly refer to them as a necessity, for instance in order to be informed about the children in class or on camp.

I have Facebook because [my 6-year old daughter] went a year ago, or maybe two, on a summer camp with her rope skipping club. And the only way to get some information from them was via Facebook. And I've always been against Facebook. (B8m)

Communication services such as Skype are very important for families with relatives abroad. Skype has a positive connotation, independent of the digital capital of the family. Communicating with loved ones abroad is one of the few online activities children perform together with their parents as illustrated below by a 6-year old indicating that “we skype to our grandmother”

B4g6: I know what this is. You can click on this. This is Skype.

Interviewer: Ah you know Skype. What happens when you click on Skype?

B4g6: On Skype you can Skype somebody that is not by you and then you can see them. And then you can say how you feel.

B4b4: On the computer

B4g6: And they can tell how they feel. They can see us (...) I know Skype. Skype is something with which you can see people on the computer. On Skype you can see people.

Interviewer: And do you use Skype?

B4g6: We skype to our grandmother because our grandmother lives in America

While children grow up with currently available digital devices, parents sometimes struggle to keep up with them. This is evident in a number of families in which the parent(s), usually the mother, stated that her children know more about the technology than they do.

They can do a lot more [on a tablet] than I can. They can even take panoramic pictures while I don't have a clue on how to do that. (...)

They figure that out all by themselves. They are also more adventurous (dare more). They are young and not afraid to break anything, while I am afraid to install something. You usually have to confirm or download something and then I am a bit weary. With them, it's like OK, OK and click, click (B2m)

There are also considerable gender differences in parents' use of digital technologies. High digital parents for instance usually value both watching television and playing (mini-)games on the tablet or smartphone, but it is usually fathers who are involved in console gaming and follow the latest technological trends. Likewise, all fathers in the sample have smartphones in

comparison to only six mothers. The single mothers in the sample do not own a smartphone. In the case of families with lower economic capital this can partially be attributed to financial considerations, but in general also to a lower interest in digital technologies. These (gender) differences in use are also reflected in the perceptions mothers and fathers have of digital technologies. Fathers are in general more enthusiastic and positive about digital devices and more strongly encourage the adoption of new media.

Parents have ambivalent perceptions of digital technologies and acknowledge both positive and negative aspects related to their child(ren)'s use of new media. Whether or not the positive or negative aspects are emphasized seems to be dependent on a number of factors including the amount of time that is spent on devices, the content, and parents' perceptions towards digital technologies in general.

Very similar to children's discourse on digital technologies, parents value digital technologies for their entertainment character. Most parents consider media as a valid tool for children to occupy themselves (or to kill time), as long as it does not interfere with other activities that are valued by parents. Media use is regulated in terms of frequency of use, the amount of time children can spend in front of screens ("*screen time*") and it is often allocated to specific moments, usually before bed time or dinner. Parents want to make sure that children's media use is part a healthy diet of activities. Only the Iota family seldom restricted their children's use of digital technologies in time. In the Beta family, children have little time to engage with media during the week, but can engage with media several hours in a row on Sunday.

The most prominent reason for parents to stimulate children's digital activities is the educational value of digital technologies (e.g. educational games or as a tool to help children with homework). A number of parents refer to playing games as beneficial for hand-eye coordination and improved spatial skills or as a fun way to acquire knowledge or skills (e.g. learning math).

Watching a movie, for instance, or learning a movie by heart that they have seen five times already. That's brainless, just staring at a screen. And gaming, that's for hand-eye coordination. (B7f)

B1f: For me, technology is something really positive. For example, at school. For me, I think he learned math with Apps. And it is not easy, it is complicated for a four year old. Now he is six. But as a four year old he learned math with the Apps and now it is easier for him at school.

Interviewer: Do you think it would have been more difficult to sit next to him and teach him with a book?

B1f: Absolutely, because it is more interactive. You have the answer immediately. The feedback is instant.

In contrast to the Eta family, parents in the Delta family and Kappa family do make a distinction between the value of educational games and commercial off-the-shelf games. Some parents also encourage their children to acquire a more profound knowledge or skills by using YouTube as a gateway to a wide range of tutorials, in particular related to current interests or hypes such as Loom bands or Minecraft.

B10m: Oh, and with those loom bands, they watch that on YouTube to make complex things.

B10f: Yes, it is really true that they learn from watching these clips. It was the first time

that I encountered it, and well, I was very impressed. So therefore we helped to find these videos.

Television was considered less educational by most parents, although some assigned educational value to a couple of programs.

B7m: You have to admit that things on TV these days aren't the same as the things we watched. If you look at Dora, for instance,... What else is on TV, Bubble Guppies

B7f: Diego, Umizoomi.

B7m: That [These programs] is to think along. What shape is this? What colour is that? What can you make out of these [shapes]? Dora even says it in English. Yes, these kids use English words sooner than us. I mean, those things. In the end, I don't think that's so bad.

Many children, however, mentioned that they watched TV at school. Later, when talking to parents, we found that in many schools children usually watch a children-dedicated news TV programme (Karrewiet) at school.

B2b8: I sometimes watch Karrewiet.

Interviewer: Where? On television or on the computer?

B2b8: At school after lunch.

In one low digital family without a cable subscription, parents are especially content that their children can see Karrewiet at school, because this allows the children to better understand and contextualize news they hear on the radio.

B10m: Sometimes we are also a bit surprised/frightened of the images we see [because the family relies mostly on the radio for news]. And then, well yeah, then those images for children...

B10f: Well, that is why I think it is good that they see Karrewiet at school. If they listen to the radio here, well with the news on the Tsunami for instance on the radio, you say well yes, okay, a tsunami. But if I saw images of the phenomenon half a year later I thought like "Yes, actually that is a lot more powerful than the emotions radio can evoke".

Parents acknowledge that the World Wide Web provides their children (with basic reading and writing skills) with a wealth of information that can be used for school purposes.

B10m: Last year they worked a lot on themes. And with each theme, B10b9 came home and spontaneously said "I am going to give a presentation" while that wasn't part of his homework. But then, he just went on Google images. And then copy, paste, that is how he does it.

For one single mum, the fact that her daughters will have to make presentations for school could persuade her to buy a new computer in the future.

Interviewer: When do you think the family will need a computer with an Internet connection?

B8m: For the sake of simplicity from the moment they need to write book reports. Well, not only book reports, how do you call it, when they need to present something.

Interview: Give a presentation?

B8m: Yes, give a presentation! But it would be pure for the sake of simplicity, because in the end you can also go the library and get a book. So, mmhh, really necessary? I don't really know.

Although digital technologies are commonplace in most families interviewed, they are only occasionally shared as a family activity. In most instances, bonding occurs between siblings, for instance watching television together or taking turns when playing games while communicating with loved ones abroad (e.g. via Skype) is one of the few online activities that children perform together with their parents.

Despite the widespread use of digital technologies in Belgium, many parents perceive them as expensive, in particular smartphones and tablets. This theme was recurrent in many interviews irrespective of the socio-economic status of the families. Parents also indicated that because children are not very cautious they buy the cheapest versions of these devices to be used by their children. Other strategies include supervising children closely or forbidding their children to use certain devices (e.g. expensive smartphones). In addition, financial considerations were also mentioned when purchasing online content or even movies on-demand. For instance, parents do not allow children to download games that are not free of charge unless they ask for permission.

2.1.1 Parents' perceptions of risks

During the interview parents discussed the risks associated with digital technologies but they seldom believe that these risks apply to their young child(ren). Indeed, many parents argue that their children's use of digital technologies is limited to a number of activities that are considered as safe. These include playing games on the tablet, usually offline, but also watching videos on YouTube. Even though browsing and watching videos requires children to go online, and encountering a less controlled environment, most parents believe that their youngest children will not (be able to) encounter inappropriate content or other types of risks there. This is mainly because they assume that their children have insufficient digital skills to start exploring the digital world - and in particular the Internet - on their own. They also think that their children have not yet reached an age at which they are attracted by and able to engage in risky (online) behaviour. As observed during the interviews, however, some children spend a considerable amount of time on online applications or services such as YouTube or Google which sometimes can lead to potential risky experiences.

B9g7: [my 15-year old brother] always looks at pictures of pretty girls

Interviewer: And you look at those pictures with him?

B9g5: Real naked women and so, that's what he looks at. To see if he can get a girlfriend

Interviewer: Ah, OK. And those are really naked women? What do you mean by that?

B9g7 They sometimes wear a bra and panties and sometimes they are completely naked.

In spite of this, the parents interviewed feel quite confident that their children will not get into trouble and, in general, they believe that they are successful in mediating their children's digital activities. In contrast, parents express fear for the future media habits of their children especially when they become teenagers. For instance, in the Iota family, the mother and the stepfather do not seem worried about their youngest children's use of digital technologies (B9g5 and B9g7), however they do express considerable concerns about their older children

and, in particular, their 15-year old boy, who, according to them, uses technologies excessively and has had some bad experiences online.

B9m: [my son] is addicted

Interviewer: The one who is 15-year olds?

B9f: He always has his laptop or his smartphone with him. He uses them all the time. So, yes, I call that addicted.

(...)

B9m: With the 15-year old boy we don't have any control about what he does [online].

B9f: And we've already had a bad experience with him. With those 'special' sites.

When talking about the future, parents identify several potential risks including meeting strangers, revealing personal information, cyberbullying, exposure to inappropriate content, and effects on identity construction and image. In particular, parents feel that risky online experiences can be exacerbated by the use of social media or chat rooms, which their younger children have not yet started to use.

Interviewer: In general, do you consider technologies as something rather positive or negative?

B6m: Positive. I don't think that we have gotten to the negative things, yet. I worry in advance, though, about the things that could happen in the future especially when I listen to my friends who have older children talking about Snapchat and that sort of things. We don't know [Snapchat], we haven't even seen it. But I do worry a bit about the future. [My friends' children] are in their puberty. They are all the time making photo shoots of themselves. So that worries me about Facebook. So I really try that [my daughter] does not get into that.

Interviewer: So she is not on Facebook, yet?

B6m: No, she doesn't know about it yet (...) I'll try to keep it like this as long as possible. I'm a bit scared that the time will come when she will [start using it]. Also when I hear those newsmagazine programmes about cyberbullying. [Teenagers] are so concerned and busy with their own image. I already notice that [my daughter] is into her looks, and she's so young! So, I worry about what the future will bring. So I really try to block [Facebook].

When referring to specific risks affecting young children some parents expressed some concern about inappropriate content such as exposure to violent or sexual content (e.g. on YouTube), but once again they explained that this is a type of risk that mainly applies to older children. In spite of this, most parents indicated that they (try to) keep an eye on their children while using technologies:

[My 6-year old child] is not watching those [music videos perceived as sexual] on her own. She is still very innocent. But she watches clips of Frozen and then you stumble upon those songs [explicit music videos]. And from those Nicki Minaj songs [parody of Nicki Minaj on a popular Flemish television series] it goes very quickly in the menu to... all kinds of stuff she doesn't need to watch. It goes really fast, you know. (B6m)

Apart from keeping an eye on the content children watch online, parents also admitted that they are mainly concerned about "accidental" in-game or App purchases. With the exception

of B5b6 who could freely browse the app or play store and install free games on his own tablet by himself, most parents who own a tablet have set a password and forbid their children to download games that are not free. With this strategy, parents manage the content their children are exposed to and keep control of the family budget. In the case of free games children most often found new games by clicking links in games that were already installed.

B6g6: I found the dog [app Talking Bend] and then there was something on top [of the screen] and then if you clicked there [on an icon that said 'free'] you got this game [app Talking Tom].

Interviewer: So you first got the dog, then you clicked on the dog and that's how you got to Talking Tom [App]?

B6g6: Yes.

In spite of the fact that online virtual spaces are often commercial spaces and, consequently, children who go online are frequently confronted with advertisements, parents did not really seem aware nor worried about their children's exposure to commercial content. Even though parents of young children do not seem to worry much about commercial, contact and conduct types of risks (See Livingstone et al. 2011), most of them expressed concerns about the highly attractive nature of digital technologies and its potential excessive use. Partially related to the fear of addiction, is some parents' concern on the immediate, easy and instantly gratifying nature of digital technologies and games in particular. Parents are afraid that children cannot handle boredom anymore and that other valued activities have become less appealing. In particular, they fear that digital activities may displace other valuable activities such as social and physical ones or cause other types of problems such as sleeping disorders or asocial behaviour. When we interviewed children, however, they all seemed to enjoy both online as offline activities and toys equally. Parents also agreed that the use of digital technologies becomes problematic when it comes at the expense of or displaces activities that are considered more essential, such as playing outside or face-to-face interactions:

B3m: It's about what they miss out, eh. At the moment you are doing that [sitting in front of a screen] you can't do anything. You can't get bored, you can't play, you miss out social contacts. Those are things you can't do 'alone alone'.

This was also the reason why B4m did not allow her children to play non-educational games. She believes that playing commercial, off-the-shelf games would decrease her children's interest in educational games. Parents also referred to mood changes after children used digital technologies, in particular gaming devices. Digital technologies are perceived to be hyper-stimulating and pump up the adrenaline of children, which makes them more difficult to handle. Several parents (e.g. B1m, B10f) stated that after certain games or television content their children were "agitated". Only B7d stated that they use television to relax their children before going to bed while B10m fears a detrimental effect of exposure to screens on eye sight. Because of all these reasons parents strongly believe that children's technology use should be embedded in a healthy mix of online and offline activities.

[My 6-year old son] can be absorbed with playing. If you offer him to do something else he thinks that it's boring. I think that the problem is that the PlayStation, iPad offer too many stimulus. But I don't think in an apocalyptic way. He also plays with other children and enjoys doing other things. (B6m)

Finally, it is important to stress that even though most parents agree on certain general notions about children's use of digital technologies, we were still able to observe that their views about the potential positive or harmful effects of technologies on children differ largely,

even within the same family. This was clear in the different ways in which parents described digital technologies ranging from “largely redundant” to “acceptable” or even “vital”. For instance, while some parents (e.g. Kappa family) consider almost every use of digital technologies as anti-social, including playing multi-player or strategy games together with friends. Other parents (e.g. Alpha or Zeta family) see ways in which digital activities foster interaction between family members, for instance when a child needs help to progress in a game they can play together with dad or an older sibling. We also witnessed some degree of incongruence in terms of parent’s discourse and behaviour. For instance, B9m believes that technologies ‘make people stupid (...) and lazy’, as well as *anti-social*. In spite of this, she thinks that it is important that children use technologies as much as possible ‘because the world advances too fast’ and children need to be able to catch up. In other cases, some parents refer to the inevitability of technologies as explained by B1m who strongly stated that she does not “associate technologies with something positive.” However, she adds:

B1m: “I think it’s important that [my son] has a fluent relationship with technology. Technology is part of our lives today. I don’t think you can avoid technology. I don’t think it’s a good idea to prevent children from using technologies”.

2.2 Children

Young children love technologies and, in general, they relate them to positive things such as entertainment, fun or games. Digital technologies are, indeed, an integral, although not dominant part of children’s lives. Apart from digital technologies all children interviewed said that they liked performing other activities as well, for instance, riding their bike, going to the playground, practising sports, swimming, reading books, playing with their toys, etc. The picture below illustrates a 6-year old boy’s favourite digital and non-digital activities.



FIG. 17 6-YEAR OLD BOY’S FAVORITE DIGITAL AND NON-DIGITAL ACTIVITIES

All children interviewed used some or even several technological devices on a daily or weekly basis depending on the accessibility to such devices at home. The most popular one was the TV which practically all children watched every day. Children’s preferences of devices varied a bit from family to family, but in general, most children placed the TV, the tablet, the computer and some games consoles among the things they liked most. Interestingly, music devices such as the radio or MP3 players were usually not placed among the children’s favourite. However, they were not placed among the devices children disliked, either. In

general music devices were placed somewhere in the middle. We were also able to observe some consistent differences in the preferences of older (6 or older) and younger children (5 or younger). For instance, younger children placed toy computers or tablets among the things they like most. On the contrary older children usually placed these devices among the things they disliked because, as most of them explained during the interview, these toys were for “*little children*”.



FIG. 18 DIFFERENCES IN DEVICES PREFERENCES BY AGE

Because of the positive character that children attach to digital devices most children aspired to getting access to or to own a device they did not yet possessed. For instance, older children who were allowed to play games on their parent’s smartphones or tablets expressed that they would like to have their own smartphone or tablet. Other children told us that they wanted a new PlayStation, a tablet, a Smartphone or a Nintendo DS, usually because they had seen or used the device at a friend’s house or because an older sibling or parent had one.

The older the children are, the more they seem to reflect on what devices and functionalities they want to engage with. In general, children’s responses about the opportunities that digital technologies offer are captured in one word: Fun. Fun, however, is understood in various ways by different children, especially among children of different ages. As opposed to traditional toys where girls usually like dolls and boys cars, we were not able to observe significant gender differences in the digital preferences of children. This was neither observed in the non-digital activities they enjoy such as sports or going to the playground.

Age seems to be an important factor that does not only influence children’s preferences of digital devices, but more essentially, it affects the ways in which children make sense of the digital world. For instance, older children had some notions of the use of digital technologies for purposes other than fun, for instance, for sharing information (e.g. Facebook), for finding information (e.g. through Google) but also for more instrumental purposes such as learning or even for work (e.g. e-mail).

Interviewer: How did you learn mathematics?

B1b6: I haven't learnt mathematics. I learn the numbers, to add and subtract numbers.

B1f: Where did you learn the numbers?

B1b6: On the iPad (with a tone as if it were something obvious). Because there are little boxes to add up and subtract. (Asking dad and mum) Can I shown them [on the iPad]? You can also do it on the portable phone [iPhone]

B1f: he loves to do the mathematics. I downloaded the application and he started to use the application one year ago?

Interviewer: Why does he like it?

B1m: For him it is a game. He associates the numbers with a game. He is competitive: I did it! I won! And he likes learning in general.

WD: Do you think he likes it more on the iPad?

B1f: Yes for sure! He is using it all the time.

Interviewer: What can you do with the iPad?

B1b6: (pointing at some icons on the home screen) I can play this game or other games

B1b6: (when pointing at a folder). This is important. This is boring, this is boring, this is boring.

B1f: This is not boring.

Interviewer: What is important? How do you know that this is important?

B1b6: Because I know. Well, no actually this is not important... Just because. I don't know. It is not important. Dad has to save it. If he does not save it (for work) then he has to start all over again.

B1f: You don't have to delete these things.

B1m: How do you know which things are for work and which are not?

B1b6: Just because!! I know.

Just a few older children had incipient knowledge, although no experience, of social networking sites such as Facebook. The youngest children interviewed were not really aware of social media. In the following quote a 7-year old girl explains what, according to her, Facebook is:

B9g7: [at home] we are not allowed to use Facebook. Only the oldest ones (...) I have four brothers and a very big one, he is 20, I think. He is all the time on Facebook. But we [B9g5 and B9g7] cannot go on Facebook.

Interviewer: And do you know what Facebook is?

B9g7: There you can find a girlfriend and look at pictures. And then you can choose which girl you find the prettiest...And you can fall in love and then the girl

doesn't know it. And then you can send her [a message]. And then the girl knows...And then they start sending messages to each other. (B9g7)

In terms of communication functionalities, half of the children interviewed knew Skype and enjoyed using it to talk to their relatives abroad. Both the older and younger children in these families knew what Skype was used for, however only the older children were able to express rather clearly what Skype is and how it works.

VD: What is Skype?

B10g6: It's to call someone.

B10b9: Yes, so that you can see each other

B10g6: Yes

Interviewer: So you both know it?

B10g6: We often use it with Godmother

B10b9: MY Godmother

B10g6: Yes your [godmother], my aunt.

Interviewer: And why with her?

B10g6 and B10b9: because she lives in Singapore.

So, in general, we can conclude that children's engagement with digital technologies relates to the following main motives: passing time in a fun and engaging manner, sharing an activity with siblings, friends and sometimes with other family members (e.g. playing games or using Skype), and learning about things they like or are interested in (informal learning).

2.2.1 Young children's perceptions of risks

Young children do not seem very aware of, or they may not have been confronted yet, with potential risks associated to the use of digital technologies. When explicitly asked if they had ever experienced or seen something "not (so) nice" on the computer or the tablet, or if they knew someone who had, almost all of them replied that they had not. However, a few children expressed some concerns or told us about less pleasant online experiences. For instance, a few children referred to scary, violent or sexual content. However, we must be careful when interpreting this because in one case what was considered as scary was the movie "The Lion King". In other cases, however, children expressed that they did not like games where people hurt or kill each other and two young girls mentioned that they had seen naked women on the tablet and that the women were "ugly" which may imply that the experience was not a very positive one. Commercial aspects of digital devices were also disliked by some children.

Children however seem to react proactively to scary content by avoiding subsequent exposure.

B3b4: [My 6-year old brother] finds this movie scary.

Interviewer: Ah, the Lion King.

B3b6: No, BOTH B3b4 and I find that movie too scary.

Interviewer: Do you think that your children have ever watched something on television that you considered... Hmm, I would rather have that they did not see this.

B3f: No, no.

B3m: They don't operate the television by themselves so we sort of have that under control. And [our 6-year old son] comes to us himself [whenever he sees something scary]. He doesn't want to see the Lion King anymore. He sets that boundary himself: "B3b4, you can watch it, but only when I am not here", he says. That is actually something they can do pretty well.

On the other hand, children are made aware of some risks, for instance commercial ones, by parents. Children who can access the Play Store or App Store are usually aware that they either have to ask a parent for permission to download a game or that they can only download games with the label 'Free'. Parents who allow their children to access tablets or smartphones also make sure their children understand that these devices are expensive and need to be treated with care. Interestingly, even though many of the children interviewed could not read or write or they were just starting to learn how to do it, the ones who used tablets were able to recognize the word "free" even when it was written in English which is not a language very young children in Belgium usually command.

Interviewer: Were the games here when the iPad was bought?

B1B6: This game for instance?

Interviewer: Yes, how did you get them?

B1B6: I buy them! (With a tone which implies isn't it obvious?).

Interviewer: Where do you buy them?

B1B6: In a place

Interviewer: Do you buy them on your own?

B1B6: No, my dad does, with money.

Interviewer: Ah with money, how does it work?

B1B6: I choose them.

Interviewer: And then what happens?

B1b6: My dad buys them unless he says no.

Interviewer: Does he buy all the games you want?

B1B6: No, not all of them.

Interviewer: But if you want a game you just search for it and ask for it?

B1B6: Yes

Interviewer: What about mom?

B1B6: Mom does not decide. Mom always says 'ask dad'.

Interviewer: so when dad says no, you can't buy a game

B1B6: No [I cannot], because it costs too much money.

Interviewer 1: And can you download games on your own?

B5b6: yes. My dad lets me

Interviewer2: And can you download games here [on the Tablet]? And must you pay for them or can you just get them without paying?

B5b6: If it says 'free' then you can click, otherwise you cannot

Interviewer2: So you can click everywhere where it says 'free' just like that?

B5b6: Yes

Even though the searching skills of young children are quite limited, among other reasons because they are just starting to learn how to read and write, we observed during the

interviews that some children succeed in finding games, information, videos or websites usually with the help of the autocomplete feature of some search engines. This process, however, is less straightforward as it requires them to check and visit a few websites, usually the first ones suggested by the engine, before finding the desired content. This trial and error process is not exempt from risks. On the contrary, because most of the devices children use to connect to the internet are family devices which are also employed by parents or older siblings, the possibility that children encounter commercial or other types of online content not meant for them or directly targeting an adult audience are high. This potential risk is illustrated by the pictures below which were taken while B5b6 was showing us how he typically used the internet on his dad's laptop.

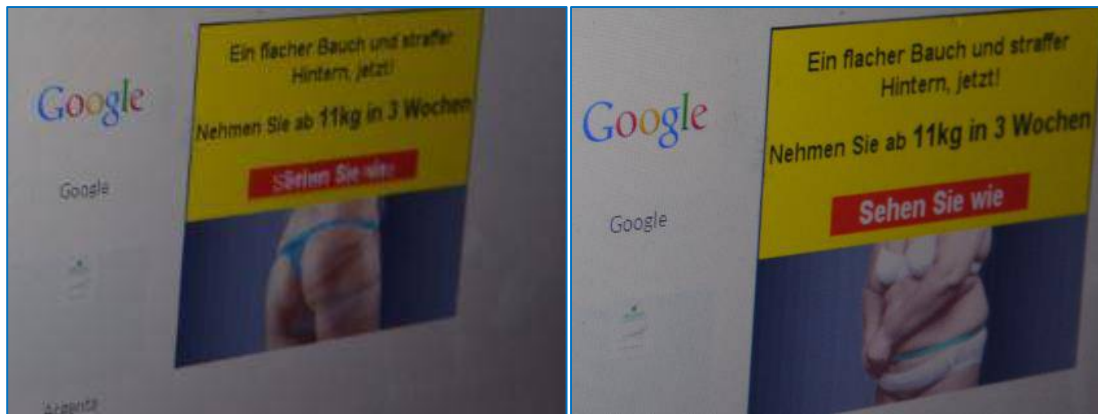


FIG. 19 PICTURES TAKEN WHILE 6-YEAR OLD CHILD BROWSES FOR INFORMATION ON HIS FATHER'S LAPTOP

Other children interviewed expressed that they do not enjoy content that is not interesting or relevant for them, for instance explicitly adult or commercial content on the internet:

Interviewer: Have you or has a friend or anybody you know ever seen something that is not so nice on the computer. Or is it always nice and fun on the computer?

B4g7: On the computer sometimes we look big people, and we don't like it

Interviewer: And why don't you like it when you see big people on the computer?

B4g7: Big people we don't like because they...because big people they are not interesting for children because they only say things about things that you can buy in a store. Or sometimes they put silly films on computer, like this (pointing at a YouTube screenshot displaying some videos).

B9g7: [my 15-year old brother] always looks at pictures of pretty girls

Interviewer: And you look at those pictures with him?

B9g5: Real naked women and so, that's what he looks at. To see if he can get a girlfriend

Interviewer: Ah, ok. And those are really naked women? What do you mean by that?

B9g7 They sometimes wear a bra and panties and sometimes they are completely naked. (...)

Interviewer: And are these ladies pretty?

B9g5 and B9g7: No, ugly!

3 What role do these new (online) technologies play in the children's and parents' lives?

3.1 How important are digital technologies for family life?

Digital technologies are an important aspect of most family members' life. As discussed in more length in previous sections young children mainly value digital technologies for their entertainment value and as an additional opportunity to have fun, while parents value a broader spectrum of possibilities related to work, entertainment and relational uses. Although these values are salient in most families, the specific ways in which technology is appropriated in families depends to a great extent on specific family characteristics and values. Families (e.g. Gamma and Delta family) that encourage outdoor activities were more likely to restrict technology use; Families (e.g. Alpha family) in which parents frequently work from home or parents who sometimes need to work in the evenings or in the weekends tend to perceive digital technologies as an efficient, although not always a desired time-filler which help them keep their children busy while they finish their work.

Sometimes [my son] gets bored when we have a deadline, he has to stay alone watching TV or playing with the iPad, but he cannot go outside on his own (....) So I associate the fact that he's playing with the fact that I cannot pay attention to him...so for me [playing videogames] is not something that we do together. (B1m)

In families with lower cultural capital (e.g. Iota and Epsilon families), parents are more lenient towards digital technologies and let their children explore these quite freely as compared to the other families interviewed.

Despite the importance of technological devices to individual family members, family activities are usually centred around offline or non-digital activities, such as going to the playground, swimming or riding bikes. Parents' main contribution in children's experiences with digital activities is to help to initiate digital activities, provide help whenever necessary and keep an eye on their children. They are seldom actively involved in the activities their children engage in, although some exceptions exist, such as a couple of fathers who played videogames with their children, or a family who sat together to watch a TV series on YouTube. Another family accompanied their children while playing educational games and the families who used Skype they usually did it as a family activity where they together called their loved ones living abroad.

"[Dad] chooses to play with him with the PlayStation or with the iPhone. They can play together. I cannot because I don't like it, so we read a lot together, but if I have to choose between a book and the PlayStation, for me the book is better." (B1m)

3.2 Do digital technologies facilitate or hinder family life?

Parents have ambivalent opinions and attitudes towards digital technologies. In some cases, digital technologies are sometimes seen as a tool for family bonding (e.g. Eta family) or as social in general because it takes place in a shared space (e.g. Zeta family). Most parents we interviewed, however, lamented that many digital devices, in particular the tablet or gaming consoles, foster individual play. Children therefore cannot use digital devices during certain

family moments such as dinner and parents try to embed the time spent on digital technologies in a healthy diet of online and offline practices.

Even though many parents condemn the practice, a large majority admits using (new) media to entertain or to keep their children busy whenever they have little or no time to be with them. This practice is most common when cooking, working or doing household chores, although some parents also use this strategy when they have to leave home for 5 minutes, for instance, to go to the bakery or simply when they are too tired. In a way, many parents believe that digital technologies facilitate their life, nevertheless many also feel a bit “guilty” of using technologies in this way and they somehow justify their behaviour by explaining that when this happens they have no other option at their disposal. Although using digital technologies as ‘babysitters’ may not encourage parents-children interactions, it may help busy parents cope with their busy agendas and, consequently, release some stress. So, if not excessively employed, and depending on the context when and where this strategy is used, it can potentially have some benefits as well.

3.3 The impact of digital technologies on parenthood

In general, we did not find evidence that digital technologies impact parenthood in a significant way. Conversely, it seems that parental styles, family dynamics and family values shape the ways in which technologies are appropriated at home. We saw, for instance, that families who value sports and outdoor activities try to limit their children’s exposure to technologies by acquiring fewer digital devices, by setting up strict time limits to use them, but also by actively offering attractive, non-digital alternatives to their children, such as playing board games with them, encouraging them to perform hobbies, playing sports, etc. Parents who valued digital technologies because of their educational uses or simply because they loved them themselves, acquired more digital devices, also for their children, and encouraged their children to explore the possibilities of the digital world. These parents usually felt very proud that their young children possessed high digital skills for their age and usually encouraged their children to show us what they could do on the devices they possessed.

Last, we were also able to observe some family conflicts. In general these conflicts emerged because one of the parents viewed technologies as intrinsically positive, also for child development, while the other one saw technologies as essentially the opposite. This conflict of values and interests was particularly noticeable in the Alpha and the Iota families. In spite of having totally different cultural and even ethnic backgrounds (e.g. one mother was a post-doctoral researcher at a prestigious university and the other one had only finished primary school), in both families the mother had a negative view of technologies and the fathers a very positive one. In both cases, however, the mothers also shared the view that technologies were something unavoidable and they were aware that in today’s society there is no other option than to keep up with technological changes. In spite of the divergent father’s and mother’s views of digital technologies in these families, in both of them the children used technologies quite intensely and were among the families who placed less time restrictions to their children.

4 How do parents manage their younger children's use of (online) technologies?

4.1 Parental mediation

Parents seek in varying degrees to balance the psycho-social and educational advantages of digital technologies and the negative effects that may be associated with excessive use and certain types of content.

Parents interfere and guide the interactions children have with media and technological devices in diverse ways even within the same family. Independently of their ethnic and socio-economic background and their cultural capital, all parents interviewed employ some type of restrictive mediation strategies to control the time children spend on media and digital technologies. Fewer parents employ strategies to control the content their children are exposed to, although they usually admitted to “keep an eye” while their children are online (e.g. While playing online games or watching YouTube films). More active parental mediation strategies such as co-use in which parents share media use with children, and active or constructive mediation to educate children on media use and explain complex content (e.g. Koolstra & Lucassen, 2004; Nikken & Jansz, 2006) were less often used. This is probably because most parents feel that their children's digital behaviour is quite safe and they associate the need for more active parental mediation strategies with older children (e.g. adolescents).

Parents are mainly worried about adolescents' relational use of digital technologies - referring to diverse risks including an excessive emphasis on looks and image and contact with strangers - and about adolescents' exposure to inappropriate content such as pornographic material. In contrast, parents consider their young children's use of digital devices as rather innocent, especially because it is believed to be limited to a specific set of activities, such as watching television channels for children or watching YouTube videos which they perceive as harmless. An additional reason why most parents in our sample believe strong mediation of media use is not necessary yet relates to the inability of their children to read and write. Without these abilities, parents believe children's skills for exploring and accessing inappropriate content are limited.

We are aware that at certain moment in time we might need to be [more attentive], from the moment she can type words (...) then I'll probably change my password or use a filter to block certain words. (B6m)

Parents' main concern is young children's excessive exposure to digital technologies and, therefore, restrictive parental mediation strategies, especially as regards to time, were discussed the most during the interviews. Only in the few cases where children had been exposed to (perceived) risky or harmful content such as violence or sexual content, parents intervened and discussed the content with their children. For instance, B1m saw her six-year old son watch a cartoon in which, according to her, one of the characters was being tortured. Her son did not seem to perceive the cartoon in the same way, though, and he found it funny. So, instead of forbidding her son to watch the cartoon, she “tried to explain her point of view” and told him that she did not think that that cartoon was funny and explained to him why she thought that way. In another family, B6g6 sometimes passes by the section with adult-rated content while browsing the online video-on-demand services. This section is not accessible to B6g6 but she is nevertheless exposed to a suggestive image that accompanies the menu.

Whenever this happens, B6g6 calls her mother and yells that there are “*big breasts on the television*”. The mother explained that when that happens she comes to her and they both end up laughing and making jokes about it.

Active mediation strategies at this developmental stage seem to be directed more towards explaining how a digital activity can or must be performed. A number of parents explain that children sometimes ask for help while they are playing a digital game or when they have problems operating a device. Similarly, parents and children sometimes explore together homework or educational exercises for which the computer is necessary.

Given that children’s media preferences not often coincide with those of parents, co-use was not very popular (except in the few cases where some dads played videogames with their children). Typical parents’ expressions regarding their children’s TV programmes were “If you have seen one Dora [episode], you have seen them all”. Basically, when parents have little confidence in their children using a certain device, co-use comes forward as a mediation strategy:

B7m: When I am playing Fruit Ninja, they sometimes ask: Can I play as well? And then I’ll let them, but only that [activity].

Interviewer: Why only that activity.

B7m: They can press all kind of stuff. Not that we have secret things on it [the tablet], but well, they just press everywhere. And with those games as well, you can buy things in these games. And that costs money. They don’t know what they are pressing, so, if you are not there with them... Therefore, they can go on it [the tablet] but only when we are there with them.

As follows from the few concerns parents have with regard to inappropriate content, most families do not make use of parental controls. Parents do, however, set up passwords on technological devices such as Tablets or Smartphones to avoid accidental online purchases such as Apps. The few parents who referred to parental controls during the interview talked about word filters (B6m) or tracking services to check their older children’s online behaviour (B9f).

In two families no or little concerns were expressed regarding the digital content their young children were exposed to (e.g. online or videogames or websites). These two families were also the ones with the lowest cultural capital. In both these families the highest educational level attained by the parents was primary education. One of the mothers did not even finish primary education and she could, therefore, not read nor write. It is possible, therefore, that the level of awareness of these parents as regards digital safety issues is somehow limited by their insufficient cultural capital, therefore, more efforts should be made in order to reach and support these families so that parents from socially challenging environments can increase their level of awareness regarding potential digital risks, but also develop effective measures to better protect young children who come from vulnerable environments and who may lack parental guidance in this respect. In the quote below, the 7-year old daughter of one of these families explained to us that she once wanted to get in touch with a “*pretty lady*” she had seen on the internet, but she did not know how to do it. She also told us that she did not want to tell anybody about it even though she seemed to be aware that contacting a stranger was not safe:

B9g7: Once I also saw a very pretty lady with clothes and that. And I found her pretty to become my friend. But I didn’t tell anyone about it. I didn’t want to.

Interviewer: So you wanted to become friends with the lady?

B9g7: [nodding] I kept it to myself.

Interviewer: And did you get in touch with the lady?

B9g7: What do you mean?

Interviewer: Did you talk to her or send her a message?

B9g7: But I've never seen her! I never see her. I live in [name of town] and I don't know where she lives.

Interviewer: Ah, OK. So you don't know where she lives, but you would like to meet her anyways?

B9g7 [nodded].

Interviewer: And if you get to meet her, do you think that would be safe?

B9g7: No.

Finally, as illustrated by the mother of three young children (6 and 4), families feel that they would benefit from the availability of more positive, educational and safe (online) content for young children. However, many of them do not know where to find it:

"And then I think it would be nice if there would be a platform for online safe Apps. And the network would be kept up to date, that you can go up there and they are like educational, and that they always work because sometimes they have good little Apps but next you'll go and they are not there anymore, like a brochure for parent to accompany it" (B4m).

4.2 Rules

Rules originate within the family dynamics and involve a level of negotiation. They are not static or fixed and can be subject to change over time. In general, the older the child, the more rules are negotiated. Most parents in the sample do not have strict rules on media use, at least not for their youngest children. As their children's media use has not resulted in problems to date, they do not perceive a strong need for restrictive mediation, except setting up time limits. Many parents referred to the developmental stage their children are in and to the boundaries in which their children's media use take place (e.g. watching kids TV, browsing (innocent) YouTube videos, etc.). According to many parents, the need to impose more strict rules arises when children enter puberty and digital technologies such as social media become to be used.

Although most parents do not impose strict rules about media use, in nearly all families we observed limits related to usage, time, and content. Families differ in the extent to which children are allowed to use specific technological devices and the extent to which children need to ask permission before using them. In some families, certain devices such as portable gaming consoles or tablets are considered the 'property' of the children and as a result children do not need to ask whether they can pick up the device. In other families, on the other hand, children specifically need to ask whether they can engage in a digital activity. In general, the usage of more expensive, fragile (e.g. tablet) or personal (e.g. smartphone) devices is more strictly regulated. In the most extreme cases, children are not allowed to engage with devices without the help of a parent (e.g. Gamma family).

All parents consider it unhealthy to interact with digital technologies for an excessive amount of time and aim to embed the use of technological devices in a well-balanced and healthy diet of digital and non-digital activities.



FIG. 20 TIME-TIMER EMPLOYED BY THE DELTA FAMILY TO CONTROL TIME SPENT ON THE TABLET AND LAPTOP

Only in one family (Iota), in which the mum considers herself to be “addicted to television”, children can fill in their leisure time completely as they wish. Most parents, however, do not limit their children’s media use to a specific amount of time per day or per week. Instead, media use is either part of a routine (e.g. “one or two movie clips before bedtime”) or based upon contextual factors (e.g. they can use technologies while parents are cooking, but not during dinner), and as a result it is limited in time. Only parents of one family with strong negative perceptions on digital technologies limit their children’s use of technology to a maximum of 2.5 hours of “screen time” a week, based upon a reward system.

B10m: It is as follows (per day), if he does his homework well, because that is the problem. The reward system is that, if he does it in a reasonable amount of time and without making a fuzz, he earns half an hour of ‘screen time’. (...) For example, if he does his homework in an orderly fashion three times, then he has an hour and a half. Then he can choose one time an hour and a half or three times half an hour.

Finally, even though parents perceive few risks regarding the content their children are exposed to at this age, parents instruct children to ignore certain types of content. In particular as regards games on tablets or smartphones, children are not allowed to download content that is not free of charge and are requested to close advertisements.

Young children are in a developmental stage in which they sometimes lament but nevertheless not seem to question the rules their parents impose. Parents generally state that their children are obedient, but they also acknowledge that digital technologies, in particular games, can be very absorbing (hence the fear for addiction) and that it is sometimes necessary to ask children more than once to stop playing or to come to the dinner table.

5 Surprising findings

- Low digital family with a high digital literate child: In one of the families with practically no digital devices available we found one of the most highly literate children we interviewed.
- After/during interview “effect”: Some of the children we interviewed asked their parents to get a Tablet or a game console. We are not sure, though, of this was one consequence of the interview
- Aspirational issues: Children love technologies and even though they may possess some such as a tablet, they always seem to crave for something else such a device they do not possess or a newer/better version of one they already have.
- For parents risks are a future concern only
- Children possess a very low level of awareness of services and platforms that are popular among adults, for example, social media. Two notable exceptions are YouTube and Skype.
- Skype only has positive connotations at home.
- Big discrepancies as regards values related to digital media are observed within some families.

6 Method

6.1 Procedure

In this section, the implementation of the study in Belgium is discussed. For a general overview of the protocol of observations and the protocol of analysis that were shared across participating research groups, we refer to these specific documents.

6.2 The sampling procedure

Given the exploratory nature of the pilot and the emphasis on selecting information-rich cases, theoretical sampling was used. The goal was to obtain a diverse sample in terms of children's ages and gender, family composition, ethnicity, and socio-economic status. Families were initially targeted using a flyer distributed via Facebook, schools and a sports club in the region of Leuven. Families with lower levels of economic or cultural capital, however, proved difficult to reach or reluctant to participate. We therefore distributed the call for participants in three schools in the region of Mechelen, where more families with low levels of socio-economic capital live. In addition, we contacted two community initiatives in the region of Leuven that support socially disadvantaged families. In the end, 39 families expressed interest in the study, of which 10 families can be considered to have a low level of economic and/or cultural capital. Families were chosen based upon the sampling criteria of diversity and the availability of the families in the data collection phase. In addition to the incentives provided by the Joint Research Centre, children were promised a Ketnet goodie bag and parents a small present (i.e. a bottle of wine).

6.3 The sample

Table 1 provides information on the basic demographic characteristics of the participants. As regards the Iota family, we could not extract specific details of some of the older children.

Family	Family code	Low – medium-high family income	Family member code	Sex	Age	Year school/ max level of education	Ethnicity
Alpha family	B1	High	B1m	Male	40	Tertiary	Latin
			B1f,	Female	41	Tertiary	Latin
			B1b6,	Male	6	1 st grade	Latin
			B1g0	Female	0	/	Latin
Beta family	B2	Low	B2m	Female	39	High school	Asian
			B2b9	Male	9	3 rd grade	Asian
			B2b8	Male	8	2 nd grade	Asian
			B2b4	Male	4	Preschool	Asian
			B2bgm	Female	72		Asian
			B2bgf	Male	76		Asian
Gamma family	B3	High	B3m	Female	37	Tertiary	Caucasian
			B3f	Male	41	Tertiary	Caucasian
			B3b6	Male	6	1 st grade	Caucasian
			B3b4	Male	4	Preschool	Caucasian
Delta family	B4	High	B4m	Female	35	Tertiary	Caucasian
			B4f	Male	34	Tertiary	Caucasian
			B4g6	Female	6	1 st grade	Caucasian
			B4b4	Male	4	Preschool	Caucasian
			B4g4	Female	4	Preschool	Caucasian
Epsilum family	B5	Low	B5m	Female	Unknown	None	Asian
			B5f,	Male	Unknown	None	Asian
			B5b6,	Male	6	1 st grade	Asian
Zeta family	B6	High	B6m	Female	36	Tertiary	Caucasian
			B6f	Male	40	High school	Caucasian
			B6g6	Female	6	1st grade	Caucasian
			B6b2	Male	2	/	Caucasian

Family	Family code	Low – medium-high family income	Family member code	Sex	Age	Year school/ max level of education	Ethnicity
Eta family	B7	High	B7m	Female	34	Tertiary	Caucasian
			B7f	Male	31	High school	Caucasian
			B7b7	Male	7	1 st grade	Caucasian
			B7b4	Male	4	Preschool	Caucasian
Theta family	B8	Low	B8m	Female	37	Tertiary	Caucasian
			B8g6	Female	6	2 nd grade	Caucasian/African
			B8g3	Male	3	Preschool	Caucasian/African
Iota family	B5	Low	B9m	Female	30	None	Caucasian
			B9f	Male	45	None	Caucasian
			B9g5	Female	5	Preschool	Caucasian
			B9g7	Female	7	1 st grade	Caucasian
			B9?10	Unknown	10	Unknown	Caucasian
			B9g10	Female	10	Unknown	Caucasian
			B9b15	Male	15	Unknown	Caucasian
			B9b19	Male	19	Unknown	Caucasian
Kappa family	B6	High	B10m	Female	38	Tertiary	Caucasian
			B10f	Male	38	High school	Caucasian
			B10g6	Female	6	1 st grade	Caucasian
			B10b9	Male	9	3 rd grade	Caucasian

6.4 Implementation of the protocol of observations

The interviews were conducted in the home of the participants, with the exception of one interview. The Iota family preferred to discuss children's use of digital technologies at the facilities of the community service centre where the family was recruited.

The family visit was structured around four sections. For detailed information we refer to the shared protocol of observations. Information in italic refers to adaptations in the Belgian study as compared to the original protocol of observation shared with other teams.

1. Introduction and briefing (10-15 min): Researchers introduced themselves and explained the main aims of the research project, the procedure, and participants' rights. Researchers asked if children could show (how they use) digital technologies during the interview as well as if pictures could be taken. This section of the interviews was concluded by signing the informed consent forms.
2. Ice-breaker activity (25-30 min): Parents and children identified the structure of a typical weekday by matching time and activities using stickers. *In the first three interviews we also used a Fun line on which families indicated what activities they do together as well as rated them in terms of enjoyment. This activity did not result in meaningful data for the project, infringed on the time of the remainder of the interview and was therefore deleted.*
3. Semi-structured Interview (30 – 60 min): Children and parents were interviewed separately in adjacent rooms. The following activities, materials and investigative methods were used with children:
 - *Suitcase: To spur the interest of children, researchers brought a child-friendly suitcase that housed the interview material.*



FIG. 21 CHILD-FRIENDLY SUITCASE WITH INTERVIEW MATERIALS

- Card game: As foreseen in the protocol of observations the card game was used to initiate conversations on digital technologies. *In Belgium, we created an entire activity around the card game. We instructed children to flip through the cards and asked them to arrange the cards in three groups (what they like a lot/what they like/what they don't like) or two groups in case of children under the age of five. Each category is represented by a smiley face (☺ / ☹ / ☹). Children wrote their name on post-its and linked these to the smiley faces.*



FIG. 22 EMOTICONS USED TO CLASSIFY ACTIVITIES

The interviewer then discussed the classification with the children. At the end of the card game children took pictures of the classification together with the interviewer. We added three non-digital activities to the card game to create a better balance between digital and non-digital activities.

- *Digital tour: Whenever allowed by the parents, children showed their favourite digital activities on one or a few devices, usually the tablet or smartphone.*
- *Screenshots: When digital technologies were not present in the home or could not be used, or because the limited time frame of the interview did not allow children to engage with many digital devices, we used screenshots to examine children's knowledge and skills related to digital devices and activities. Screenshots included pictures of amongst others TV remote controls, diverse gaming websites, e-mail clients, Facebook, Skype, and an iOS and Android lock screen and home screen.*



FIG. 23 SCREENSHOTS OF ANDROID LOCK SCREEN



FIG. 24 SCREENSHOTS OF GOOGLE WEBPAGE

The Following investigative methods were used with parents:

- Traditional semi-structured interview using a topic guide.
- *Associations: As a way of summarizing, at the end of the interview, we presented parents with words they may or may not associate with their children's use of digital technologies. Parents flipped through the words and chose those words that apply to their children/family. The activity has proven very useful as it helps parents to summarize what they have discussed already during the interview, but also allows them to pick topics they have not discussed yet, but which nevertheless have some value to them.*



FIG. 25 WORDS CHOSEN BY THE ETA FAMILY

- *Tick off lists:* Given the scope of the pilot project it was important to know what digital devices are present at participants' homes. Parents ticked off a list of devices they own, a list of devices their children own and a list of devices their children use.
 - *Closing:* Researchers asked parents whether there was anything else they would like to add.
4. **Closing (10 – 20 min):** At the end of the interview, parents and children got together again and were asked if there was anything they wished to add to the interview. Researchers asked for basic demographic information, thanked participants and handed over the incentives.

6.5 Implementation of the protocol analysis

Each interview was recorded using voice recorders (2 x Olympus WS-110) and researchers' smartphones (Samsung Galaxy / iPhone 5) were used as back-up devices. During the interview researchers took notes in relation to the setting, technological devices available and surprising findings. The notes were added to the interview material for analysis.

After every interview a comprehensive debriefing took place during which the researchers discussed the setting, family members' responses to the four research questions and surprising findings. One researcher took notes and a number of debriefings are recorded.

The researchers, with the help of two students, transcribed each audio file verbatim. The emphasis was on the verbal component of the recording, but the most prominent changes in the tone of voice (e.g. enthusiastic, surprised, etc.) and acoustic elements (e.g. laughter) were taken into account. Colloquial language was not corrected.

Researchers' notes, debriefings, and transcripts were used as the basis for thematic analysis. In using thematic analysis, researchers search for patterns and themes in relation to the research questions. Researchers carefully read the interview material and assign codes to relevant segments. This coding process results in a list of codes that later in the analyses are refined, elaborated upon or deleted. Subsequently, researchers compare the material and choose a limited number of key codes that are useful to answer the research question. Within these key codes they search for similarities and differences, which are subsequently coded in subcategories. Finally, researchers aim to uncover connections between concepts. Given the short time frame of the project this process is ongoing.

Discussion of methodology

In addition to studying young children's use and perceptions of digital technologies, this pilot study aims to map methodological challenges and inspire future research. A first set of challenges and recommendations relates to the sampling procedure and the target group of the study (young children and their parents):

- Other sampling techniques should be considered. Given the exploratory nature of the pilot study and the emphasis on selecting information-rich cases, theoretical sampling was used. Although research based on a larger and more representative sample of families is needed, we also encourage future researchers to pay extra attention to families with low economic, cultural and/or digital capital because we have indications that the risks regarding digital technologies in these families are more strongly felt. Recruiting these types of families in a short time frame however proves difficult because these families are more difficult to reach or reluctant to participate. In Belgium, targeting community service organizations and schools located in socially disadvantaged areas proved valuable recruiting strategies. In addition, we advise researchers to be flexible in their sampling criteria. One family with low economic capital for instance preferred that the interview was conducted at the facilities of the community service centre where the family was recruited.
- Interviewers should be able to converse with the participants in a language that is comfortable to them in order to create a relaxed atmosphere and to avoid misunderstandings. This is especially relevant for socially disadvantaged families whose mother tongue is more likely to differ from official national languages.
- The informed consent forms are too difficult to understand for some families. A more user friendly version would also save time at the beginning of the interview.
- **Research on children's perceptions of digital technologies and parents' mediation strategies** is often based on the account of a single parent (cfr. EU Kids online). In this study however we observed remarkable differences between mother's and father's viewpoints (most notably in the alpha family, but also in the eta and kappa family). In order to fully understand the family dynamics as regards use and perceptions of digital technologies we advise to interview both parents whenever possible.
- Young children, especially those that still attend preschool, cannot yet reason at an advanced or abstract level. They find it difficult to provide us with elaborate answers and to go beyond what they like/dislike regarding a device/activity. The best way to extract information is to observe and talk to them while they are engaged in a digital activity or to use visual aids representing digital devices or activities.
- The entire procedure takes two to three hours and is very intense, especially for young children. Ideally, we would suggest that the interview is divided in two shorter sessions. In addition to minimizing the burden on young children, this would allow for greater opportunities to establish a trust relationship as well as to validate

preliminary findings. This is especially relevant as an (adult) interviewer's reality is used to make meaning of a child's reality.

- A child friendly approach is needed to quickly gain the trust of the children and to extract valuable information. Researchers need to be prepared to play with the children and stay longer whenever necessary.

A second set of challenges relates to the protocol of observations and its implementation:

- The emphasis of the protocol of observations is on digital devices. In reality, however, people talk about what they do using digital technologies. The device is a means to an end (e.g. playing games, watch videos on YouTube). We suggest redesigning the protocol of observations and to focus on digital activities instead of on digital devices.
- **Video recordings are an important tool to capture children's interactions** with digital technologies. Children often refer to an activity or a device as "this thing" and whenever possible show us how they interact with digital technologies (and thus swipe, point, play games, ...). As a result, observations are a very important constituent of the methodology, yet the protocol of observations only allowed for audio-recordings. We strongly suggest future research to contemplate the use of video-recordings.
- The protocol of observations foresees the presence of multiple children. Besides the fact that interviewing multiple children is challenging, children are in different developmental stages and therefore require a different approach and adapted activities.
- As a result of the variations between children (and families) it is paramount that the methodology remains flexible. If the goal of the research is to include all or multiple children of a family, it is important that the interview material is flexible and can be adapted on the spot to the cognitive level of children who are in different developmental stages.

As explained, the flexibility of the protocol of observations proved to be an asset to the study and benefited our research. We briefly describe which and why some of the interview techniques and activities used in interviews in Belgium proved (not) useful to map young children's experiences and perceptions of digital technologies and to keep children engaged during the interview.

- The *My Day activity* overshoots its goal. The activity gathers the entire family and helps to create a more relaxed atmosphere. Children genuinely enjoy using the stickers to construe a typical weekday. However, as weekdays are very packed with activities such as school, homework, dinner, etc. little information is actually gathered on digital technologies. On weekends there is more time to engage with digital technologies. In general, the activity is too time-consuming in relation to the expected outcome.
- The card game works very well to initiate a conversation on digital technologies. Children under the age of five however have difficulties creating three groups with activities. Usually they only make two categories, one group of activities

they like and one group of activities they don't like. We tried to make the card game more engaging (cfr. Methods).

- **The best method to explore young children's digital skills is to observe their interactions with digital devices.** These interactions however are a two-edged sword for researchers. On the one hand, they help researchers to grasp how children really engage, interact, and perceive technology. On the other hand, they make it sometimes difficult to redirect children's attention back to the interview. Researchers should anticipate strategies to pull children back to the interview.
- **Observing children's interactions with digital technologies may not be possible during the interview.** It may be that a family has little or no digital devices, that parents are hesitant to let their children interact with digital devices with strangers, that devices are not charged, or that there is little time to explore children's understanding and skills of a variety of devices. In these cases, extra resources such as screenshots representing digital devices, activities and applications can stimulate interaction without the need of letting children engage with digital devices. At least in Belgium, these screenshots provided a valuable tool to get a first impression of children's knowledge, understanding and perceptions of digital technologies. Another possible strategy or back-up plan is to bring (cheap) digital devices to the interview that can be used by the children. The interviewer can also allow children to perform basic operations on his or her smartphone or tablet.

Similar to the methods we introduced in the interview with children, we explored ways in which researchers can improve data collection with parents.

- The words presented to the parents at the end of the interview serve as a final reflection. The activity creates a valuable summary as well as allows parents to pick up topics that are not or only briefly touched upon during the interview, but are nevertheless deemed important.
- A short survey for parents on the use of digital technologies at home and basic socio-demographic information provides researchers with a valuable overview. Given the scope of the pilot project it was important to know what digital devices are present at participants' homes. Parents ticked off a list of devices they own, a list of devices their children own and a list of devices their children use. This survey can be combined with a short survey on demographics and socio-economic characteristics of the family.

Conclusions

In this report we summarise the main findings of the 10 interviews conducted in Belgium with young children and their families. It was evident from our encounters with families that kids love technology and that digital technologies are an integral, although not a dominant part of their lives. Apart from playing digital games or watching videos, they also enjoy performing other non-digital activities such as sports, going to the playground or riding their bike. Young children mainly use digital technologies to have fun and to a lesser extent for bonding, i.e. a way of doing something together with significant others. Their favourite and most common activities are watching TV, watching video clips on YouTube and playing digital games. As opposed to children, parents mention that the main motives for their children to use digital

technologies are fun, learning, school-related tasks, "reward-punishment" strategy, baby-sitter", and only occasionally, a way of doing something together with their children (bonding). In spite of parents referring to positive aspects of digital technologies only a few of the children interviewed, and only the oldest ones, were able to use digital technologies in more advanced or creative ways. For instance some (older) children can make videos, take photos ('selfies') or do homework, but creative engagement with technologies is not widespread at this young age, nor is it actively encouraged by parents

Children usually use tablets or iPads to perform digital activities, although sometimes they also use their parents' smartphones (if they are allowed to) or game consoles. Several of the children interviewed, especially the oldest ones, are able to use tablets or iPads quite independently and have developed a number of skills (e.g. navigating across screens, searching for information, downloading Apps, etc.). Young children's digital skills vary a lot from child to child, but in general they are low (as compared to older children or adults). Not surprisingly, the highest skills are observed among the oldest ones (e.g. finding the information they are looking for or downloading Apps). In general, all children have some grasp of device and game navigation. Navigation is notably eased when young children do not have to use the mouse or other game controllers. Because of their very limited search skills many young children turn to their parents to find the information they want.

Several factors affect young children's uses and skills of digital technologies. These include family constitution, family and parental styles, daily routine, and even the neighbourhood. Above all, kids watch and learn from parents, but also from other relatives (e.g. siblings, uncles, and grandparents), friends and peers. Children's perceptions of digital technologies are highly influenced by their parents' attitudes towards technologies, but also by their daily use.

Only the oldest children (6-7 year olds) seem aware of communication or social media functionalities such as Facebook, e-mail or instant messaging applications. None of the children interviewed had a profile nor were they active users of any of these services, though. The only exception was Skype, which had been used by half of the families in our sample. What all these families had in common was the fact that they had close relatives abroad.

As regards online risks, children have some level of awareness, especially about commercial and "technical" risks. Parents, on their turn, seem to trust that their young children will not get into trouble online. This is probably mainly due to the fact that parents feel that they are successful in monitoring their children's use of online technologies (e.g. by limiting the time they can spend online, or by not allowing them to download online Apps or games). Parents, in general, seem much more anxious about the future risks their children may encounter than about current ones. This may be worrying because we were able to observe that even though young children, in general, enjoy quite safe (online) experiences, a few children in our sample mentioned (or we observed) having encountered less pleasant online experiences such as viewing "*ugly naked women*" or "*silly videos*" or being exposed to commercial information (usually targeting adults, but sometimes also children). Even though our sample of families is extremely small to make any generalizations, we observed that the few children who referred to unpleasant online experiences of any kind came from socially challenged environments and/or had parents with a low literacy level. In another family, economic constraints prevented children from accessing digital technologies. They did not have access to the internet or to cable TV because they could not afford it. The mother in this family, who had a university degree, worried that their children would become digitally excluded especially as they grow older and more digital resources are demanded from them at school. It is, therefore, essential,

to invest resources in studying more vulnerable children and their families, and to explore the ways in which these less privileged groups engage (or not) with digital technologies and the consequences thereof.

As observed in our study, parents are quite confident that very young children won't get into trouble online and they feel quite successful in monitoring their children's use of online technologies. Nevertheless, our study also shows that some children are exposed to less visible risks such as encountering inappropriate content, being commercially targeted or privacy risks. Enhancing children's and their parents' digital skills, but also increasing their awareness of potential risks and how to cope with them is essential.

Even though lots of research has been published about older children and teenagers' experiences with digital technologies, very little research has focused on very young children, and especially vulnerable ones. An important challenge ahead is exploring adequate and innovative research mechanisms to reach and study these groups. Last, researchers should make efforts to gather evidence on the less explored, and more positive aspects related to the use of digital technologies by very young children. This could include the ways in which children and young people's use of digital technologies may contribute to creativity, informal learning and active cultural participation.

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ONCE UPON A TIME, THERE WAS A TABLET: YOUNG CHILDREN (0-8) AND DIGITAL TECHNOLOGY

*A qualitative exploratory study - National report –
CZECH REPUBLIC*

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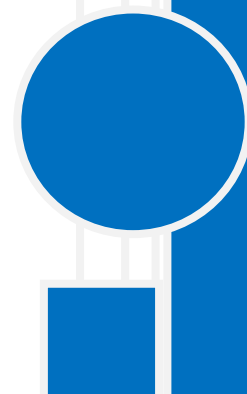
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1 Executive summary

This research deals with the context of the use of technologies by children less than eight years of age. We use the explorative and in-depth research design to fill some of the gaps in the current knowledge with the fact that we do not focus only on the children's use of technology, but wonder about the location of the new media in the context of other children's activities and about the role of media in the functioning of the whole family.

1.1 Key findings

New media are a stable part of the children lives. Children vary in the extent to which they use media and in the activities that they perform with them. Their activities with technologies are an enlargement of the activities from their "offline" life: media are another toy for children, another source of information, and another devices for watching programmes. Children develop their "offline" interests through technology, such as; they are searching for contents associated with their favourite musicians or athletes.

Some parents underestimate the risks of the use of technologies by their children. The parents especially see the risks of technologies in the future, particularly with adolescence and with the interest of children in online social networks, through which children can be harassed by other Internet users, both peers and adults. However, parents underestimate the already present risk, since they consider that "children are only playing with technology", which is not sufficiently perceived as a risk. However, many of the children in our research have encountered violent content in games, and describe the commercial risks. Additionally, one girl was searching for pages about weight loss and had installed a "strip game" for adults on her phone.

Children are digital natives, but to some extent. Children can easily handle digital devices; they can control and install a wide range of applications, and they can search on the Internet. Also, they encounter situations that they do not manage. Parents note that children learn to deal with digital devices more easily than they do, but at the same time reflect the cognitive development of children, when seven-year-old children still do not control critical thinking and distinguish stronger between the real and the unreal.

Parents have a bigger control over their children thanks to mobile phones. But at the same time, they lose control over the activities of children with mobile phones. Parents buy sometimes phones to children to control them when they are not with them personally, i.e. they can call the child when they go to school on their own. The mobile is also seen as the first private device of the child, and parents are losing control of what children are doing with mobile phones and what games and applications they have on them.

Media help parents. Parents use technologies also to "entertain" children. Sometimes they even speak about "putting children aside" with technology or "watching" the children by technologies when parents know that a child interested in technology does not do anything unwanted. At the same time, parents are trying to use the technologies in this way to a degree, for example, only in situations when children are bored, such as waiting and on long journeys.

1.2 Recommendations

Based on our findings, we can formulate some specific recommendations that can help parents to improve the education of children with regard to the use of new technologies.

Parents underestimate the risks of technologies for children up to eight years. Parents should be better informed about the risks and not focus only on the risks, often described by media (but less frequent), such as the Internet addiction, meeting with paedophiles or cyberbullying in mediation.

Children cannot cognitively evaluate content on the Internet and the implications of all of their actions. It would be advisable to ensure better that children could not get at inappropriate content – parents should monitor children while watching online content, or to play children only offline content and even disconnect the device from the Internet.

Parents should focus on positive content that they provide to their children through media. Children should have limited access to the Internet on all facilities, for example, only on pages where parents have verified that they are safe for children. We recommend the use of specialized software intended for parents for this purpose.

1.3 Proposal of implementations

This pilot project, in addition to the above-specified findings and recommendations, also uncovered new issues and directions in the area of the research of the media role in the lives of young children.

In future research, we recommend focusing on understanding the context of parental rules, the use of technologies by children and the subsequent impact on both on the development of children. Especially following longitudinal research with young children could bring a deeper understanding of what the right parental mediation is for children under eight years of age. For example, is it right to significantly restrict children at this age in the use of technologies? If yes, does the child lose something? If not, what will it bring to the child in the future? These all are questions that parents deal with daily and to which the research does not know the answers yet. We also recommend extending the field of exploration and capturing the influence of other agents influencing the use of technologies in more detail, especially the role of peers and school, and also capturing various factors in relation to the different social or economic background of the families.

On a policy level of providing content to children, it would be appropriate to promote the necessity of registration of children in applications with audio-visual content, which would then select the offer of videos with regard to the age of the user. Also, a clear labelling system and the distinction between paid for and free applications would be beneficial, children should not ever have access to paid for applications.

From the perspective of the providers of content, it would be appropriate to develop specialized portals for parents that, for example, concentrate in one place a variety of educational levels or games that are suitable for children. Such portals would be a verified source and would allow parents to better navigate in the existing menus of these products at the same time.

Once upon a time, there was a tablet: Young Children (0-8) and Digital Technology, report from the Czech Republic

2 Introduction

With the development of new technologies, still younger children are using new media, often from one year to eight years (Findahl, 2013), and we know about their use less than about the use of older age groups. The current overview of studies researching the theme of "children and the Internet" in the European area, pointed to the gaps in current knowledge: Only a small percentage of studies focuses on children younger than eight years, the studies are focused mainly on fixed Internet and do not take into account mobile devices, the researches focus more on the risks associated with the use of the Internet and ignore the profit and opportunities for children. And finally, there is only a little known about the role of parents and other persons in the use of new technologies by children (Ólafsson, Livingstone, & Haddon, 2014).

This pilot project "Young children (0-8) and Digital technology – a qualitative exploratory study" is trying to fill some of these gaps. It is focused on children aged up to eight years and takes into account the family context at the same time. It is based on the assumption that for younger children, the parents are the main factor of children's access to new technologies. The project takes a depth approach, which focuses on a smaller number of cases, but it tries to capture as many aspects of the use of technologies by children as possible. These aspects have been summarized into four themes:

1. How do children under the age of eight engage with new (online) technologies?¹
2. How are new (online) technologies perceived by different family members?
3. What role do these new (online) technologies (smartphones, tablets, computers, video games, apps, etc.) play in the children and parents' lives (separately and in relation to family life in general)?
4. How do parents manage their younger children's use of (online) technologies (at home and/or elsewhere)? Are their strategies more constructive or restrictive?

¹ By "new (online) technologies", in this text we mean the so-called information and communication technologies (ICT), resp. media technologies or new media, technologies based on digital coding of data. We use the term "technology" in the widest sense of the word and we include physical devices (hardware – personal computers, laptops, tablets, mobile phones and smart phones, also cameras and music players), and also applications for these devices (software – e.g., games, media players, Web browsers, text editors, etc.), and also computer networks (the Internet) and related services (Internet search engines, Web pages and portals, social networks, etc.) under it. For the purposes of this project, we also deal with TV, which is known as a classic medium, but has an important role in the family. For the designation of new technologies, we use only the word "technology" or "media" in the next text and we use these terms interchangeably for greater readability of the text.

This pilot study is conducted in the framework of the JRC's Project ECIT, Empowering Citizens' Rights in emerging ICT (Project n. 572). ECIT deals with "Identification of new threats that children by ICT besides social networks. Development of recommendations that empower children's rights by preventing and mitigating these emerging issues through education, school and community co-vigilance, as well as reconciliation of digital and personal interaction".

The research centres from several European States have cooperated on this project. The research teams from Belgium, Finland, Germany, Italy and United Kingdom are working on it alongside the Czech Republic. For the Czech Republic, the project was carried out by members of the "Interdisciplinary Research Team for the Internet and Society" (IRTIS-irtis.fss.muni.cz), which operates within the Institute for the Research of Children, Youth and Families of the Faculty of Social Studies, Masaryk University. The researchers working primarily on the project are the authors of this report: Prof. David Šmahel, Ph.D., Mgr. Věra Kontríková, Mgr. Martina Černíková, plus Mgr. Alena Černá, Bc. Jiří Motýl, Mgr. et Mgr. Hana Macháčková, Ph.D., Mgr. Lenka Dědková and Bc. Vít Gabrhel also participated in the data collection, their coding and writing this report.

2.1 Report structure

This report describes the progress and results of research in the Czech Republic, where researchers led interviews in ten families with children and their parents. The chapter [5 Method](#) is dedicated to the process of getting the participants, data collection, and a description of their analysis. Due to the deep character of the study, we pay special attention to each of the participating families, whose characteristics we present in the chapter [3 Families](#). In the following chapter [4 Findings](#) we devote our findings regarding the above-mentioned themes. In the first section [4.1 How do children under the age of 8 engage with new \(online\) technologies?](#) we describe which kind of devices children have available, and we analyse more the context of the use of TV and mobile phones by children. We describe a wide range of activities that children do on digital devices. The usual activities are games, but children also spend time watching videos, searching for information, and other activities. We also explore what children can do with technologies, and how the use of technologies by children is connected to other areas of their interests and experience.

In the second part [4.2 How are new \(online\) technologies perceived by the different family members?](#) we deal with the point of views through which children and parents perceive new media. We have identified four main perspectives, which we gradually describe: (1) media as a source of entertainment and interest for children, (2) media as a source of information and skills, (3) media in a social context, and (4) media in a historical context.

In the third part [4.3 What roles do these new \(online\) technologies play in the children's and parent's lives?](#) we describe the role of the media in families. We deal with the educational, practical and socializing role, with the opportunity to fill the spare moments of children with technologies, the possibility of parents to put children aside with technologies or technologies to watch over them, and finally the possibility of contact between members of the family through technologies, or the ability to control and protect children using technologies.

In the last part of the results 4.4 How do parents manage their younger children's use of (online) technologies? we describe the strategies of the parents by which they manage the children's use of media. We introduce the explicit and implicit rules managing the use of technology by young children in families, and we state how these rules are connected, respectively, and inserted into the everyday life of families.

Although we present each of the topics in this report separately, they are in fact strongly interconnected in the lives of children and their parents. For example, children's use of technologies and what they can do with technologies is affected by what parents allow children to do, or in what they directly lead them. Children's activities with the technologies are closely connected with their digital knowledge. The ways that parents choose to control the use of technologies by children are connected to their general conviction and their perception of the technologies. Last but not least, the specific events that occurred when using the technologies by children affect their perception of technologies, their treatment of them, and also influence parents.

The report continues with the chapter 6 Discussion, where we present our results in the context of the existing findings, we consider the limits of research and propose the possible steps of research in the future. We summarize the key findings and recommendations in the 7 Conclusion.

3 Families

3.1 First family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Mother	35 yrs	Maternity leave	Apprenticeship	Yes
Daughter	7 yrs 6 mos	Schoolgirl	2nd class of primary school	Yes
Son	1 yr 6 mos	At home with mother	-	Yes - passively

Description

The mother lives with the two children in a one-room flat (1 + 1) close to the city centre within walking distance of the school, which is visited by the daughter (approx. 10 minutes). The mother is a single mother, and her monthly income is below half of the national median. The father does not live at home. The mother mentioned that the daughter travelled to him for weekends. The parents do not talk together with children about rules of the use of the technologies.

"It is not completely wrong (technology), definitely not. But to a certain extent. Only to the extent that they play games on it, that they are just watching cartoons, until then, yeah ... Until they get to the Internet as such. Yes, before they start reading what is going on in the world, what is wrong."

The daughter has her own tablet and smart phone. The mother mainly uses a second smartphone and laptop. The son uses technology together with her sister. The children watch children's shows and cartoons on TV.

The little girl worked, in particular, with male researcher and in the opening game glued images according to his instructions. The mother watched and looked after the son, who was moving around. She tried to advise her daughter with what was what. The daughter described how she walked to school alone and after school when home, where she slept. She watches TV after waking up, she has something to eat, and she thinks about the tablet. She watches evening TV broadcasts on the tablet. She is talking about a gaming console, which she does not have, but she would like to have it. The daughter is talkative and friendly from the arrival of researchers.

An interview with the mother and female researcher took place in the living room connected to the kitchen. The son was running around during the interview and was bringing a variety of toys. Later, he demanded that his mother took down a portable DVD player. He copied how his mother was on the phone. The mother is talkative, speaks openly. The interview with the daughter happened with the male researcher in the bedroom connected to the children's room. The daughter had a tablet and smart phone at her disposal.

3.2 Second family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Father	37 yrs	Auditor	University	Yes
Mother	39 yrs	Technologist	University	No
Son	7 yrs 11 mos	Pupil	2nd class of primary school	Yes
Daughter	6 yrs 2 mos	Schoolgirl	1st class of primary school	No

Description

A family of four members lives in a block of flats on the outskirts of a larger city, the children have their own room there. The family income is national median. The parents were very helpful with the research; they have participated in other studies as well.

The children use a computer at home and a tablet at Grandma's. Further, their father lends them his phone for playing games.

The whole family joined in on the opening game; the parents helped the children by asking questions and with the order of the activities. The children go to school together and play sports games at an after-school club. The children attend sports and natural science clubs. They do their homework after coming home from school, and then they can play outdoors or on the computer or watch TV. The parents mentioned that the use of technology was considered as a reward if the children got everything done.

Although all members of the family were present at the time of research, after consultation, it was decided that the individual interviews would take place only with the father and son. The mother looked after the daughter in the meanwhile. The female researcher led the interview with the father in the living room; an interview with his son took place in the kitchen. The son had his father's mobile phone at his disposal. The boy was not too talkative, he mainly answered simply. Therefore, the female researcher also used other activities from the *Activity Book - Play and learn: Being online*. The mother and daughter came into the room towards the end of the interview with the son and added to some of the boy's statements.

"It is very easy to switch on the TV, of course, that is it, simple sentence. But I would rather go read with him, we would rather play something somewhere, than get rid of them. There are, of course situations when I am tired from work, also from doing housework and other things, so I do not like it, but sometimes I do slip into it, to the use of those shortcuts. 'Just as I said, done, right, no discussion.' But at the same time, most of the time, I explain why not and that we have agreed this way."

3.3 Third family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Mother	35 yrs	Self-employed - Architect	University	Yes
Father	35 yrs	Self-employed - construction area	University	No
Son	7 yrs 4 mos	Pupil	2nd class of primary school	Yes
Son	3 yrs 6 mos	Attends kindergarten	-	Yes - passively

Description

The family of four members lives in a family house on the outskirts of a larger city. The father works a lot, and so the mother particularly takes care about the mediation of the use of technology. If there is a problem, both parents discuss

it. The older son has been diagnosed with Asperger's syndrome; therefore, the mother consults his access to technology with a psychologist. The family's income falls between half of the median to the median of the national average.

"We try to make the children sensitive to our computer primarily as a working tool (...) I'd just wanted to prove (son) to (technology) have access to, say, that thing is him and not that it controls."

The mother and father have their own laptops given for work. The older son has access to the computer and games, exceptionally to the smart phone of one of the parents. The younger son mainly watches fairy tales on the computer. The family has no TV or tablet out of conviction. The children have their own room in the house, where they are allowed to use an older computer without the Internet.

In particular, the older son and male researcher joined in on the opening game. In the beginning, the mother discussed the details of the research and interviews with the female researcher, and told the researcher about her son's diagnosis. The older son stuck stickers according to the current day, when he goes to school, he does his homework after school, and then he plays on the computer or with Lego, sometimes even on the phone. The younger son occasionally engaged and stuck some stickers.

The interview took place with the mother; the father was not at home. It took place in the living room connected to the kitchen. The interview with the older son was in the children's room. The door was initially open between the living room and the children's room, but because of the noise the door, it was closed after a moment. The older son had the older computer without the Internet available during the interview. The younger son was alternately running between the two interviews. He was cooking in the children's kitchen and was bringing tea, pizza and cakes to the female researcher. He sometimes actively participated in a conversation of the brother with a male researcher. Both children were friendly and immediately asked lots of questions.

3.4 Fourth family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Father	38 yrs	Self-employed – athlete	Apprenticeship	Yes
Mother	40 yrs	Lecturer	University	Yes
Son	7 yrs 8 mos	Pupil	2nd class of primary school	Yes
Daughter	4 yrs 5 mos	Attends kindergarten	-	Yes
Adopted daughter	20 yrs	University student	Secondary School	No

Description

A family of five members lives in a village beyond a larger city. They sometimes stay in a one-room apartment (1+1) in the city close to the centre, due to better accessibility to work and school over the week, and the interview was also there. A twenty-year-old adopted daughter lives with the respondents in the house. She is the daughter of the mother's sister who died in an accident, and is now being raised by her aunt. The family involved the information about the adopted daughter only briefly. The monthly household income is within half of the median and the median of the national average.

"We would rather go out, when it is nice in the summer, and my wife is going to work, so we take kids; we go to the park ... They will enjoy the computer when it is bad weather outside. Yeah? That it is simply not a priority. (...) our kids have it really as a reward or if they really need to do something."

In particular, they use a computer and smart phones at home; they had a tablet, but it broke. The children do not have their own phones yet. The mother has her own laptop, but she uses it mainly for work purposes and does not lend it to the children. The family stresses that they are sport based and generally prefer other activities to the technologies.

The opening game "My day" took place together with the parents and both children. The children were involved alternately. The mother helped the daughter with the answers and with peeling off the stickers. The father was also engaged and advising the children. The son goes to school; he spent the afternoon at an after school club; he has football training some days of the week. The son was watching football on the computer and the daughter fairy tales. He states that he enjoyed football the most in free time, and he also puts the PlayStation there, even though they it was not in use. However, the son insisted that he would stick it there. The daughter was enjoying painting.

The interview took place with both parents with a female researcher in the children's room. Both of the children participated in the interview that took place in the living room connected to the kitchen, because there is a desktop computer, which was available to the children during the interview. The mother also lent her smart phone to the son.

3.5 Fifth family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Father	40	Nurse	Secondary School	Yes
Mother	41	Operator, Web designer	Secondary School	Yes
Daughter	7 yrs 6 mos	Schoolgirl	2nd class of primary school	Yes
Daughter	5 yrs 5 mos	Attends kindergarten	-	Yes

Description

A family of four members lives in a block of flats on the outskirts of a larger city. The household income is around the national median of the national median. The father works in the IT area, so he emphasises computer literacy and has educated the daughters in the use of technology from childhood.

"These computers are everywhere today, right. Whatever you do, computers are everywhere (...) So from this perspective, I think that it is very important that they can work with it, that they can orientate in it."

They have several computers in the house. The daughters own a tablet and the older daughter a smart phone. The younger daughter has a phone, but she practically does not use it, she does not need it, in the words of her parents. The children also watch TV. They also use a computer. The mother owns a tablet and push-button phone. The father uses all of technology.

The whole family joins in on the game "My day". The mother and father help the younger daughter. They describe a normal day, when they have breakfast and clean their teeth. The older daughter goes to school; the younger was exceptionally at home. The older daughter attends a scientific circle; they created a volcano today. The younger painted after lunch. They both also rode a bike. The older daughter is doing her homework, and the younger is playing on the computer. After they return from outside they have a shower and watch television. They both state horse riding as their most popular activity.

The interview with the parents and female researcher took place in the living room. The interview with both daughters happened with the male researcher in the children's room. The children had access to a computer, tablet and smartphone for a demonstration of working with technologies. Both of them show high computer literacy at first sight, and it is obvious that they can use technologies really well. However, it is also obvious that they are generally smart, and they take technologies as one of the options for spending time. This also reflected in the joint opening game, where both identified horse riding as their most popular activity. The children are talkative and expansive.

3.6 Sixth family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Mother	35 yrs	Teaching Assistant	Higher vocational school	Yes
Son	9 yrs 7 mos	Pupil	3rd class of primary school	Yes
Son	7 yrs 9 mos	Pupil	2nd class of primary school	Yes

Description

A three-member family lives in an apartment in the city centre, in which the boys have their own joint room. The family is economically below half of the national median. The mother also works from home in addition to employment. The boys live with their mother, but they spend some weekends and some afternoons with their father. The younger boy had health problems at the time of the interview; this made speaking difficult for him.

"He was showing me Slenderman. And then we were going somewhere in the car, and he asked, mum, this is the suburban forest and Slenderman could live there? Maybe it is filmed, so it looks like a real, right. That if I were a kid, I would also believe it."

Each boy has his own smart phone. They have access to it at any time, but they must not take it to school. There are a television and a desktop computer in the house. Only the mother uses the PC. The boys use father's laptop when they are at his place.

The boys do not respond to the opening game; they need to be encouraged. The younger boy mentions that he was playing with a mobile phone as the first activity in the morning. He did not go to school today due to health problems, but he sometimes plays on a mobile phone before he goes to school. The boys spend the morning at the school, the afternoon in an after-school club. They like to play football outside and ride a bike when the weather is nice. They watch TV at home and play games on smartphones. The older son sticks together paper models, the younger plays with toys on a robots theme.

The interview with the boys took place with the female researcher in the children's room. The older boy sometimes answered for his brother because of his health problems. The boys had their own smart phones available during the interview. The boys rarely paid attention to each other; the interview was alternately with one and then the other. The younger boy, when he did not participate in the interview, played with toys. The older boy was playing in the next room; he was occasionally entering into conversation with the mother.

3.7 Seventh family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Mother	39 yrs	Maternity leave, translator	University	Yes
Father	41 yrs	Graphic Designer	University	Yes
Son	9 yrs	Pupil	4th class of primary school	Yes
Son	7 yrs	Pupil	2nd class of primary school	Yes
Daughter	5 yrs	Attends kindergarten	-	Yes
Daughter	5 mos	At home with mother	-	No

Description

A family of five members lives in an apartment in a residential part of a larger city. The monthly household income is below half of the national median. The younger boy has an individual study plan; he will complete three years of primary school within two years.

Older boy: "I just had an idea that we could play that game even without a tablet or a computer, and I drew it."

Researcher: "And how is it more fun?"

Younger boy: "Well, on the tablet, because there it fights itself, we can only show it on paper."

The children use a tablet, a computer that is located in the playroom, and sporadically a console located in their room. The father owns a smartphone that he exceptionally lends to the children. The parents do not want to have a television.

The children were actively sticking the stickers. The parents almost did not interfere with it; the mother only sometimes directs them when they start talking over each other. The boys spend mornings at school and the afternoon at an after-school club; the daughter goes to kindergarten; they spoke about playing with other children, handicrafts, staying outside. Both sons attend clubs, etc. the younger son attends a drama club. They play on a tablet or PC at home. The favourite is Lego. The children watch a programme in the evening during which they exercise. The boys drew some of the online games on the paper and then played them together.

The interview with the parents and the female researcher took place in the living room. The interview with the children was led by the female researcher in the children's room; the younger boy and girl participated in pairs and sorted the technologies by popularity. Later, the conversation focused mostly on the younger son. The technologies do not have a fundamental place in the girl's life. The older boy joined in the interview mainly in the form of replenishment and specifying information. The children had the tablet available during the interview and showed also games that they drew on the paper according to the online game.

3.8 Eighth family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Father	41 yrs	Teacher	University	Yes
Mother	40 yrs	Teacher	University	No
Son	10 yrs	Pupil	4th class of primary school	Yes
Daughter	7 yrs 3 mos	Schoolgirl	2nd class of primary school	Yes
Grandfather	76 yrs	Retired, teacher	University	No

Description

A family of five members lives in a house in a residential part of a larger city, the children have their own joint room there. The household income is over half of the national median.

In the household there is a computer that the children can use, they can sometimes play online games on the father or mother's laptop. Each parent has a smart phone, but they do not lend them to the children. The son has his own push-button phone. There is also a tablet in the household; it is mainly used by the children. But it had been under repair for a long while, and the children had it available from the day preceding the day of research.

"If children go to an event with such a device, twenty individuals are sitting there; everyone is alone and is playing some sort of game. And some of them are linked, they like something, they are taking pictures and so on. They are in contact, but they are still looking into that screen, into theirs. They simply slide into that."

The father encouraged the children during the opening game at first, and then he prepared food. The mother was not at home at that time. The girl was more active when sticking the stickers, the boy responded rather only to stimuli from the female researchers. The kids go to the same school; they spend the afternoon at an after-school club, where they play games with other children and draw. The boy is talking about how other children bring mobile phones or other devices to after-school club sometimes, with which they then play – someone is playing and another is watching him, or they borrow it. The children attend clubs – sports club and music club, which fills almost every afternoon during the week. They also participate in domestic chores in the house. They can watch TV till eight o'clock in the evening, and they go to bed at nine. They play with toys at home; the boy likes reading very much.

The female researcher led the interview with the father in the living room. The interview with the children took place in the kitchen. The female researcher focused the interview mainly on the girl, the boy was interfering in it a lot, he responded more quickly to the questions and even advised the girl, while playing, where she should click.

3.9 Ninth family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Father	37 yrs	Doctor	University	No
Mother	36 yrs	Economist	University	Yes
Son	8 yrs 3 mos	Pupil	2nd class of primary school	Yes
Daughter	6 yrs 8 mos	Schoolgirl	1st class of primary school	Yes

Description

The family lives in a flat in the centre of a larger city. Their monthly income is between the median and half of the median national average.

They use a computer in the house; both children have their own tablets. They paid attention to them from the beginning, but they were forgotten and flat in a closet in the time of the interview. They took them out and put into the charger for the purpose of the interview. The son had his own smart phone, which he got for his eighth birthday. From the moment he got it; the tablet went into seclusion. The daughter does not pay great interest to technologies. She will get a smart phone for the eighth birthday, like her brother. The children also watch TV.

"It's a utility thing (technology), which is not used extremely, I think, so I do not care. Actually, I say that if I knew that those children did not do anything else, I would mind a lot (...) I am not a big fan of it, however, when I see that all the other kids are doing it; I do not want my children to be left out. I think that they should somehow keep up with children of the same age. "

The children seem to be shy, but then they joined in on the game that was led mainly by the male researcher. The mother advised the daughter in particular. The children described a day when they were at school, and then at after-school club and then they went to the park. If they did not go to the park, the daughter played with Lego or dolls. The son played with a balloon. They did their homework, the son played on the phone and they watched TV. The daughter rides a bicycle the best and the son plays football.

An interview took place with mother. The father was after a night shift and exhausted from work. The interview with the female researcher took place in the living room. The mother seemed to be careful in the beginning; she started talking during the interview. Both children participated in the interview. They talked with the male researcher in the children's room; they had an available computer, tablet and smartphone.

3.10 Tenth family

Family members living in the same household	Age	Profession	Completed education	Participation in the interview
Mother	35 yrs	Self-employed	University	Yes
Daughter	7 yrs 1 mo	Schoolgirl	2nd class of primary school	Yes

Description

The family lives in an apartment in the centre of the larger city; the daughter has her own room, and she has a playing area in the living room. She is an only child and lives with her mother. The father does not figure in the family; the mother and daughter did not mention him. The household income is around the national median. The girl had a cold at the time of research, and during the individual interview, she sometimes ran off into the living room to her mother for a handkerchief.

"And then at home, when I need to do something quick, and I need to put her kind of to one side. If I say it openly, in fact, it is putting her aside. And rescue. "

The girl uses mainly a tablet from the technologies and watches TV. The mother has her own laptop; the daughter does not use it.

The mother and daughter worked together during the joint activity. The daughter asked what the pictures on the stickers could mean, and asked the mother to find a suitable picture. The mother gave her suggestions to how the activities could follow each other. The girl spent that morning at school; she did her homework after returning home, and she watched children's shows on the tablet. The girl likes to play with Lego, dolls and stuffed toys; she paints and uses the technologies. The mother mentioned that the girl's favourite activities came "in waves", she cared more about something in a certain period, and then she did not enjoy it anymore and replaced it with another interest. The mother and daughter were talking about a dream during the joint interview. The dream appeared to the girl in connection with watching a children's show. The dream had had horrifying content, and the girl was unhappy in the morning. Mother thought that the show was more for older children, but the daughter liked it so she watches it. The girl made the contact with the researchers slowly; she did not respond directly to asked questions, she answered the questions to her mother or asked her mother to say things for her.

The interview with the mother was led by the female researcher in the living room. The interview with the girl took place in her children's room. The mother invited the girl to show her toys and her pet to the female researcher. The girl then started talking more, she even co-organized the progress of the interview – she was spontaneously showing toys and left a male researcher to make choices about the games on the tablet. The girl had an available tablet during the interview, on which she showed her favourite games and was playing videos. The girl's real toys were involved in sorting technologies and toys by popularity. The girl was often playing with something and talking at the same time during the interview.

4 Findings

4.1 How do children under the age of 8 engage with new (online) technologies?

4.1.1 Types of device and their use

The children use all types of digital devices within our sample: mobile phones, smartphones, tablets, notebooks, PC, or mp3 players. Most of the families, of course, also have a TV, and if they do not own one, they use another digital device for watching television programmes or videos, as described below. Table 1 shows which technologies are present in the families and which the children themselves own. If there is no cross by a device, the family did not talk about it in the interview, or it is not used, e.g. for Mp3 players, it is possible that there are more of them in families between the parents.

Table1: Device types occurring in the family and their ownership by a child (blue) format.

Type of technology in the family	C1	C2	C3	C4	C5	C6	C7	C8	C9	C0
Owned by a child (blue)										
Television	X	X		X	X	X		X	X	X
PC / Laptop	X	X	X	X	X	X	X	X	X	X
Tablet	X			X	X		X	X	X	X
Smart phones	X	X	X	X	X	X	X	X	X	X
Mobile	X	X	X	X	X	X	X	X	X	X
Mp3 player	X			X				X		X
Game consoles (PSP, X-Box, etc.)				X			X			

We can see in the table that computers (PC or laptops) are used by all the families in our sample, as well as smart phones. About half of the children, in our sample, own smart phones, about which we will talk further in a separate chapter (4.1.12 Mobile phones). If they do not have their own smart phones, they borrow them from their parents. The children mostly have a shared computer, but in two cases, they have their own computer in their room (from the age of 6 years). Computers and tablets are devices that the children typically share with their siblings or parents.

In the case of sharing, the technologies can be the subject of a dispute between siblings, similarly as other toys. Especially children with younger siblings must deal with the fact that their siblings are interested in the technologies practically from the moment that they can take them in their hand and perceive them. As reported, the girl that has a brother one and a half years old: *"Because it is not possible with my brother, he is constantly taking it away from me."* (C1)

In terms of time spent with the different devices, there are big differences between the families. In some families, children spend a minimum time with the technologies, mainly due to other obligations and clubs (e.g. about 10 minutes a day on school days), in other families, the use is not limited and the children can spend an hour or more a day with them. We describe parental rules, in terms of the use of technologies and their control, further in the chapter 4.4 How do parents manage their younger children's use of (online) technologies? A typical family behavior pattern is that children can use technologies after they meet their everyday duties – tasks for school, or home obligations (take out the rubbish, etc.) The children typically have a bigger access to technologies, when they are ill, or when they have holidays:

When he looks like he is very ill and must lie in bed with a temperature, so he gets the computer in the bed and watches fairy tales or plays something a little bit... If there are such exceptional situations, he really spends a few hours a day on the computer. For example, 5, 6, no problem. (C3)

The time of children spent with technologies often varies by grandparent, who sometimes cannot entertain the children, and therefore leave them for long with the computer or television. As the mother states:

Because grandma, when she should be entertaining them, plays them those fairy tales, and the children even do not want it ... My daughter wrote me a list and she had about 13 fairy tales there. She wrote there what her grandmother was playing to her. (C10)

Rules and rates of use are changing with the given environment, children, where parents live apart; meet typically the two "worlds" of parental mediation of technology use. This observation, however, does not concern only the use of the technologies, but the overall approach to raising children. In the context of some families, the technologies are used as a reward and as a means of punishment, which we present in the chapter 4.4 How do parents manage their younger children's use of (online) technologies?

From our research, it followed that children do not distinguish between different types of equipment – it is not important to them, whether they use a computer, tablet or mobile. Important for them is rather the type of activity that is performed by the device. As reported by the seven-year-old boy:

I play computer games with any Internet access, simply, that I play games there... I play computer games, just play them on some electronics where the games are. (C7)

Similarly, the children, so far, do not differentiate between the platforms on which they occur, it is not essential for them, whether it is Windows, Android or without its own operating system, or, for example, whether the game is "online" or "offline". Important is the activity itself, not that it is "hidden" behind the activity. The aim is the activity; technology is only a means.

Differentiation of activities does not even sometimes have to be on the level of technology versus other toys or devices, the technology is not an "independent world for itself", but is a normal part of the world. It is only one of the activities that is possible to do, or one means of entertainment. As reported by the mother of four children:

It does not matter if we put scissors into their hand, they were trying scissors, when they got a mouse, they were playing with the mouse. It seems such a normal thing to them. (C7)

For the above-stated reasons, we have structured the chapters according to the activities that the children are doing with technologies. The division is as follows: playing games, educational programs and work for school, watching videos, looking at web pages and blogs, taking photography and working with photography, social networks, and the other used applications. In relation to the game play, we take notes about violent content and commercial risks.

Then we describe the use of the TV in families separately, because along with the use of digital media are changes in this area. We also state the chapter about use of mobile phones separately, which is specific in the framework of other technologies. Last sections are devoted to digital skills and interconnection of children's online and offline activities.

4.1.2 Playing the games

Playing games is, in terms of the use of media, the main activity of children aged up to eight years. The children play games on all available devices – mobile phones, tablets, notebooks, computers, and sometimes directly with game consoles. Some games occur across all devices, e.g. the popular game *Pou*, where a child takes care of their "pet". Some games are specific to each device, more complicated, and educational games can be found mainly on computers. Children up to eight years of age, mostly play less complicated games, corresponding to their cognitive development. The children play games mostly separately, but playing games is also a shared activity between siblings, sometimes with classmates at school, for example, in after-school club. Sometimes, children play games together with their parents, especially fathers.

Mostly, children play games offline or on the Internet without the presence of other players, but once emerged in playing a multiplayer game on the Internet (the game *Pán hradu CZ*, Czech game about building and maintaining the castle). Such games have their specifics, such as by the interruption of the game at an "inappropriate" time; a child loses all of the previously obtained benefits. As described by the father:

This is that what bothers my son, that you do not let him do something and he is just playing that multiplayer game where he must build something exactly in sixteen minutes, that it would be optimal, and when it is not optimal, so he is playing that game from the beginning for no reason. (C7)

Boys and girls play all types of games, the girls often "dressing" games, where they are choosing different parts of clothing for different types of characters, for example, known from fairy tales, and cooking games, where they are putting together different meals from the ingredients. However, boys are also playing cooking games at this age.

Children also play games of combat, strategy and sport; the boys play more games aimed at the control of cars, for example, by tilting the tablet. Sports games are sometimes a shared activity of children; one girl said that she was bowling on the tablet with her only one-and-a-half-year-old brother. He can send the bowling ball against skittles and defeat them with his little finger.

In the context of games, children learn a variety of principles of management and gaining points for their activities, such as shopping for things for their computer pet *Pou*. In the following example, a boy (C4) shows how he treats the rest of his money in one strategic game: "...when I have some money left, I can build another fort. This is the money, for example. In a minute, a small window will open here, and extra guards will be there." So the games are used to learn the principles the children will meet later in the normal world.

Another favourite game among girls and boys at this age is the game *Minecraft*, which children play in the offline and online versions; however, they do not distinguish that. Children create worlds from blocks in the context of this game. However, some of them remember mainly meeting the "zombies" that need to be eliminated, which carries bleeding with yellow blood, in the context of the game. As described by a seven-year-old girl (C1) in interaction with a male researcher:

Girl: Well, Minecraft, there are such zombies, and you have to shoot them and you have to do that there.

Researcher: How do they look, those zombies?

Girl: Well, they are like blue, more likely green, and they are shooting at you and when they shoot you are all from blood and you grow a new hand and then you are a zombie.

Researcher: And is it not scary when you bleed?

Girl: Not really, it is yellow, that blood.

Playing games is not only a positive experience for children, as we describe in the next section.

4.1.3 Violence and blood in games

Some of the children have encountered blood or violence in games; it led to their fear and concern. A seven-year-old boy was showing a game in which the goal is to shoot the greatest number of sheep, which is also connected with blood on the sheep, or in the "hunter". The boy (C4) would like to switch off the blood, but he did not find out how to do it so far:

Boy: And this one here started to shoot, and that is me. I have a sniper gun. And the sheep can get to me as well, and they can hurt me too. One attacked me just now.

Researcher: One sheep bit you. The blood there does not bother you?

Boy: No. I did not find out how to switch the blood off, but I would like to switch it off.

As we describe further in the [section 4.4 How do parents manage their younger children's use of \(online\) technologies?](#), parents are trying to eliminate the violence or blood in games, but they do not always succeed. As reported by one of the parents:

For example, when (older son) found a game there, where he was hacking with a machete people and the blood was splashing in the third row, so we just said, not this, we do not want to see him

play this. So he found something else and when he started this one, we said, "Hey, we did tell you something." So he put it away and did not play it anymore. (C4)

Even if parents are careful about violence in the games at home, children sometimes get to inappropriate games outside the home, for example, even in after-school club. In the words of one of the parents:

Well, they very much, they do not even realize it, but I know that they are playing at school with their friends, so he plays the games of his mates, so he is playing it there and he should not. Or it also happened that they played on some computers in the school library that nobody controlled. So it seemed very bad to us; they are playing such brutal games in the school library. (C8)

Complete avoidance of blood in games is difficult and requires the constant attention of the parents, including the difficult control of all the environments in which children are located.

4.1.4 Commercial risks in games

However, playing games also carries commercial risks, when children get easy access to the possibility of purchasing or ordering goods or a link in the game may try to obtain personal data. Some games are also designed in such a way that it makes children buy certain "advantages" in the game for money. One girl (C1) describes a negative experience when playing on a tablet in the next example:

Girl: ... I am afraid that I will buy something there again. Because I just purchased something there and mum almost paid it.

Researcher: And what happened?

Girl: There was a note there 'borrow five thousand, and you can buy a house for two thousand' and I accepted that by mistake, and my mother did something and then everybody phoned us

Researcher: So you have to pay something, right?

Girl: But finally, it wasn't what we thought, it was just a game, but I got really scared.

As we describe later in the sub-chapter [4.1.13 What knowledge do children have and what can they do with the technologies?](#), some of the children can install applications and programs on tablets and mobile phones from 6 years, they use the *Google Play* tool. But within *Google Play* are paid for and free applications. Some of the children in our sample could identify which programs are paid for and unpaid, and install only free applications. In the words of one boy *"I am installing only those games that are for free."* (C9)

However, the risk is that children purchase application by mistake, for example, when a parent has set up automatic payment to a certain amount over a mobile phone. However, how often children accidentally purchase the applications would need to be verified in quantitative research.

4.1.5 Educational games and programs

The use of explicit educational games and programs was stated only for some families. Seven-year-old children rarely stated that they used the technologies for work for school. For example, one boy describes the use of a tablet for a task from national history:

I learned to work with it, even at school, for example, I recently searched on a tablet because we should search for the author of the Czech national anthem and we should find all of the Czech holidays. (C7)

However, some of the games also have an educational function, a girl describes how to use a tablet for learning to play the piano in the following example: *"... a friend of mine taught me the song Pásli ovce valaši (Czech song) a year ago. And I do not even know how to sing it, how to play it, but I knew a part of it, I knew. But I knew it on the piano on a tablet... Now I am trying to just create something nice." (C1)*

However, games whose primary purpose is not a to teach child something may also have an educational effect. Children learn the basic words of foreign language in the games in English, one parent even stated that the younger son learned to read because of the game *"... because of the game, the younger son learned to read at five years, so that he could read the instructions and would not have to ask somebody all the time, 'what is this?'" (C7)*

Some children have experience with educational programs from kindergarten, one family described the use of tablets such as speech therapy equipment: *"(daughter) goes to speech therapy classes, so they got two tablets within a project so that they will use them at school such as for that speech therapy for those children. They have some games for the development of speech." (C5)*

4.1.6 Video watching

Children watch videos on all types of devices that allow it – computers, tablets and smartphones. Watching videos is for children similar or the same activity as watching TV, and so they sometimes describe, for example, the use of YouTube as a "television on a computer". Many families used the playing videos of fairy tales or bedtime stories through digital devices in the need of a child's entertainment, as we describe later in the chapter 4.3 What roles do these new (online) technologies play in the children's and parent's lives?.

However, also watching videos carries risks for children, a boy described that his older brother played him a video with the ghostly figure "Slenderman", and he had bad dreams after watching it: *"It is like a ghost. But when I watched it on my mobile phone, so I had bad dreams... (C6)* Most of the children also stated that they could search for videos via YouTube on their own, which happens even without the presence of parents and which carries other possible risks. For example, a girl who thinks she is "fat" is searching for videos about weight loss via YouTube: *"I found one video about weight loss once, but mum said that it is only for adult women and that I would be even fatter. Mum said that I should not watch it, that it is just for adult women." (C1)*

Watching videos on digital devices carries risks in the form of small children watching inappropriate content.

4.1.7 Looking at web pages and blogs

Looking at web pages and blogs is, compared to playing games and watching videos, less frequent activity in our sample. Children look at web pages relating to their interests, or sometimes even work for the school, as we stated above. For example, the children were

describing looking at pages about animals, or their sports clubs, where they can find the results of the competitions of the club.

Typical is also looking at pages of sports idols or celebrities, one girl even talked about reading the "blog" of her favourite singer, with whom she probably identifies: *"I was looking for Violetta's blog, all of her best buddies. All of her boys. Then I was looking at how her home looks. Then I was looking for Violetta's games and then there was a test - who do you look like. Like who? Like Francesca, Violetta, Tomas, Leon. And I put like Violetta."* (C1)

Children are sometimes looking at web pages together with their parents, for example, when parents are using social networks. As we describe further, during the search for a joint holiday or during online shopping. So web browsing can sometimes become a joint activity of the whole family, which is significantly different, for example, to playing games.

4.1.8 Taking photographs, making videos and working with photographs and pictures

The majority of children in our sample knew how to take photographs, some children how to make videos, one child used its own camera. Some children can search for images or photos and subsequently edit them. Taking photographs and the subsequent viewing of pictures is also often a shared activity between siblings, in the following illustration, a seven-year-old girl describes her activities with a one-and-a-half-year-old brother: *"And then I record a video. But with those photos, I am looking at them with my brother and I want to create an album. (...) And I am taking pictures of mum, sometimes even the whole family."* (C1)

Some children also create videos, which they upload together with the parent to YouTube, as we describe later in the section 5.1.13 What knowledge do children have and what can they do with technologies?

4.1.9 Social networks

The children from our sample do not have social networks yet, but they are aware that they exist and that their parents use them. Children are watching their parents on Facebook when they are, for example, uploading photos from a vacation. As a little girl describes: *"This game is done via Facebook, and I cannot work with Facebook so far. Mum searches there or writes through Facebook; I think. And then she does something else there. I can get to it, but I cannot work with it. And I do not have my own so far."* (C4)

Parents often perceive social networks as a landmark when the Internet begins to be dangerous for children – as we describe below in the section 4.2 How are new (online) technologies perceived by the different family members?.

4.1.10 Other applications used

In this section, we will describe the applications that have been mentioned only marginally. Some of the children described the use of a calculator, for example, for difficult arithmetical problems at school, in the words of one boy *"I use a calculator for some difficult arithmetical problems in mathematics"* (C4)

In some families, Skype is also used (an on line telephony application), where the children described, for example, speaking with grandmother over a camera. One boy even had Skype

installed on his own mobile phone: *"And I also have Skype there. I call, for example, my grandfather. (...) It is calling, and you can see the one that you called on that mobile."* (C9)

No child in our sample used e-mail, but children have a more or less distorted idea for what to use email: *"I do not even own email and my mates also not."* And at the request of a researcher, the girl describes her idea about e-mail: *"It is like our password. Everyone has their own email, and it is like their password. (...) I am writing through email, or when we want to log in to something, so we have to write our email."* (C5)

4.1.11 Television

In our sample, 8 out of 10 families have their own television, the other two families watch TV programmes and programmes for children through a computer or tablet. As we have already said, children do not distinguish between watching TV and fairy tales, for example from YouTube, both are the same activity for them, only carried out through a different device.

Specific for the use of television in the family is the function of the device where the family meets together and watches shows together. This element does not exist if the family does not own a TV. In the words of one of the fathers: *"But I understand that in the case of TV it is an extreme, and because we do not have one, so they (children) do not know it. That television is switched on in the evening, and you can watch whatever is there."* (C7)

Another specific feature of life without television is the fact that the child is probably less affected by advertising, or rather affected by another type of ads within online media. As one mother reflects: *"That it does not have ads, it suits me terribly. It is true that they do not know some shows sometimes, but I think that we manage that successfully, because they will say, 'hey, we were talking about it at school, will we play it?' So we play it (on the computer) and it is mostly some crap."* (C7) Therefore, if there is no television in the family, parents have concerns that a child could have problems integrating into a group because of the ignorance of some of the shows.

In some families, television fulfils the function of a "time organizer", according to which, for example, the evening programme of the children is organized. So parents do not have to "watch" the evening time, in the words of one mother (C6): *"In the evening from a quarter to eight to half past eight is Sponge bob and then Scooby Doo from half past eight. I know that Scooby Doo is over at eight, and we go to have a bath. I know that if I wanted them to have a bath about seven thirty, they will not go, because they want to watch Scooby Doo ... it is for me such that I do not have to watch the time."*

The use of media in families without a TV is specified by the fact that the family were replacing the TV by the use of digital media, but the TV did not organize their time and children did not watch unnecessary programmes. However, this topic would require another research.

4.1.12 Mobile phones

Mobiles can be divided into the so-called smartphones and classic mobile phones. The basic functions of mobile phones of both types are phoning and writing text messages. Some children already do both from approximately six years, as one little girl describes in the context of

communication with her friend: *"I have her number, we write and call each other. And I also have her mum's number and the mum of that friend. Because I do not go to class with that girl friend, just to school, but I do with that boy friend, so if I was sick, for example."* (C5)

The specific function of the mobile phone is that it is often used as a means of child control, for example, when a seven-year-old child goes to school on their own, so they must speak with the parent all the way (see 4.3 What roles do these new (online) technologies play in the children's and parent's lives?). Control and supervision of the child is often the first reason parents buy a mobile phone for their children.

Children are then using the smart phones similarly to tablets and computers – they play games, watch videos and search for information – see above. As the specific use of smart phones was stated once, the use of the answering machine on the mobile phone and the use of the mobile phone as a flashlight in the dark. One child also had maps on their phone and was using them together with their dad for guidance on a trip.

The use of mobile phones by young children carries one major turning point – the mobile phone is the first device that is perceived by the whole family as a personal device of the child, where the child has a right to their privacy. While the tablet is typically shared between siblings (but not always), children in our sample did not have to lend their mobile phones to their siblings, because they were "theirs".

However, the perception of the mobile phone as the first private facility also carries negatives. It seems that parents already have less control over this device from the early age of their children and let the child choose which applications they install and what they do with the mobile phone, as the mother of two sons admits: *"It would be great if it was possible to have just safe and suitable things for them on their mobile phone. But I do not know it unfortunately, and it is not possible, probably. Because a person cannot watch them and control them at every second, what they are watching on video or what they are looking at on the Internet. Things I download on the computer, I can look at them, I think I can see it. But I do not know with the mobile phone."* (C6)

In one case we have experienced a situation where a mother probably did not know about a game that was clearly not intended for children and her seven-year-old daughter had it installed on her mobile phone. In the game, the task was to delete by finger the sheets that covered a seductive woman in underwear. *"You have to have them naked there, those women. But they do not show knickers and bras."* And the girl added that what is fun for her: *"That you can undress it like this. And when you delete it all, so, she is wearing only knickers and bra."* (C1)

So the mobile phones, for some children up to eight years old, become personal devices, over which parents have only limited control in some cases, which carries significant risks.

4.1.13 What knowledge do children have and what are they able to do with technologies?

In this section, we show what the knowledge of children about technologies is. Children varied in their level of so-called digital skills. This overview does not represent what each

seven-year-old child is able to do with the devices, but describes the knowledge and skills that at least one child mentioned in our sample. Knowledge of children also arises, in part, from the above-mentioned description of the activities that children do with technologies.

Children can manage the basic control of technologies, they know how to switch on and off the device (some already from 1 year of age), or charge the tablets and mobile phones. On the other hand, it is interesting that some of the children were unable to turn down the volume on the mobile phone and computer. Children can also control programs on the taskbar, whether on a computer, tablet or mobile phone, they can switch between them and select the program that they want to use. Some children can also use the file manager on the computer.

Children can switch on and off the Wi-Fi on a mobile phone or tablet, some of them can even download applications. As one girl describes downloading in interaction with the researcher: *"First, I have to switch on the Wi-Fi." – "And what is this Wi-Fi?" – "The battery is discharging more and I can download games, and that is all for what I use Wi-Fi."* (C5) Already above in the section about the games, we showed that children can avoid downloading paid for games or applications. Some children can also un-install games and applications from the device.

Children also often use multimedia applications with technologies – they can start a CD or DVD, they can take photos, and they can find, download, and edit pictures and photos. Some children can also use painting programs.

Children can also run a browser, run a new window in it, or close and open the Web pages that they want. So they can find games that they need, or to track the results of their sports team or search for a recipe for their mother.

Children can run YouTube on all devices and search for videos or songs and skip the ads. In the words of one seven-year-old girl: *"Then what I can do with a tablet is that I sometimes play songs there."* (C1)

Some of the children can make videos, and in one case, a child described that, along with their mother, they make a video and then uploads it to YouTube: *"Mum records it on the phone. And then it is somehow loaded onto the computer. (...) Then mum loads it on YouTube or Google."* – *"And what is this YouTube?" – "Those different videos are searched for there."* (C7)

Children learn new things mostly from their parents, in the words of one boy: *"Dad told me, then mum. For example, as I had set that elastic-band knitting, so he told me about two weeks ago, that it is for storing videos."* (C4) Parents do not always teach children directly; children sometimes just monitor the work with the technologies of their parents, fellow students or siblings. Typical is a younger sibling learning to work with technologies from an older. Sometimes grandparents fulfil the role of teacher with the technologies as well. However, children also learn to work with devices themselves, that they are "trying" the things, as a boy mentioned: *"I always find out myself."* (C2)

4.1.14 The connection of the online and offline experiences of children

It is possible to say that the connection of the interests of children and the use of media is very narrow. Children often use media to promote their interests that they have in everyday life. For example, a little girl who wants to become a singer is watching a blog, listening to

songs of a singer and her favourite device is an mp3 player. A boy that "lives" for football is often watching videos of football players and his idol, Lionel Messi, on his computer and mobile phone. As one of the fathers confirms: *"So they do it in real life, what they like, and then they do it on a mobile phone."* (C6)

Some children also consider the Internet a place where it is possible to find out what is possible to do during the weekend or holidays. So children know that digital media can bring enrichment of their everyday life. In the words of one of the fathers: *"They still ask about what will we do tomorrow, what will we do during the holidays... I say; I don't know, I need to find something. And they say, well, look on the Internet if there is something for children."* (C5) Similarly, children in some families, together with parents, do shopping on the Internet and online purchases are a normal part of life for them.

Some children also described that they connected computer gaming with the production of a table game, according to the digital master, in the words of one boy: *"It just occurred to me that we could play it even without a tablet or computer and I drew it."* (C7) Children adapted the computer master of a game, drew it on paper and created their own rules for the table game.

The following sample interestingly demonstrates how the experience from the world of technology can be connected up to the level of the physical needs of children.

Girl: I play this game when I am hungry, and there is nothing to eat, so I am looking at food and I play it.

Researcher: You are playing that when you are hungry, yeah?

Girl: Yeah?

Researcher: And does that help?

Girl: Yeah, it helps, because I already know what I am going to have. And do you know that you can paint a mouth with strawberries.

Researcher: So by that, that you are looking at food, you think about that you want to eat, yeah?

Girl: Yeah? And I will make a chicken up.

Researcher: And how can you make a chicken up through gaming?

Girl: Well, because I put an apple and pear together, so it creates a chicken. I split the bananas into little pieces, and it reminds me of a chicken, well it makes it. And I say, "Mummy, I want chicken for lunch." (C1)

So this little girl plays a game where she creates food when she is hungry, and she is thinking while playing what she will really have to eat later. It seems that the smaller the child is, the less they distinguish between "on the screen" and feelings "inside me".

However, the connection of the use of digital media and the normal world does not occur only in a positive sense. As we have already described above, there can also be risks in playing games in the form of blood and violence, and also risks of commercials. In some cases, children mentioned bad dreams after watching scary videos, in one case, a boy (C6) is scared of the character "Slenderman" living in a wood, which is *"a man dressed in black clothing and has very long arms and legs"*. The boy saw this figure when watching a video, which was switched on for him by an older sibling. His mother then subsequently states: *"The son asked when we were traveling somewhere by car, 'Mum, this is the suburban forest, and Slenderman could live there, right?'"* (C6)

Virtual game characters may cause fear in children, which does not appear only at night, but also in everyday life. Technologies affect the lives of children not only directly, but also as a means of reward and punishment, as we show later in the chapter 4.4 How do parents manage their younger children's use of (online) technologies?

4.2 How are new (online) technologies perceived by the different family members?

The perception of technologies by parents and children can be divided into the following four areas: (1) media as a source of entertainment, interest and relaxation; (2) media as a source of information and a means of gaining skills; (3) media in social context; (4) media in historical context. The point of view of children and parents is usually similar: some topics that relate to the immediate usage of technologies are mentioned by both generations. Such topics are, for example, media as a source of entertainment and media as a source of information. Topics that describe a wider context of the usage of technologies - social and historical context – appeared more in the answers of parents. The interviewed found both positives and negatives in relation to all the four mentioned topics. Even the usage of media for entertainment is a source of the worries of parents: they fear, for example, that their child has problems breaking away from technology and that there might be the possibility of addiction. All the perspectives of the perception of media are summarized in the table 2, along with an overview of related pros and cons, fears, and worries. The role of media in the family is analysed in the next chapter.

Table 2 - an overview of the perception of media by parents and children.

	The positives	The negatives	Fears and worries
Media as a source of entertainment, interest and relaxation			
Children and parents	Fun Easily accessible		"Addiction" Health Unpleasant experiences Consequences of imprudent clicking
Parents	Relaxation Cognitive skills Fun for kids = time for parents	Inadequate experience Inappropriate content	
Children		When it ceases to be fun	
Media as a source of information and a means of gaining skills			
Children and parents	Information about interests		
Parents	Useful information and skills Learning through media is more fun	Inappropriate content The "virtual" world Untrustworthy information	Loss of the ability to learn Unpleasant experiences Inability to distinguish the "real" and the "virtual"
Media in social context			
Children and parents	Communication with distant friends and relatives		
Parents			Cutting down of real contact The loss of social skills Violation of privacy

			Sharing of personal information Cyberbullying Contact with strangers
Media in historical context			
Parents	Digital skills		Inability to get along without the technology

4.2.1 Media as a source of entertainment, interest and relaxation

Children enjoy using technology. They do not talk about technology in general, but they express their opinion on specific media and specific activities they perform with them: playing computer games and watching television. A girl says: *"I like (X-box) because there are lots of fairy tales... (On the tablet) there are lots of games."* (C7) It is important for children that entertainment is easily accessible through the technology; compared to some toys and games which need preparation. The girl describes how to decide what she will play with: *"It depends mainly on our time. Because, for example, a tablet you can turn off quickly. But it takes time to turn on and off the computer. And then it takes a lot of time to find it there - we can go out for a minute instead. But when we have all afternoon free, I do not turn on the tablet, but the computer. Because there is more, and I have more time for it."* (C5) Children, therefore, perceive that it is possible to be entertained through the means of media even if they have little time.

Parents also perceive that children enjoy using technology – it is relaxation for them – and besides, they can develop their cognitive skills: observation, imagination, and logical thinking. A mother describes her opinion of playing: *"In specific areas, it develops imagination, and it develops logical thinking too. Of course, not everything, but they have to find out how to get somewhere, how to do something."* (C9) Some parents, however, consider entertainment conveyed through technology not adequate. *"I think that media never give them the experience (...) that they turn the PC or tablet off, and that's it. For example (my younger son) tells me: 'Mum, do you remember when we found that chestnut?' They never say: 'I played this game and scored these points.' My older son, for example, never told me that."* (C4)

For some parents, the fact that children have fun is not positive itself, rather the consequences of amusing children with technology: at that moment they do not require the parents' attention and the parents thus gain time for themselves and they can devote themselves to their activities without being disturbed. *"When I have an important deadline, computers help me. (...) They (children) also enjoy other things (...) but with the other activities they seem to require more attention of their parents."* The description by the father and mother continues: *"Exactly, they enjoy themselves with the computer."* (C5) Parents note that it is sometimes easier to amuse their children with technology than with other activities.

Media can be viewed as one from many toys and children activities while it does not have any privilege: children sometimes play with media, sometimes with their toys. A mother describes the usage of technology in her family: *"We don't have a TV, so we use a notebook for watching fairy tales. From my point of view, I like watching it as a passive entertainment because for active entertainment, it is nice to use other sources than those multimedia ones. Just games, outdoor activities, sport and so on."* (C3) Usage of media, therefore, can be supplemented with and balanced by other activities.

Other parents define using technology as a different type of activity for children that has its specifications. Usually, they stress that other activities give children something that the technology cannot provide. *"I think he should play with toys more. (...) To make an improvement in motion with toys; hands, eyes, perception; rather than some clicking and flashing. He does too much. What does it give him? It gives him nothing."* (mother, C1) From this point of view, the usage of the technology seems to be negative for children, and parents worry about their normal physical and psychosocial development.

Other parents refuse to see technology as entertainment for children, their opinion is that technology is not a toy, but a work tool, as a mother describes: *"We try to make children see computers primarily as a work tool, as a tool with which you can learn something, but of course there is also a sort of fun available, but it is limited to a certain extent. And rather exceptional."* (C3)

Parents mention that in the context of media, kids do not like only games, but also other elements. Some of the older kids are also interested in ways the technology is used by parents. A father describes his son's behaviour: *"Whatever I'm doing with it, he asks 'what are you doing? Why are you doing it? What is it good for?' everything interests him. (...) When I'm having a phone call, so he knows that I'm on the phone, that is simply a clear thing, but when I have it for a long time, like this (he is demonstrating it), and I'm doing something, then he immediately comes and asks 'what are you doing? What do you have there? What was that?' He saw something, yeah, as I moved between applications or Internet banking. (...) Everything concerning computers and mobile phones interests him."* (C2)

Some children observe their parents at work like that. Younger children are attracted to the shining and shifting elements on the screen.

Children are interested in media in different ways: they enjoy using them, and they also enjoy watching others using them. Parents recognize this and fear that children may use media too much because of that. Parents also mention possible negative consequences of the excessive use of media on the children's health. *"I just don't like it. It seems to me that it must hurt their eyes when they still just stare at the same, (...) they totally lose track of time: they can feel that something took five minutes, but it can actually took an hour."* (C6) Too much interest in media could result in spending large amounts of time with technology, and the child would then have no time and space for other activities, even though they like them too. Eventually, technology might become the only entertainment of the child. Parents are afraid about the ability of the child to stop using technology themselves, to break away from it. In this context, parents even use the term "addiction".

Children also speak about these parental worries, especially in the context of negative impacts on health. The term "addiction" is associated with the constant use of technology, as shown in the interview with two boys. The older boy describes an addiction: *"Like we're still playing on it."* And the younger one adds that he is addicted to one game because *"I really enjoy it."* (C7) Some parents then fear that the interest of children in the technology will grow in the future.

Both parents and children notice that even though the technology is used for entertainment, at some time, the feeling of entertainment turns to uncomfortable. A girl describes a situation that occurred while playing a computer game: *"I'm afraid that I would buy something there again. Because I bought something there, and my mother almost paid for that. There was a note there 'borrow five thousand and you can buy a house for two thousand' and I accepted that by mistake and my mother did something and then everybody phoned us. But finally, it wasn't what we thought, it was just a game, but I got really scared."* (C1) It happens to children that they 'misclick' and the device starts to behave in a way they do not understand. Parents think that children "are just clicking" and they do not realize the consequences of it.

Children describe as uncomfortable those situations when they want to have fun through media, but technical problems they cannot solve spoil or delay the fun. *"My mobile phone was completely flat, and I worried that it was because of the mobile, but it was caused by the charger. So, I couldn't play at least a week or so. (...) Yeah, I was angry a bit."* (boy, C6) Apart from flat batteries, they also mention applications getting stuck, long loading of games and advertisements before the actual launching of games.

4.2.2 Media as a source of information and a means of gaining skills

Media provide information and skills for children not only through means of active searching of information on the internet and using educational applications, but also through passive receipt of information from television, web pages, and social networks.

Children appreciate that through the technology, they have access to information that is connected to their interests. It reflects the opinion that the technology is both useful and entertaining.

A positive characteristic of the technology emphasized by parents, is the searching of information for educational purposes, which is so far quite exceptional among 7-year-old children (see 4.1 How do children under the age of 8 engage with new (online) technologies?) but it will increase as the school gives children more demanding tasks. Parents appreciate that children can develop their interests through media (see 4.1.14 The connection of the online and offline experiences of children), but only if parents consider these interests of benefit to the child. They see other pros in the fact that special educational programmes, and learning through media in general, are more entertaining for children than conventional education. *"When my daughter was younger, she learned to write on the computer, she liked that very much. It means that we opened Word, and I told her, for example, 'A' and she looked for 'A' and wrote 'A'. And then she also tried to write words... She was like four, five years old?"* (father, C5) On the other hand, some parents find the way of gaining knowledge through technology negative because children lose the ability to learn in the traditional way, as is described by a mother: *"When they are older, they won't learn because they will find anything – homework or just anything – on the Internet."* (C1)

Parents are aware of the fact that, apart from useful information, media can also provide information that they consider not suitable for children. In this context, they mention violence and pornography contained on web pages and in games; extreme opinions; but also usual news. *"It is not good to read news and then cry at night that a war threatens somewhere,*

or that a little girl died somewhere else.” (mother, C1) Parents think that by highlighting negative news, media creates a negative view of the world and society. They fear then that seeing negative content can raise negative emotions in children such as sadness, fear, disturbance, and shock.

Some parents speak in this connection about the fact that technology creates a “**virtual world**” different from the real one. A mother depicts her idea of how children can come under this virtual world: *“For example, children make up a creature, and when the creature is made into a film, it is confirmed. (...) Maybe in the film it looks real enough. Slenderman, it is normally made videos, but it looks real. If I were a kid, I would probably believe it too. (...) It is bad that it is possible to film it in the way that it looks real so that a small kid really doesn’t know whether it is real or not.”* (C6) Parents suppose that children at this age are not able to distinguish the virtual world from the real one if they do not have any clues.

Parents fear too that children are not able to judge the credence of information that they encounter through media. *“The most dangerous is maybe the fact that a person can judge the relevancy of the source only with great difficulties. And for each item a person is looking for, there are a lot of opinions of different quality: some by capacities, but some may be by somebody that morally failed, and both types of opinion can look reliable, which a person at some age and with some education is maybe able to distinguish; if they try enough. But I believe that this is very dangerous for kids and young adults because they are simply not able to make out the difference.”* (mother, C3) Parents fear that it is very easy for children to come under extreme opinions, but this fear is meant more for future, when children use the technology as a means of gaining information.

4.2.3 Media in a social context

Parents are aware of the fact that social relationships of children affect their attitude towards the technology, especially reasons for owning and using the technology (see 4.3 What role do these new (online) technologies play in the children’s and parents’ lives?). According to parents, their children want to have access to similar technology as their friends, and they want to use them in a similar way. *“I believe that they don’t choose games according to anything else but their friends’ tips and tastes. Angry Birds is extremely popular. I do understand; it’s a good idea. And of course, they enjoy it even more because it fits the mainstream taste.”* (father, C7) When children play the same games as their friends, they can share experiences and thus strengthen their relationships.

Parents see in their younger children that sometimes they use the technology only because other members of the family use it. A father describes as his younger daughter imitates her older brother: *“He is a role model for her. He uses the computer; she wants to do that too. He watches a documentary; she wants to do that too.”* (C2) In some situations, the motivation for using the technology thus can be an attempt to do the same activity as a close person.

Parents and children also describe an opposite view, namely that the technology affects social relations. The technology affects relationships on the one hand directly, for example it enables to maintain them, as a boy describes: *“When you have a friend from the Czech*

Republic as far as, for example, Prague, it is good when you can phone him." (C6) The ability to communicate with distant friends and relatives is appreciated both by children and parents.

On the other hand, parents perceive negatively the indirect effect of media on social relations. The usage of media in general takes time and from their point of view it reduces the time for social interaction with other people. In the future then, they fear that the usage of communication media may replace real contact with people as such. *"I'll try to make it work like that – 'Feel free to have a profile, make arrangements there with guys, etc., but it cannot happen, that instead of being picked up and going out with these guys, he spends two hours on the chat."* (mother, C3) Parents are worried that children might, because of the excessive use of communication media, lose the ability to deal with people face to face.

Parents realize that with media new specific ways of interaction come such as social networking and the possibility of communicating on the Internet anonymously. They believe that for children at this age it is difficult to fully understand these ways of communication, as a mother describes: *"They see when we send an e-mail that it is like a letter. (...) But they do not care about it."* And a father adds, *"Not yet. The principle goes beyond them. (...) They know that we correspond with friends and other people, but they aren't interested in the way we are doing it (Facebook, e-mail, etc.)."* (C4) Children do not use media for communication purposes yet (see 4.1.9 Social networks), but when they start in the future, parents worry that they will be exposed to many risks. *"Because those games they're playing aren't interactive; and they aren't communicating with other people; for that, they don't expose their intimate affairs, actually. It's far more, far more dangerous these social networks, of course. (...) I think that they can be hurt by that, that their classmates can be evil, and exploit certain information to their disadvantage."* (mother, C9) Parents also have a fear of invasion of privacy, sharing personal information, cyberbullying by peers and contact with strangers who might want to hurt the child. These risks are connected, according to parents.

4.2.4 Media in a historical context

Parents perceive that new media was not always there, they did not experience them in their childhood. For some time, the media started to spread in society, and their descendants are already growing up at a time of pervasive technology. As a mother describes: *"They would probably find it hard to imagine life without the media, because it has been there since their childhood. They hardly can imagine when we tell them that we had a black-and-white TV, and we did not have a phone at home, or that there were no mobiles."* (C5)

Parents believe that, compared to their generation, children learn to deal with technology in a more intuitive way. *"What I show them, they take completely naturally. And they do not learn it, they see it, and they are doing it,"* says a father, and he adds: *"the devices are made like this."* (C2) Therefore, the nature of new media itself contributes to the fact that children can easily learn to handle them.

Nowadays, according to parents, use of technology is inevitable. As a mother explains: *"You need a mobile phone in case anything happens: whether it's because of the child, because of doctors or a water leak, one simply needs a mobile."* (C1) And in the future, the situation will be the same. It is important for parents that their children embrace digital skills, and they

appreciate that children can learn it naturally through the use of the media. *"In theory, you could paraphrase that 'as many programmes you know, as many times you are a human being' (refers to Czech proverb about foreign languages). I think that computer literacy, in the largest possible extent, is an ideal, and it is possible to use it also just for fun."* (mother, C3)

But at the same time they fear that their children start to rely on technology too much. A mother describes it like this: *"I am horrified when I see a young person coming to a stop and instead of checking the timetable they immediately start Googling the departure... And I think to myself that when the battery is low or if there is no signal or somebody steals the mobile, then the person wouldn't know when the vehicle departs."* (C7) Many parents thus find it important that their children are also able to manage without media.

In summary, the children perceive technologies rather positively; they are having fun with technologies, but they also reflect some of the concerns and worries of the parents relating to the use of the media. Some parents perceive the technologies positively; they see their profit for children. Others directly allege that they do not see the benefits of technologies for the lives of children, but on the basis of the analysis, we have identified various reasons why the same parents allow and tolerate the presence of technologies in the life of children: for example, because of the interest of the children in technologies, social pressures on owning the technologies, or because of secondary gains, when parents obtain time for themselves through entertainment of the children using technologies.

4.3 What roles do these new (online) technologies play in the children's and parent's lives?

Technologies play, in the lives of children and parents, a variety of roles that make certain aspects of life easier. They fulfil a role, for example, in the maintenance of contacts, they are used as a means of entertainment, shortening leisure time, protection and control of children. They also have a practical, educational and socializing role.

Technologies are perceived as a means of using the time in which parents assume that their children could get bored. Media fills the role of "filling leisure time", when in different life situations, such as vacation, travelling, waiting at the doctors, etc. it serves children for fun and completing various (typically shorter) time "holes" and downtime. *"This child entertain itself ... these mobiles and so, when travelling, when there is a long period of waiting."* (mother, C10) Parents also use technologies as a means of entertainment in everyday situations when they need to calm down and keep a child busy. In the words of one single mother: *"When I see that he is bored and will begin to be annoying, and I know that I do not want him to go to sleep, and I need to keep him awake, at that moment I switch on videos."* (C1) Children also perceive this role. Some reflect the specificity of the situations in which its fulfilment happens. For example, when a sibling is asleep, or in the words of one girl: *"We cannot play on it all day, but we can play on it for a while in the afternoon, when there is bad weather outside, so that we did not get bored."* (C5) It seems that boredom is often perceived by parents as something that needs to be driven away, for example, by using technologies.

Parents also describe the role of technologies as a means that makes life easier, if they need to do other activities themselves. So it is possible to "put children to one side" with media,

as a mother perceives: *"At home, when I need to do something quick and I need to kind of put her to one side. If I say it openly, in fact it is putting her aside."* (C10) Other parents call this role as "watching". So technologies represent the functions that parents or other people meet in different circumstances. *"When I needed to go to the store opposite, which was a matter of ten minutes, fifteen minutes, and I did not want to take all the children with me, I put them in front of the tablet. For example, I went to the drama club for the boys and I left the daughter there, I always told her, today we are watching Pat and Mat or today are watching Bob and Bobek (characters from Czech fairy tales)." (mother, C7)*

So, for example, technologies make life easier for a single mother that is on her own with children and so represents both parents: *"I take it the way that I am not lazy, but to entertain children, that I would do something, so I know that this works for a while. There is nobody else here that would entertain them, or take them somewhere for a while, as I have to work for two."* (C1) The "watching" role of the media is, in particular, used in situations when the parents are working, taking care of the household or doing other activities that require concentration or the distance of parents. *"We need to clean up something here, or to do something... So the children go and watch a fairy tale."* (father, C8) An important aspect of the "watching" role of the media is that in these times children do not require the attention of parents (see [4.2 How are new \(online\) technologies perceived by the different family members?](#)) However, its goal is often not just to have peace of mind from the children, but also to choose a suitable activity with digital technologies. Therefore, it is considered a role that has multiple aspects. In the words of one father: *"Actually in something it can make it lot easier when you have some free time and also by that they are (children) engrossed (technology) ... but at the same time, I have to say that we do not play anything to the children, whether it is TV or a computer, just in order to have peace of mind. Any minute of peace, I like it very much (laughs), but we do not do that 'switch on the computer and...', that in any case."* (C2)

Some parents reflect the educational role of the media. Children use media in order to learn new things. One of the fathers mentions that his daughter learned how to write using the computer, as we show in the part [4.2.2 Media as a source of information and a means of gaining skills](#). The educational role is also in the development of already obtained capabilities, such as reading, as reported by one mother: *"I would rather say to my son to find it (on Google), because I know that he will read. That he would not read a book to me."* (C4)

Another aspect is the practical role of the technologies when parents and children are using them for assistance and highlighting the usefulness of their existence. In the words of one father: *"I am trying to use the technologies that they would help. So whether it concerns some lists or a search of public transport, or some maps ... The children know that it can be used like this."* (C8) We analyse the wider context of the media as a tool in part [4.2 How are new \(online\) technologies perceived by the different family members?](#).

Even if parents are not in favour of the use of media, they consider their use as important, that the child would be part of a group of children of the same age. In the words of one of the mothers: *"I am not very inclined to it (ownership of technologies), however, when I see that all the other children are doing it, so I do not want my children to be "out". I think that they should*

somehow keep up with children of the same age." (mother, C9) So the technologies fulfil a socialization role, when their ownership ensures that the children are not "out" and are part of the group. *"Because they have a mobile phone, so they are not behind the other kids."* (mother, C6)

The role of mobile phones/smartphones is perceived differently in the context of other devices. In addition to the already mentioned role, they perform the function of maintaining the contact of family members with each other, the role of the control and protection of the child. A mother can let her daughter go alone to the school thanks to the use of a mobile phone: *"She walks to school alone in the morning, so that I would not have to wake up my son. And she goes in the way that we have her on the phone. So I am speaking to her all the way, we have it out loud."* (C1) So parents can know about the child, even if they are not physically with them: *"The fact that he started to go alone to clubs, we consider it good to know about him, to be able to call him."* (father, C8), and they can control the children: *"For me it was this (the purchase of phones) so that I would have them under control."* (C6) Parents and children, however, may perceive this role, differently. The words of one mother illustrates this, who would like to introduced phones for control, but perceives that children want a phone just for fun: *"Because for them it is not about telephoning, but they are interested in games. And so I am afraid. We moved and they travel to school, so the phone would be useful, we are discussing it."* (C7) Some of the children are aware of the control and contact functions of technologies. One girl, in addition to games, uses a smart phone to be in contact with her parents even when they are not together: *"For example, if we are sometimes for a minute there (visiting) alone, so I take the phone ... If mum does not come for a long time to go, so I call her and ask her what is going on."* (C5)

As we show above, the technologies fulfil different roles in the life of families with young children. Although there are different types of technologies, it is possible to say that parents and children, from our small sample, likely see the role of technologies in their lives more positively. However, this fact is of course influenced by the choice of families. For example, in the sample of families there were not families that do not use technologies, or forbid technologies for children completely so far – these families would surely have seen the role of technologies in the life of family differently.

4.4 How do parents manage their younger children's use of (online) technologies?

In the question of establishing rules and opinions on the topic, parents differ from each other. Some parents prefer explicit rules for using technology, which they set up on the basis of various principles. Others do not feel that they establish any rules and rather state some implicit norms that are connected with the usage of technology or with an absence of rules. Both approaches are further described in detail.

Parents also connect explicit and implicit rules with upbringing in general and they put them in the context of a normal (offline) world. Therefore, it is possible to notice that the rules for the use of technology by children originate on the basis of the general values and belief of parents. Educational principles also differ according to various perceptions of technology by parents (see 4.2 How are new (online) technologies perceived by the different family members?).

4.4.1 The explicit rules for using technology

Clearly stated rules mainly regulate children's activities in the context of their normal lives. In the words of one of the mothers: *"I think that my older son still needs a lot of moderation of his relationship to entertainment. He is absorbed in TV or the computer so much that 'Well, (his name), dinner, cleaning teeth and bedtime' and somehow the day is gone"* (mother, C3). Rules are clearly structured for both children and parents. In connection with rules, technology is usually used as a means of reward or punishment. *"My son knows that the rules are clearly laid. He knows that if he fulfils a task, a duty; a reward follows. But something bad, such as a bad mark or a letter from a teacher, means no reward."* (father, C2) Children perceive these rules too. They know that if they are nice, they get a reward in the means of using technology; and if they are bad, there is a punishment in the means of a ban on technology. As a girl states: *"For example, when I am naughty, mummy forbids me to use the mp3 player for four days, till I behave in a nice way."* (C1) And a boy who knows that his father will lend him his mobile phone as a reward: *"Only as a reward... For example, when I get A at school."* (C2)

Some parents also set explicit rules on the time of the use of technology. The usage is limited by setting the time that can be spent using media, but also by the number of fairy tales or games: *"It's been a rule now. We say 'one more game.'"* (father, C4) The rules regulating the usage of technology also fulfil a preventive function for some parents: the regulation is perceived as the prevention of an addiction: *"That's why I give them only these little doses, so that they are not so addicted to it."* (mother, C7) While the regulation of usage can also fulfil the above-mentioned function as a means of reward and punishment: *"A carrot and stick in this case... the regulation of hours they spend with it."* (father, C7)

Some rules are made into **"rituals"**: they take place at some intervals or during particular events. *"Boys choose their evening fairy tale on YouTube - each chooses one. This is a minimum we have every day... It's a kind of ritual."* (mother, C3) Children perceive these situations as illustrated by the next example in which a boy is asked by a researcher when he can use the PC, and his answer is: *"When father isn't at home and my younger brother is having a rest."* (C3)

Rules are also set up in order to monitor children: parents for example check the history on the computer and the games children play. They then regulate the children's playing according to set rules. Parents refuse games that contain violence or which do not correspond to the children's age. *"We observe which means of expression is used in the game. Blood, brutality"* (father, C8) Monitoring is done through checking the game or sometimes through reading the game's review. A mother (C9) says: *"When I see that there is a game I don't like – some fighting – I tell him that we won't play this game. Because I'm trying not to make it aggressive for the kid... I come to have a look, what is there, if I don't like it, the game is over."*

Some parents claim that rules evolve intuitively and that they are made to fit a particular situation – nothing prepared beforehand. *"It's done naturally. Instinctively. It's not like that I would think that this is OK for my children and this is not"* (C1).

Rules sometimes evolve after consent with an authority from outside. A mother of a boy with Asperger's syndrome consults using technology with a psychologist: *"Well, I would rather strictly ban technology all together, but a psychologist at a special education centre for people with autism advised us not to take it away from him completely."* (C3) Children also perceive rules set up by school. Most frequently, they mention a ban on mobile phones in the lessons. A girl says: *"I have to switch off my mobile phone because my teacher said that if don't switch it off, she will ban it and give it back to me when I start switching it off."* (C1)

According to parents, rules that limit children's usage of technology also apply to themselves. For example, they have to reduce watching programmes unsuitable for children; a father says: *"It doesn't mean only a positive limitation of him, it is also a limitation of me. When there were documentaries on CT2 (Czech television channel) about WW2... I was interested... But my son was sitting there and seeing it very differently... So I had to switch it off, I had to switch to another channel."* (C2)

4.4.2 Implicit rules for using technology and the lack of rules

Implicit rules are connected with how technology is perceived by parents (see [4.2 How are new \(online\) technologies perceived by the different family members?](#)). When the usage of media is only one of the options among other children activities, it is not necessary to set any special rules. *"So, it is neither a punishment, nor a reward... It is a standard activity... Like reading a book or playing a board game. Simply, we agree that we're going to play a board game, or that the girls are going to play on the PC"* (father, C5). Technology can be a reward also in the sense that it is something "rare", **not as a rule "quid pro quo"**: *"For our kids, it is an experience, a real reward, something else – that they don't have it all the time. As we don't eat ice-cream every day... it is a reward in the sense of being rare, not quid pro quo."* (father, C4).

Parents sometimes combine explicit and implicit rules and use them in the dependence on the context and current need. For example, they do not need to make rules about time spent with technology if there is no reason for that and if the child does not seem to be "addicted" to it – in the sense it is seen by parents: *"But if I saw that my child was addicted to it, I would stop it. So far it really seems that there is no need to deal with that."* (C9) If the time spent with technology seems reasonable to parents, they do not set up any rules to regulate that. As

a mother states: *"I know that in some families it is a given that, for example, you can play every day; but it is not like that in our family, because they do not require it like that, so that we, adults, don't need to limit them; that we feel that it is OK – in inverted comas – "the time spent using technology."* (C5) Thus parents do not need to monitor and set up rules if they feel that the **children's interest in technology is normal**. An example given by a mother that compares her two sons and explains why she limits more her older son: *"Concerning computers, my older son has always seemed to be almost addicted to it... Which is not the case of the younger one at all. So I don't have to limit him so much because if he watches something or uses the computer, he comes after a while saying he's had enough."* (C3) The tendency to set up rules thus sometimes comes from the perception of using technology by the child itself. Parents tend to interfere more if the usage of media seems to be harmfully leading to an addiction, a fascination of technology or unsuitable usage of it.

Even if the rules are not explicitly set up, children do understand the implicit principles. Even in those families without explicit rules, parents state that children are aware of and follow these **"automatically set up"** principles: *"If they want to use technology, they ask us 'May I switch on the computer?' 'May I play on the tablet?' It is like that in our family that they have to ask if they can use it at that moment. It was somehow automatically set up, there has been no problem about that."* (C5)

In some situations, parents can see rules as an obstacle. As is claimed by a father of two children to whom the rules about time spent with technology seem like slavery: *"We don't have any strict rules about who will use technology and how. It would be difficult to follow them, the rules... it's not worth setting set them up because we would be slaves to them ourselves."* (C8)

4.4.3 Explicit and implicit rules for using technology in connection with the offline world

Parents usually connect rules and their setting up with the context of bringing up and the offline world. Technology is thus, in some respects, not perceived specifically, but as a part of the family course of events. A mother says: *"Of course, the computer is not the single thing we use as a reward, or eventually, as a punishment; but it is one of them. It's more like that, that there are some general rules and media are part of them."* (C3) Some parenting styles are based on the existence of rules. Respect to rules in general is thus an essence for setting up rules also for using technology *"Then it is about education, I think. That children must respect that... we tell them this yes, that no. There are rules. And I think that in our family, we obey rules, so it is OK."* (C4) Elsewhere, parents perceive parallels between the online and offline environment, and apply the rules from the offline world to the possible problems in the online one. *"Now, we cannot do anything... they aren't in the phase of the demand of social networks yet, so it's just a waste of time to tell them something now. Now we are telling them not to get in a car with a strange person"* (mother, C5). They also mention the fact that it is good to bring up and generally direct children in that way so that they are capable of facing the risks of the online world: *"It is not unreasonable to lead children to critical thinking from a very young age because when, at the age of fourteen, they read superlatively manipulative neo-Nazi articles, and feel that this is it; then at that age it can be a period when they don't want to talk with me about that any more."* (mother, C3)

Rules and their setting up are also connected with **parents' values**. They establish rules according to these values, and teach children various principles for using technology. One of the already mentioned values is computer literacy, which is perceived as one of the most important skills nowadays. Therefore, parents educate children in that: *"I say 'We'll write this here', I just say what I write and then I show them how I click on the particular panels, pictures, etc."* (mother, C3) Parents sometimes do not educate children directly, but they just let them watch how they work with technology. Children thus **"acquire" principles** of usage: *"So far we haven't taught him anything. Rather, he's just found out that it is really possible to Google something."* (mother, C9) Another educative topic is social contact on the Internet, and parents teach children what to be aware of: *"Quite recently, we've discussed that children put their photos on Facebook... or that some of those freaks acting like little girls and they search – in inverted commas – their peers and then there are those problems, we've discussed that; that there are some uncles, some men, in the world, who are bad"* (father, C2) In some families, children are also taught about other advantages and risks of the Internet in general, such as addictions, for example. Parents reflect the fact that the usage of technology both has its positives and negatives: *"New technology, possibilities, Internet – it exists, familiarize yourself with that, but be careful, there are some negatives... that a person can be addicted to it."* (father, C2) Besides that, parents emphasize that, regarding the usage of technology in the context of other activities, it is important to offer some options and show different ways of spending free time. Usual activities are after-school clubs, sports, family trips and visiting friends. A father says: *"It is not a priority (that technology). I think that they will work with a computer so much in their future, so why bother them already now? We prefer to go out; when my wife is at work or so in the summer, I take the kids and we go to the playground, to the slides."* (C4) Another principle based on values is teaching by example: when parents see the importance of being an example for their children: *"The environment at home is educative for them: when they see that we don't play computer games, that we use it for work, not for entertainment."* (father, C8) In the principle of teaching by example, some parents see the biggest opportunities to mediate the usage of technology for children. A mother says: *"The computer is primarily a tool for work, secondarily a tool for entertainment, but still, we parents, spend a lot of time doing some other activities... I think, that if the child is brought up like that and sees a sensible approach towards technology, it gives them more than if I retell it maybe every second day."* (C3)

5 Method

5.1 The sampling procedure

For gaining participants six primary schools in South Moravian region (territorial administrative unit of the Czech Republic) were addressed with a request to forward invitations for participation to students of 2nd classes, these then delivered it to their parents. Approx. 350 invitations, with a brief description of the research plan and the researchers' contacts, were handed out this way. 30 families registered themselves to participate in the study and in 10 of them an interview subsequently took place. The parents, who expressed an interest about the research, received by email informed consents to the children's and parents' participation in the research. The consents included information about the research, the progress of the venue, the time of the duration of the visit, the risks and benefits of research participation, the rights of the participants. Consents summarized too the basic ethical aspects of the research, such as confidentiality and data anonymity. Parents received gifts for the children provided by the Joint Research Centre and a reward in the amount of 1 000 CZK = approximately 37 EUR, for participating in the research.

5.2 The sample

Because this research focuses on the use of technologies by seven-year-old children and their siblings, families were interviewed where the child uses some technological equipment regularly, at least once a week. We tried to diversify in other aspects, in terms of the socio-economic status of the family, family constellations (the number of siblings, younger and older siblings, single mothers, etc.), the education of the parents and the sex of the child.

We describe the participating families in detail in the part [3 Families](#). We will summarize their main characteristics here. The parents' age ranged from 35 to 41 years. Seven families are complete; three are single mothers. All parents have Czech nationality and live in the South Moravia region. Their education covers a spectrum from apprentice to university. The income of the families also varies from under half of the national median to the national median (incomes were counted according to the number of members living in the household, for a two-member family the national median is 24 000 CZK – approximately 888 EUR).

The age of the children in our sample is seven to eight years; we conducted interviews with them and their siblings, if it was possible (some of them were not present and younger siblings to approx. five years were staying with a parent). One child is an only child, five of them have younger siblings, two of them have older siblings and two of them have both older and younger siblings. The age of siblings ranges from five months to 20 years. One family shares the household with other relatives. The nature of the sample allowed us to explore in depth the situation in families where children have regular access to technologies. However, the obtained findings cannot be extended to the families in which the media are not present at all, or the children do not have access to them.

5.2.1 Specifics of the Czech context, and of this sample

For future international comparison, we will describe the specifics of the Czech context here. Before compulsory school attendance, children in the Czech Republic have the possibility to attend kindergartens, the educational facilities for children from the age of three years, most of them are unpaid, private are paid. Compulsory school attendance begins with the 1st class of primary school, which should start after the child reaches six years of age. Enter to the 1st class may be postponed if the child is not physically or mentally advanced to that age (the director of the school decides about this fact based on medical and psychological assessment). During the first school year, children learn to read and write in their mother language among other things.

Children in our sample visit the 2nd class of the primary school and spend 18-22 hours in the school per week; this weekly hour load is evenly divided into five working days. The schools have an obligation to educate their pupils in 2nd class in their mother language, mathematics, the basics of understanding the world and art, among other. School hours starts usually at 8 a.m. Children learn at school, and also receive specified homework to handle outside school. The schools can allow an individual study plan for gifted children, which speeds up or enriches their going through primary school. Children can attend after-school club after school, which are educational facilities established mostly by (but not necessarily) the primary schools. Various kinds of leisure centres operate in the larger towns. These organize so-called clubs for children, which are regular professionally guided courses developing the interests of children, in particular in the areas of sport, scientific knowledge and artistic activities. Some clubs are narrowly focused (e.g. playing on a specific musical instrument, a particular sport), others are complex and the children do different activities in their course. Visiting the after-school clubs and clubs is paid for, but at the same time affordable to most families, many of these institutions are subsidized by the state.

The Czech Republic can be characterized also in terms of the use of technologies by children. According to the classification within the EU Kids Online project (Livingstone, Haddon, Görzig, & Ólafsson, 2011), on the basis of data from children aged 9-16 years and their parents, the Czech Republic is, in comparison with other European States, a country where children use the Internet above average, in comparison to other European countries, and also meet online risks above average, but at the same time, use above average the range of benefits that the Internet brings.

5.3 Implementation of the protocol of observations

Interviews with participants of the research took place in the period from 22nd of September to 9th of October 2014, at their homes at a time that was suitable for them. At the beginning of the interview, the two researchers presented briefly the purpose of the study, and the starting activity from the book *Activity Book - Play and learn: Being online* took place with all of the members of the family. In this game, in cooperation with the parents of the children, the children had the task of using stickers to introduce the progress of their usual day. The children sometimes focused on the course of the day, because it was easier for them. This opening part of the interview lasted about 30 minutes. This was followed by half-structured

individual interviews, when one researcher spoke with a parent or parents and the other with a child or children. With parents and children, the topics related to the themes of this research (see [2 Introduction](#)) were gradually discussed.

The children had, after the agreement of the researchers with parents, available the digital technologies that they use (most often a tablet or smartphone), so that they could directly show how they control the device and what their favourite activities were.

The card game, a set of cards with pictures of different media devices (tablets, laptops, PCs, smartphones etc.), and traditional toys such as dolls or cars were also used during the interview with the children. The card game was used in various ways at different places of the interview, according to the direction of the conversation with the child. It sometimes served as a so-called "warm-up" activity at the beginning of the interview, when the researcher played snap with the cards of this game with children. The game was always used for orientation, which devices the children know, which they use and what they do with them, the pictures on the cards served as a springboard for conversation. The game was sometimes used for orientation about which place technologies have among the other toys, when the child should sort the cards by popularity. If it were possible, other toys of the child were directly involved physically or in the form of an image in the sorting.

The parents were asked for factual information, i.e., age, education and nationality of all members of the family, the type of school or the educational services the children visit, the parents' employment and the income of the family, at the end of the interview. Individual interviews with the children and parents were between 35 and 85 minutes (60 minutes on average).

5.4 Recording and implementation of the protocol of analysis

The joint introductory activity and individual interviews were recorded on a tape recorder. The researchers made notes during the interviews, and then wrote a record about the interview setting, i.e., where the interview took place, the events that occurred in the course of the interview (e.g., a younger sibling moving between the interviews with the child and parent) and the circumstances affecting the interview (e.g., health problems of the child). Also the main topics of conversation were captured in relation to the research themes and the circumstances, which were not transported to the sound recording, for example, an observation of the children's treatment of technologies.

Individual interviews with the children and their parents have been transcribed and anonymized, stored on a shared drive, and then the main areas have been identified, about which parents and children talked in relation to the research themes. On the basis of these areas, the coding system was developed, which was, after a test of coding, further edited by researchers during the next discourse. The following areas have been encoded: type of technology/toys; time spent with technologies; property of technologies, who uses them, and where; activities of children and parents; game type (characteristics and notes), digital skills; favourite technologies; favourite offline activities; interconnection of online & offline; current perceptions; perceptions of the future; active mediation (behaviour and rules); perceptions related to mediation (opinions about parenting and values).

In the coding process, the researchers assigned the specific statements of the conversations to the above-mentioned topics. Then a thematic analysis of statement, in the context of the scope, took place. The specific topics about which children and parents spoke, and that we describe in the chapter 4 Findings, were identified through comparing and searching for connections, similarities and differences.

6 Discussion

6.1 Why might the results have turned out that way?

The results of our study can be seen as an explorative probe into the effect of technology in the life of families, because only a small percentage of studies in the European area focus on children aged 0-8 years, similarly parents and children together are involved only in a few researches. Similarly, the mediation strategy of parents and the family context are neglected topics (Ólafsson et al., 2014). In our research, we found that the main activities of children aged 7-8 years of age with digital media are playing games, watching videos, and, in some cases, using their own smartphones, which is, in accordance with the Finnish studies, focused on children aged 0-8 years of age (Kotilainen, 2011, cit. according to Ólafsson, Livingstone, & Haddon, 2014).

The sample is in certain respects heterogeneous because of the research pilot nature: it consists of only families from a larger town, the children are attending traditional schools, and, despite the fact that the incomes of the involved families vary, all parents were employed, or mothers on maternity leave. This could cause the requirement for regular use of technologies by the children, which excluded families that do not want to provide technologies to children from the selection, or that they cannot afford them from their income. The results of our research need to be understood with regard to the selection of this sample – we examined in particular the family where the technologies are used, and their role is more likely seen positively. It could be otherwise in other types of families.

Among our parents were present people that actively used technology during their youth, and also people who did not use technology until adult life, which might be reflected in the diverse view on technologies. This will change in the future, when parents will become people with a richer experience of using technologies.

It should be noted that the seven-to eight-year children speak only about their specific experience; they are not capable of abstract thinking yet. If children had available, for example, a tablet during the interview, we could not learn about their skills with the computer. Also, their perception of the technology is based on their specific experience, and the awareness of the children is based on the rules of how clearly parents communicate them.

6.2 How could the study be improved?

The current design of the study tried to capture the use of technologies by children, and also their connection within a family context. There are not many studies about this topic; therefore, this study was relatively broad and especially uncovered themes with which future research should deal.

We chose the way of reaching through schools to obtain the participants, and it was not possible to affect which kind of people would be interested in participating. The researchers had only minimal factual information about the use of technologies in a given family before visiting them. The involvement of other types of obtaining participants, for example, the

snowball method, could bring more information about the role of technologies in a given family at the beginning, and could therefore bring even more variable results.

In terms of the involvement of different families, giving families the opportunity to do an interview in a different environment than the home, for example, a research institution, might contribute to a higher variability of results. Some parents may perceive the visit of researchers to their home as excessive invasion of privacy, and those do not appear in our research. The disadvantage of interviewing outside the home would be probably slower contact during the interview, especially with children, and the inability to observe the children using technologies in a natural environment. In the present research, we worked to lead a conversation with children in their own room.

The schedule for implementing the pilot research was very tense. Two pairs of researchers worked on the implementation of interviews in ten families during one month. More time to handle the interviews, their analysis and writing the final report would contribute to the quality of the processing of the results of this study. But the advantage is quickly getting a stimulus for further research, when the area of the technologies used by children is constantly changing, and the early possibility to report the study to families and other interested bodies, at the same time.

6.3 What are practical recommendations for future research?

A pilot study was carried out with ten families. Interviews were used for data collection, and a game tracing the daily programme of the children as a tool for lifting the atmosphere at the beginning of the meeting with the family. Also, there were cards showing technologies that were possible to use as pairs in the interview with the child. For future research, it is appropriate to find more innovative methods that would allow children to engage more authentically. For example, the use of a method with a projective character. It would entail more demanding requirements for analysis. Pilot research also showed that children talk better about technologies and their use if they can have the technologies by them during the interview and directly perform and comment on their activity. Therefore, we recommend using tools that would allow data collection from these activities, for example, to record the desktop, a video recording of activities, etc. Methods of analysis of data obtained from such programs are a challenge for further research. The starting activity, when the whole family showed the progress of the normal children's day, served as a brief insight into the lives of families in general, and showed the place of technologies in the lives of children. In the case that this initial activity could be developed towards the role of technologies in the everyday life of the family, it could serve as one of the sources of data in the future.

The setting, when researchers visited families in the homes where they live, worked very well. Visiting in a pair sped up the process, and it was possible to interview the children and parents at the same time. For future research, it could be useful to lead a third interview with the parents and children together and capture the dynamics of family relationships. Part of this interview could be the interaction of the child and parent when the child is using a digital device. Another recommendation is the opportunity to visit the family twice, where researchers can compare the obtained information after the first interview, identify the main

themes for children and parents, or compare the disproportion in their answers, and to enrich the found topics in the following interview. This procedure would be time-consuming and, therefore, there also remains an opportunity for the two researchers to perform a brief conversation during the first visit after a certain length of the individual interviews (35-45 minutes), and then to continue in the interview. But this procedure puts more demand on the organization of research and threatens the trust between respondents and researchers.

Families living in the city, where children use technologies at least once a week, participated in the pilot research. We recommend formulating the target population for future research, where it is possible to focus on a relatively homogeneous sample, and deal in depth with processes in families with certain characteristics or, on the contrary, it is possible to seek a heterogeneous sample. The variability of the sample is possible to increase by multiple ways: (1) the involvement of families that do not own technology for various reasons, (2) the involvement of families from different sizes of location (larger cities vs. rural area), (3) families of another nationality than Czech or families from ethnic minorities, (4) families with children attending different types of schools (for gifted pupils, sport grammar schools, etc.), and (5) the involvement of families with children with different special needs. For example, in our research, we had the opportunity to examine the specifics of the rules in the family and parental mediation where the child had Asperger's syndrome, and it was possible to see in this example that the use of digital media by these children can be specific.

For the needs of international investigation, we recommend reflecting the national contexts of each of the participating countries in advance and so improve the harmonization of requirements. For example, if we want children in the selected sample to be able to read, it is necessary to reflect that in every country, children learn to read at a different age. An international investigation led as comparative research would also require significantly more time, especially for the collective procedure for researchers when coding and analysing data.

6.4 What is the future direction for research on this topic?

As we have already said, future research could be focused on different specific populations. The technologies play a different role in the lives of children with special needs or from ethnic minorities than for normal children. It would also be useful to focus the research on the question of how technologies may help disadvantaged or disabled children.

It will be important to focus more on the risks of technologies for small children in the future. Our research showed that young children are already exposed to the risks of technologies, and parents often underestimate this risk. Therefore, it is necessary to answer the questions: To which risks are younger children exposed? How often? How do they perceive them? How do parents cope with them? Specifically, the pilot studies raised the question of commercial risks, for example, buying applications by mistake when setting up automatic payment or purchases within the application. Parents sometimes perceive the use of technologies by children as "children click and play" and do not realize what their click could lead to. Another risk is inappropriate content, particularly violent. These are sometimes treated in games, for example, by the absence of blood or with a different colour of blood. However, do these measures mitigate the experiences of children? The pilot study also showed

that seven-year-old children are already able to get at inappropriate games (violent or pornographic) without the knowledge of their parents.

The usage of smart phones by younger children shows to be a specific topic for further research. Phones generally turn out to be the first private facility of a child, where the family respects the privacy of the child. The child also perceives the phone as "my device". However, this is bringing risks, when children can install applications onto smartphones that do not always have to be safe for the child. It is necessary to focus on this area in further research in the future.

The next topic is the use of new media instead of television, primarily for watching videos or programmes for children. New risks and opportunities are associated with this phenomenon - for example, the different nature of ads or their absence. TV programmes have a fixed order compared to freedom of watching shows on another device. Therefore, we recommend verifying the advantages and disadvantages of using technologies in this role.

The topic related to online activities in the context of everyday life and activities connected with it seems to be interesting. We found that technologies have many functions in families and that, at the same time, the opinions of children and parents are linked. The family can be understood as a complex system, where the behaviour, perceptions and experiences of one family member (whether adult or child) affect the other members. It shows that it is necessary to examine the role of technologies in the context of family life in general and not focus only on the media's use.

It seems that in families where technologies are primarily a reward and there are explicit rules regarding their use, children prefer the technologies more than usual toys than in families where technologies are only one of the possible activities, which is not necessarily a reward. It is possible that children with implicit rules list among their favourite activities primarily playing with normal toys like Lego, dolls, and sports activities. In contrast, children with stricter rules have technologies among their favourite activities more often. However, we do not know whether the families where they have strong rules, did not set them on the basis of a bigger desire of a child for technologies, in order to "protect" them, as described in the section 4.4 How do parents manage their younger children's use of (online) technologies? We recommend verifying these assumptions in the longitudinal research. Understanding of the context of parental rules and the use of technologies by children would lead to a deeper understanding of what the right parental mediation is for children under eight years of age. For example, is it right to significantly restrict the children at this age in the use of technologies? If yes, does the child lose something? If not, what will it bring to the child in the future? In addition, we can ask whether there are any groups of children for whom technologies can be recommended for their development more than to other groups? And vice versa, are there groups of children, where it is possible to recommend significantly reducing the use of technologies? These all are questions that parents deal with daily and to which the research does not know the answers yet.

Last but not least, different methodological perspectives are needed to answer above mentioned questions. We recommend a quantitative cross-culture research on the European level to understand the role of technologies in families with young children.

7 Conclusions

In the performed research, we dealt with the use of technologies by seven-year-old children, then how children and their parents perceived the technologies, the role of technologies in the family context, and what rules parents gave to children for the use of technologies. For this purpose, we visited ten families and interviewed a parent or both parents, the seven-year-old child, as well as their siblings.

It turned out that new media are a stable part of the life of children in many families, with a different intensity of their use in terms of the time that children spend with technology and also in terms of the range of activities that are performed. It is associated with the overall attitude of parents to new technologies in families: how they perceive them as a natural part of the life of children, how much they see them as something "virtual – technical" outside the framework of ordinary life and how they perceive the benefits and the risks that are associated with them. These attitudes are then linked with the implicit and explicit mediation strategies that parents apply and which are part of the whole educational style and the functioning of the family.

So the digital world is a part of the lives of children, but small children are only beginning to orientate in it. They still do not commonly use the Internet to search for new interests or for making new social contacts. They use media for the enrichment of activities that they already do "offline": play games, watch videos, look for information for school or related to their hobbies, they also shop online together with their parents. The new media represent the possibility of parents to "entertain" the child. Media do not provide just direct profits (especially entertainment and information) to children and parents, but are useful even indirectly when, for example, they are used as the guardian of children in many cases. The parents confess a generally easier learning of dealing with technologies to children, but also point out those children still cannot distinguish well the contents on the Internet.

Even the children reflect that they still do not have the necessary experience in handling technologies, and they are afraid of the possible risks, probably primarily through the concerns of parents. However, the children themselves fail to recognize or reflect the risk while encountering it. The fears of parents are primarily connected to approaching adolescence, when children are starting to live online socially – for example, through online social networks. Social networks and engaging with strangers from the Internet are things that parents fear the most in the future. However, parents underestimate the already present risk, since they consider that "children are just playing on the Internet", which is not sufficiently perceived as a risk. However, many of the children in our research encounter violent content in games, describe the commercial risks, one girl was searching for pages about weight loss and had installed a "strip game" for adults on her phone.

New media are often shared in the household, which allows parents to control their use and prevent some of the risks. As we said, mobile (especially smart) phones are a specific exception. These give parents big control and supervision of the activities of the child offline, which increasingly takes place outside the family with the beginning of schooling. The phone is a means to monitor the child's safety for parents. However, at the same time, it is the medium

in which the parents lose an overview and control over the activities of the child in the online world, or they may even underestimate the digital skills of the children.

7.1 Recommendations for parents

Based on our results, several major recommendations for parents and other adults involved in the upbringing of children can be formulated:

- As we said above, some parents underestimate the risks of technologies for children up to eight years. Parents should be better informed about the risks and not focus only on the risks, often described by media (and less frequent), as the Internet addiction, meeting with paedophiles or cyberbullying in mediation.
- Our findings also suggest that many of the issues also need to be solved at other levels, not only at the level of the primary family. At the local level, it is necessary to ensure communication about the rules for using the technologies and align the educational approaches between parents and the school. These may vary, which sometimes raises problems, for example, if the child gets access to content (e.g. violent games) in the school that is prohibited to the child in the family.
- Specific, and often delivering less control might also be the use of the media by children with grandparents or other relatives. Parents should also discuss the use of technologies in other environments where children are. Especially the grandparents may be even less informed about the risks of the use of technologies than the parents of the children.
- It is also necessary to reflect that children cannot cognitively evaluate the content on the Internet and the implications of all of their actions. It would be advisable to ensure better that children could not get at inappropriate content – parents should monitor children while watching online content, or play children only offline content and even disconnect the device from the Internet.
- On the management level of providing content to children, it would be appropriate to promote the necessity of registration of children into applications with audio-visual content, which would then select the offer of videos with regard to the age of the user. Also, a clear labelling system and the distinction between paid for and free applications would be beneficial, children should not ever have access to paid for applications. Attention should also be given to the possibilities of regulating the access to Internet content from mobile devices.
- Parents should focus on the positive content that they provide to their children through media. Children should have limited access to the Internet on all facilities, for example, only on pages where parents have verified that they are safe for children. We recommend the use of specialized software intended for parents for this purpose.
- From the perspective of providers of content, it would be appropriate to develop specialized portals for parents that, for example, concentrate in one place a variety of educational levels or games that are suitable for children. The creation of a specialized portal of games can also be recommended, which develop the skills of

children and are safe for them at the same time. It would make the orientation in a multitude of games and contents that the Internet offers easier for parents.

We can summarize the above mentioned in one sentence as follows: Parents of children up to eight years should not underestimate the risks of technologies for children and should focus on providing quality and safe games and (online) content for their children.

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YOUNG CHILDREN (0-8) AND DIGITAL TECHNOLOGY

A qualitative exploratory study - National report – FINLAND

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Introduction

Finland has a small population of about 5.5 million (Population registration centre). The country is bilingual with Finnish and Swedish as the official languages. Therefore, pupils whose mother tongue is Finnish have to study Swedish and pupils whose mother tongue is Swedish must study Finnish in primary school. The population is relatively homogenous, e.g. the majority, about 75% of the population, belong to the Lutheran church. There are about 38,000 immigrant families and about 600,000 families in which one of the parents does not have a Finnish background. About 20% of families with children are one-parent families (see Statistics Finland for families and religious affiliation). Finland is well-known for its advanced prenatal health care and pediatrics. From the child's birth up to school age the children are taken care of by the child health clinics. At school the pupils' health is taken care of by school health care system.

The City of Oulu is located in the northern part of the country with a population of about 190,000 years which is one of the youngest in Europe. The residents are highly educated and about every third adult has a degree either from a university or polytechnic (see for the statistics Kunnat.net)

A lot of attention has been paid to the Finnish school system due to the Finnish pupils' success in PISA (OECD, 2012) and PIRLS (Kupari, Sulkunen, Vettenranta, Nissinen, 2012). Teacher education has been found to be one of the contributing factors to this. Primary school teachers are educated in the universities and they must complete a Master's degree including a thesis to become qualified teachers. In addition, attention has been paid to the comprehensive school system, especially its equity. A sign of this is the relatively small number of private schools. Related to the study reported here, it is also worth noting that Finnish children start school at the age of seven. There is preprimary education for six-year-olds which has been voluntary for them and their families, but about 98% of children do attend preprimary education (Hujala et al. 2012). According to the Curriculum Framework, children are not required to learn to read and write (decode and encode) during their preschool year (National Board of Education, 2004). Rather than that, children must be offered opportunities for learning. Because Finnish has a very regular letter-sound correspondence, it is easy for children to deduce from informal literacy events and learn it before formal instruction in school. In fact, parents (275) reported in a survey that 77% of the children were able to read early in their first year of school (Korkeamäki, Dreher & Pekkarinen, 2012). Lerkanen and her colleagues (2010)

found that about 30% of the children, in the beginning of their first grade, were early readers. In addition to this, about the same percentage of children were ‘on the edge’ of learning how to decode.

The Finns have a reputation for being a reading nation; as great users of printed media, such as newspapers (Sauri, 2007) and as frequent library visitors (Spadaro, 2002). It seems, though, that the digitalization of the media has challenged the printed media and especially teenagers’ and younger children’s literacy behaviors. However, the results of the survey are mixed: on the one hand, parents have reported that children use both media (Korkeamäki, Dreher & Pekkarinen, 2012; Suoninen, 2013) and on the other, the use of the Internet is more frequent than reading books according to the Gallup Finnish International poll (YIPPEE, 2008). Because these results indicate that new media is present in children’s daily life, there is a need to learn more in depth about digital literacy in the children’s own environment and from both the parents’ and children’s perspective. Here we report findings of the perceptions of ten young children’s families about the use of digital technology.

Interestingly, media education has been on the agenda in since 1980’s in the school curriculum (Board of Education, 1985) and a special programme for early childhood education (for 0- 8 –year old children) called Mediamuffinsi was created by Stakes (The National Institute for Health and Welfare) and put in practice in 2006 (Mediakasvatus Varhaiskasvatuksessa, 2008). The programme emphasized taking into account children’s own culture and participation, the use of technology and especially the co-operation and partnership in education between teachers and parents.

In this pilot study, we investigated what kind of practices ten Finnish families, the parents and their 6-8-year old children, had experienced with digital technology. In order to understand the Finnish context in our report we would like the readers to note below the explanations of the Finnish television channels and programmes:

- MTV Katsomo - Web television of the Finnish commercial television station
- Yle Areena - Web television of the Finland’s national public-broadcasting company
- Pikku Kakkonen - Weekday evenings presented children’s program on the Finland’s national public-broadcasting company
- Galaxi, Bofori - Children’s programs on the Finland’s national public-broadcasting company

Family Portrait Gallery



Family 1

Finland

Family members

- Mum, high digital user (F1m)
- Dad, high digital user (F1f)
- Boy, 7, high digital user (F1b7)



Narrative

The family lives in a detached house about 10 km from the city center. F1b7 is the only child and he has his own room. The mother works as a land use architect and the father is a priest.

The family owns a TV, a DVD-player, cameras, a PlayStation and a computer, which is mum's. According to F1b7 they have 3 computers. At least one is a desktop computer and one is a laptop. Furthermore, the parents have smartphones, while F1b7 has a regular mobile phone. The PlayStation is almost brand new, because they have only had it for a few months. F1b7 likes to play on the PlayStation with his friends or by himself. Dad sometimes plays with him, too. F1b7's favorite games on PlayStation are Grand Turismo, Minecraft, Star Wars and Lego games in general. Friends sometimes give advice on how to play, especially as far as Minecraft is concerned. Parents think that F1b7 learnt to use the PlayStation just by using it. He still cannot read very well and that is why F1b7 sometimes needs parents' help. The PlayStation is intentionally not connected to the wireless network in order to avoid unwanted contacts on the Internet.

Previously, before buying the PlayStation, F1b7 used a computer more than now. At that time he enjoyed watching videos on YouTube, visited Pikku Kakkonen's website and watched TV programs on Yle Areena and Katsomo. There was a free game site which he liked to use as well. According to F1b7 he is not allowed to use a computer any more because he has his PlayStation. From the parents' point of view, he actually uses a computer occasionally, but not alone. Sometimes the parents search information on the Internet together with F1b7. The computer is mum's and she is very precise about the use of it. She works with digital technology on a daily basis using, for example, CAD software. At home she does not play games on any device, but occasionally mum allows F1b7 to use SketchUp, a 3D modeling program and helps him a little.

F1b7 has his own phone but he likes to loan his dad's phone, which he uses for video watching and playing. He may download games by himself to the father's phone and it has happened that some of the games have been subject to a charge. On the other hand, the boy himself tells that he usually selects games that are free of charge at the Nokia Store. He knows that by choosing a full version he gets the full version of a game. On his own phone F1b7 also has a few games and he plays with it a little, but mum's phone is not available for playing. The family does not own a tablet, but F1b7 would like to buy one in order to be able to use the Internet and watch YouTube.

In the family there are three game days per week when the boy is allowed to play one hour at a time. Before PlayStation, he could play with the computer up to half an hour per day. The game time at the PlayStation was suggested by F1b7 himself, because his friends have similar arrangements at home. The parents have accepted the game time. Watching TV has not been set so precisely in this family. On some days they do not watch TV at all, while on other days they might watch it for several hours. The family usually listens to music in the car. The parents think that music is safer to listen to than any talk show or news, because they might contain something inappropriate for children. Therefore not even the parents listen to news in the car.

The parents choose the games and apps for F1b7. He says what he would like to have and the parents find out and decide whether it is appropriate for a child at his age. The mother usually stays beside F1b7 when he uses the Internet. Only if mum knows that the son is using Pikku Kakkonen's website she can leave him for a few minutes. When F1b7 is watching YouTube, mum is there all the time, because in her opinion YouTube is not safe enough to watch alone. Meanwhile the father is not as active. He does not follow the rules so strictly. Occasionally F1b7 and dad do not notice how fast the time passes, and they can play games for many hours on end together.

Family 2

Finland

Family members

- Dad, unknown digital user (F2f)
- Mum, medium digital user (F2m)
- Girl, 11, high digital user (F2og11)
- Girl, 8, medium high digital user (F2g8)

Narrative

The family lives five kilometers from the city center. They live in an apartment house and the two girls share one room. Both the parents are adult students, and on weekdays the father lives in another city. The mother is studying engineering at the University of Applied Sciences, and the father will become a firefighter.

The interview started with coffee and a cake baked by the mother. The family is very talkative and easy to approach. The family has a tablet, Nintendo Wii, a TV, a laptop and four phones. F2g8 used to have a smartphone, but it was broken and now she has a regular mobile phone, which she is not especially keen on. F2og11 has an iPhone and F2g8 likes to play games on it. Ever since the children got the tablet last summer, they have preferred to use it for playing and video watching.

The interview was conducted with F2g8, because the older child was not at home at the time of the interview. F2g8 prefers playing on the tablet, due to better games and a larger screen compared to her mobile phone. She is very excited about games, such as Littlest Petshop, MovieStarPlanet and cake games. She uses the laptop mostly for video watching on YouTube, Yle Areena and MTV Katsomo. Her most favorite videos are Littlest Petshop videos made by other children. These videos give her ideas for playing with traditional toys, her own Littlest Petshop figures.

The parents do not usually teach their children how to use a technological device, as they learn by themselves and from each other. According to the parents, F2g8 was beginning to use a computer by the age of 2, as soon as she learned how to use her own fingers. It seems that the older sister decides which applications they choose and install on the tablet; the children do not ask their parents' for permission to do that. The parents rely on the judgment of their children. However, the parents do

give advice to their children on how to search for information on the Internet, and they can show them interesting things related to nature and animal life, for instance, on the Internet. The father may teach the girls history and what life used to be like by using digital technology. The parents also tell the children what appropriate behavior is and how to avoid unwanted contacts on the Internet. The family had once encountered an unpleasant video at YouTube. The video was about Moomins, but they were shooting and acting in an un-Moomin-like fashion. The parents were very amazed and almost shocked because of the video, but the children thought it was funny.

F2g8 likes watching TV. She enjoys watching Barbie DVD's with her sister and they have some favorite TV series which the children and mum watch every night. The girls watch a certain Finnish daily serial every night, even though the mother has told them not to watch episodes with a higher age limit. Nevertheless, the girls do not obey their mother who in turn thinks that episodes aimed for an older age group do not scare or distress their children. The mum might watch cartoons on TV with the children, while they rarely visit the cinema. Due to the fact that the father is staying in another city on weekdays, the mother is more involved in the digital activities of the children. Nevertheless, she does not play digital games with the children. The mother uses a laptop herself in the evenings when children are asleep, but otherwise she does not seem to be a very enthusiastic digital user.

F2g8 is aware of some rules which restrict her and F2og11's use of digital technologies. She knows that they are not allowed to play on the tablet or watch TV as much as they want, but she cannot name any specific allowed screen time. There is no restriction as such on time spent with the digital technology, but it depends on the occasion. In addition, mum says she wants to keep an eye on the digital activities of the children and that is why she often asks the children to show what they are doing on the Internet. She also regularly checks their browsing history. The rules are the same for both the girls, but those do not concern the parents.

Family 3

Finland

Family members

- Dad, high digital user (F3f)
- Mum, medium/high digital user (F3m)
- Boy, 16, high digital user (F3ob16)
- Boy, 14, high digital user (F3ob14)
- Girl, 13, unknown digital user (F3og13)
- Boy, 10, high digital user (F3ob10)
- Boy, 7, medium/high digital user (F3b7)



Narrative

The family lives in a detached house about 10 km from the city center. They are a single income family, with the mother studying and the father working as an engineer. F3b7 is an energetic boy and likes play for example football and outdoor games. His favorite toys are Playmobil figures, which he recognized immediately in the card game.

The family has a Wii play console but it has not been used for a while. They also own a PlayStation, a laptop, 6 smartphones, a regular phone and a TV which is located upstairs. F3b7 has only a basic mobile phone. He does not send any text messages but he makes phone calls and plays one game on the phone. F3b7 does not always remember to take his phone with him. He knows that the phone battery is out of charge now, but in fact F3b7 does not even know where the phone is. He likes to borrow his parents' smartphones and, for example, play games on them. F3b7 uses the laptop almost every day for playing, watching videos and visiting Lego and Playmobil websites. YouTube is familiar to him and he watches most often football and floor hockey videos where the players use small balls and goals. When he searches for videos on YouTube, he utilizes the sidebar to find interesting videos. He cannot read properly yet, hence the pictures on the bar help him to make a decision. The older boys use the PlayStation more than F3b7 does. According to the mother, F3b7 is not dependent on the PlayStation but if he plays with it, he plays NHL, Football games and Lego games, for example.

The family seldom watches TV together; they occasionally watch some TV series or films such as Sel8nne, but this happens very seldom. F3b7 watches children's programs not only on TV but also

on the laptop or on the phone. In addition, F3b7 makes videos with his phone or the web camera by himself or with friends, so they can, for example, film in turns each other playing with a ball. Neither F3b7 or the parents have downloaded or published any products on the Internet.

F3b7 often plays with toys, but he uses digital devices as well. In principle, the children are allowed to use devices whenever they want to, but the parents enter the passwords for them on the laptop and on mum's and dad's smartphones. The parents have not revealed the passwords to F3b7. They do not have any specific game days in the family, but the parents say that they are limiting the use of devices. If the children play too much or do not obey orders, the cables are taken away and the devices shut down. According to the parents, there are not any problems in the children's use of computers. The laptop is usually on the kitchen table, so the parents can see and hear what children are doing on it. F3b7 is not allowed to take the laptop into his own room. The parents say they are monitoring how much their children are using new online technology, but they do not tell exactly what kind of rules they have. This was confirmed by F3b7.

According to the parents, it is difficult to monitor the use of a smartphone. They feel that the phones are sometimes insecure devices due to the Internet which is still considered to be the most insecure thing. The parents are concerned about their children using Facebook, for instance. They have noticed that there are so many different kinds of apps that they do not even know, because they are not active social media users themselves. The parents have told their children that they have to tell their parents if they get any weird messages or uncomfortable approaches. Currently, the parents are not aware that any of the children have encountered anything scary or unpleasant on the Internet.

Family 4

Finland

Family members

- Dad, unknown digital user (F4f)
- Mum, low digital user (F4m)
- Girl, 17, unknown digital user (F4og17)
- Girl, 15, unknown digital user (F4og15)
- Boy, 14, high digital user (F4ob14)
- Boy, 12, high digital user (F4ob12)
- Boy, 10, high digital user (F4ob10)
- Girl, 8, medium digital user (F4g8)
- Boy, 6, medium digital user (F4b6)
- Girl, 4, low digital user (F4yg4)
- Boy, 3, low digital user (F4yb3)
- Boy, 1, no digital user (F4yb1)

Narrative

The family moved to Finland 14 years ago, at which time they did not know any Finnish. The mother teaches at school, while the father works as a gardener in the summer and for a property maintenance company in the winter. There are ten children in the family and four of them joined the interview. The parents and the children now speak Finnish, but especially F4ob12 helped to translate in both the children's and parents' interviews.

In this big family there are several game consoles. They have a PlayStation 4 which is normally used by the older boys, while the PlayStation 3 is for the younger children. The favorite PlayStation game for F4b6 is football, while F4g8 likes a magic game. F4g8 does not know how to properly switch on the PlayStation and needs help from the others. One of the older sisters has a tablet, which younger children can occasionally borrow to play Minecraft, a football game and a Barbie game. F4g8 occasionally plays on the iPad at school; she uses an iPad to check up homework as well. F4b6 enjoys playing a car game on the computer and F4yg4 uses a Hello Kitty Laptop. They have a handheld PSP game console as well, but it is rarely used these days. Besides game equipment, the family has a TV, portable DVD player and a radio which the small ones prefer to use to listen to children's music in their native language. The parents and older siblings have mobile phones, while F4g8 and the younger

children do not have their own phones, but they can borrow someone else's if needed. F4og17 has a smartphone.

F4g8 and F4b6 like to watch videos on the computer and TV. F4b6 likes Lego Legends of Chima and Lego Ninjago, while F4g8 prefers Winnie the Pooh and Barbie. According to the parents, F4b6 and F4g8 dance, sing or play with their toys at the same time as they watch television. It can happen that a child gets thrilled about some children's program and they would like to have a toy or figure from the program, for example Littlest Petshop. On the Internet the children search for and watch children's programs and music in their native language as well. Sometimes the children and the parents search together for information about things that are not so common in Finland. They are interested in, for example, vineyards or some cities in the world. The family watches films together on Fridays and Saturdays at home, and normally these films are in their own language. This family goes to the cinema once or twice a year.

From the parents' point of view, the children prefer to play on technological devices rather than with traditional toys. The parents think this is regrettable, because new technology reduces the children's ability to use their own imagination. New online technology might also result in an increase in asocial behavior; in the worst case scenario all the children are pottering around with their devices and do not take contact to each other anymore. Luckily, the children still play together and like sporty activities such as cycling, trampoline jumping and playing tag, even fighting as siblings often do.

The parents give the children advice on how to use the Internet and what they are allowed to do on the Internet. They intend to do that in such a way that the older siblings can pattern their upbringing methods. The young children are not allowed to use the computer without supervision; hence, along with the parents, the older siblings have a responsibility to look after them. The control between the siblings has worked well, as once one of the children made a search on Google for "wild sex". His brother noticed the situation and immediately told about it to the parents. However, the parents think that it is easier for a parent to keep control over small ones than teenagers.

There are rules in the family about new online technology. Game consoles and the tablet as well should be switched off at 8 pm. F4og17 is allowed to keep her smartphone on, because she uses it as an alarm clock. The children cannot play with game consoles or computers every day, as restrictions apply. The rules are made by the parents and the children do not always accept them. The children can sometimes complain about the rules, but they will not be changed. In addition, the parents may

use prohibition against the use of digital technology as a punishment if neccessary. For example, if they notice that homework has been neglected or the teacher has contacted one of the parents because something unpleasant has happened at school, the PlayStation is the first thing to be turned off or the tablet taken away for a week. The rules have not always been the same, but they have taken shape over time. Parental locks are in use on the computer, tablet and on some applications.

The parents are anxious about safety, content and the use of time. They cannot be sure what the children see and experience on the Internet, and they find it very worrying. In their view the children spend too much time with digital technology, but they realize that the whole society has become technologized and it is not possible to opt it out. The important thing is to learn to use it in the right way, learn how to search and construe information. The parents themselves are digitally oriented and feel that technology plays a key role in family life. For instance, furniture in the living room is arranged in such a way that the TV set is in the middle. The TV can also function as a baby-sitter if needed. In general, the parents think digital technology has both positive and negative sides. It is important to pay attention to people around instead of just hanging around in the virtual world.

Family 5

Finland

Family members

- Mum, high digital user (F5m)
- Dad, high digital user (F5f)
- Girl, 7, high digital user (F5g7)
- Girl, 5, high digital user (F5g5)



Narrative

The Family lives in a detached house about 10 km from the city center. The older girl plays the flute and does aesthetic group gymnastics as a hobby, while the younger one dances ballet and plays the piano. They are a double income family and both parents work as software engineers. The mother has completed a Bachelor's degree, while the father has studied at a vocational school.

There is a diverse range of technological equipment in the family. They have two iPads and a Windows tablet. The family owns several laptops, one of which F5g7 has in her room. In addition, they have AppleTV, smartphones, an internet radio, vSmile, CD-player and computers which are connected to the television. F5g7 also remembers to mention PlayStation, although the parents do not talk about it.

The girls use iPads more than the parents. Mum and dad think that in a way the iPads belong to the girls, but they have not assigned them to anybody. They keep the iPads in the kitchen, and the girls usually use them under the supervision of the parents. F5g5 has a regular mobile phone, whereas F5g7 has a touch screen phone. The parents are not sure if it is a smartphone, even if she can use the Internet on her phone. F5g7 uses her phone to make phone calls and also to shoot pictures and videos. The parents installed WhatsApp on her phone and showed it to her, after which she has learned how to use the application by herself. The mother has also seen her watching YouTube videos on her phone. F5g5 especially likes to borrow the parents' phones to play games. In F5g5's room there is a television set which is connected to vSmile and can only be used as a screen.

The parents supervise the girls' device usage. There is a program in the Windows computers which allows only one hour of use per day on weekdays and two hours per day in the weekend. Moreover, it is possible to choose a specific time of day after which it is impossible to use computers. F5g7

realizes why she can use her laptop only between 8.30 a.m. and 7 p.m. According to the parents, a single product they use covers both child locks and safety modes. In addition, the parents take a report regularly on F5g7's laptop to see what she has been doing with the laptop.

F5g5 does not use a computer much yet, but the older sister watches YouTube and uses Google on the computer. F5g7 can use Google independently and she does it very well. For example, she is interested in joining the WildyCraft server and therefore she searches guides for WildyCraft players on Google. On one occasion she wanted to find certain kinds of crafting videos on YouTube. She selected a listed video, but if there were not any good videos on offer, she entered a suitable keyword in YouTube search. The girl mentioned that she had watched so many videos before that the whole search method was very familiar to her.

Both girls use the iPads especially to play Minecraft which is currently their favorite game. The father sometimes plays Minecraft with them on the computer, and the girls enjoy watching him play as it is possible to do more and different things in Minecraft on the computer than on the tablet. The father and the girls also play Minecraft as a team, when the father is using his smartphone and the girls the iPads simultaneously. The mother has tried to play Minecraft, too, but the girls think that mum is not very good at playing it. F5g7 uses the iPad also to play MovieStarPlanet and HayDay along with YouTube and Netflix watching. The family watches some Finnish TV serials together, and a couple of times in a month they may watch some film on the AppleTV.

The devices are always available, but the parents decide when the children can use them after they have asked for permission to use them. They usually do get the permission, but not always because there are one or two days per week when children are not allowed to use the devices. The parents talk about 'screen time' which includes both watching TV and playing on the iPad or computer. "The so-called screen time usually remains the same." (F5m)

The parents have told especially F5g7 about individual security on the Internet. They have advised that the girls must not use their real names and they are not allowed to reveal where they live. F5g7 tells that she has seen a somewhat scary video which she put away on Momio. After that her father removed the entire app from the device.

Family 6

Finland

Family members

- Mum, high digital user (F6m)
- Dad, unknown digital user (F6f)
- Boy, 7, high digital user (F6b7)
- Girl, 5, medium digital user (F6g5)

Narrative

The family lives in a detached house about 5km from the city center. F6g5's hobbies are figure skating, guitar and piano playing and dancing. F6b7 also plays the guitar and piano and besides that, he is into Parkour and baseball. F6b7 in particular is interested in making paper planes; there was a bin full of planes in the F6g5's room where the interview was held. F6b7 is in the second grade and F6g5 is in pre-school. Both parents have completed a university education and the mother works as a CFO. At the time of the interview the father was not at home and the parent's interview was conducted with the mother only.

The family owns a wide range of digital devices. They have PlayStation 2 and 3, an iPod, Nintendo 3DS, two iPads, laptops, desktop computers, radio, TVs and various phones. When F6b7 was younger, he used to play a lot on the Nintendo but now the iPad and PlayStation have replaced it. He sometimes still plays MarioCart or Super Mariobros on Nintendo, but according to mum the iPad is his favorite device at the moment. During the card game F6b7 says that he uses his phone more than other devices, at least five minutes per day. From the user's point of view, an iPad is convenient to take and start to play and therefore F6b7 prefers to use it. F6b7 plays on the PlayStation almost solely together with someone, e.g. dad or a school mate. One of the games that he enjoys playing on the PlayStation is Skylander which is an adventure game for children. Sometimes, the whole family together plays some sport game on the PlayStation.

The iPads belong to mum, but the children use them more than mum herself. When they got their first iPad, F6b7 was only 3 years old. At the beginning the parents advised F6b7 on how to use the iPad, but now he uses it faster than his mother. Both of the children have their own folders on the iPad where the allowed games are stored. The boy's favorite games on the iPad are Minecraft, HayDay, Geometry Dash, Clash of Clans and Bloons TD; sometimes he plays 8 Ball Pool online.

Thanks to HayDay, F6b7 is now much more interested in the clock because time is in a big role in that game. For example, pigs' food making process can take 3 hours. When the time has passed the game will beep and the user knows that pigs are fed. Meanwhile F6g5 often watches when the older brother is using the iPad. When the girl uses the iPad on her own, she usually watches My Little Pony and Littlest Petshop videos or some programs on the Netflix or Viaplay. However, in her own eyes the best thing to do on the iPad is to play Minecraft, even if her brother says the game is not for girls. Radio is the most used device for F6g5, and she considers it to be the easiest thing to use, whereas his brother finds it to be the most difficult device to use. Hence the little sister has taught her brother to use the radio.

On the iPad, F6b7 watches Lego Ninjago and Minecraft videos on YouTube and children's programs on Areena, for example. The mother has noticed that F6b7 uses Google or Safari very well; he searches for the prices of toys on the Internet, for example. He might visit Wikipedia as well. The boy himself thinks playing Minecraft is educational. The player can learn how glass is manufactured or how torches and lamps are made in real life. The parents also have the impression that it is possible to learn things by playing games, such as coding and collaborative action.

F6b7 has a smartphone of his own. He used to have a regular phone but it was broken. With the smartphone he sends messages to his friends on WhatsApp. Both children enjoy taking pictures and videos which they often edit in a funny way. The parents do not publish these products on the Internet and mum hopes that F6b7 does not, either. Playing games and listening to music are also typical activities on the phone for F6b7. F6g5 does not have a phone of her own yet but sometimes she can borrow her brother's or mother's phone, not very often though. She usually borrows her mother's phone when they are driving by car for long journeys. According to the mother, she does not play games on the mother's phone, but looks at pictures and videos that they have taken. Nevertheless, F6g5 says she does sometimes play on his brother's smartphone.

On a desktop computer, F6b7 likes to play Minecraft and some kind of a penguin game. On the penguin game he and his friends can play online in the same game environment. They usually use Skype while they are playing the game to tell each other where they will go and what they will do next. He has also played a learning game that was recommended at school. F6g5 uses a computer quite seldom, but sometimes she plays Pony Game on dad's computer. In her opinion, the computer is the most difficult technological device to use.

Mum sometimes shows children pictures on the Internet or they search for information together, for example. They might watch Voice of Kids or other programs together on the iPad or on television. According to the parents, they use Areena quite a lot because they are not at home when their favorite programs are shown on TV. Meanwhile F6b7 says that he usually watches programs shown after school on TV. F6g5 sometimes watches her favorite TV-show Voice of Kids or Pikku Kakkonen on TV.

The children were earlier allowed to use devices 3 hours a week. According to the mother, it was difficult to control. Now they have changed the system so that every other day is either a game day or a screen day. F6b7 and his friends are so clever that they always go to the home where there is a game day, with the result that the parents try to decide on common game days. The children can use only familiar websites and apps they have in their own folders. They are not allowed to click on any OK buttons or adverts. The parents have told the children that they are not allowed to tell their real names or addresses on the Internet. Besides, the parents have configured the settings in such a way that F6b7 cannot use a data connection outside the home. If the children want to download new apps, the parents have to enter a password that they have not revealed to the children. According to the mother, the children think that parents have much more screen time than the children. But the mother thinks it is not about screen time when the parents, for example, pay the bills or read eBooks, but as a result of this discussion, she has increased reading normal books instead of eBooks.

Family 7

Finland

Family members

- Dad, 42, Medium/high digital user (F7f)
- Mum, 42, Unknown digital user (F7m)
- Boy, 19, Unknown digital user (F7ob19)
- Girl, 17, Unknown digital user (F7og17)
- Boy, 9, high digital user (F7ob9)
- Girl, 7, high digital user (F7g7)

Narrative

The family lives in an apartment house near the city center. Their oldest child has moved out recently. F7g7 is in the second grade and likes dancing and painting. The mother has completed a Bachelor's degree and works in the health care business. The father has studied physics at the university and is a Master of Science.

The family owns a TV set and a DVD or Blu-ray player. They also have a computer and an iPad which are common to the family members. Even the youngest girl (F7g7) has her own smartphone, which used to belong to F7og17 earlier. The older sister has taught F7g7 how to use the iPhone, while the older brother taught F7ob9 to use his iPhone. The iPad is a favorite device to F7g7 and she uses it to listen to Spotify, watch YouTube and play games. She typically puts the music on and starts to dance.

According to the father, F7g7 does not so much play games on the iPad or computer but likes to visit the Pikku Kakkonen website, for instance. However, F7g7 herself says that she plays at least two different Littlest PetShop games, Nail Salon and Dragon city games. The girl likes to play Nail Salon because it allows the player to use her own imagination and creativity. The player can decide which nail she decorates, what kind of nail polish and nail art she creates. She does mention Pikku Kakkonen which she watches on TV and iPad and also uses the Pikku Kakkonen website. Sometimes F7g7 and her classmates are also allowed to use iPads at school, because there are not enough computers for everyone. At school they play the 10 Monkeys game, for instance, which is a mathematics learning game. F7g7 uses her smartphone to listen to music from Spotify or YouTube. She also communicates

with her friends and parents by using WhatsApp, text messages and phone calls. F7g7 does not usually play games on the smartphone.

The whole family together watches some Finnish TV series usually on weekends. Sometimes F7g7 and F7ob9 have connected an iPad or computer to the TV and used the television set as a screen. The family likes to play board games like Granium together. At times F7g7 uses Google together with her parents or older siblings to seek cake recipes or information on some issue such as an animal that they have seen, for example. F7g7 has also visited the website of a local department store to check the prices of toys.

F7g7 is not familiar with some words. For example, she does not know what the Internet is but when the interviewer used the word “net”, she understood. She is aware that when a game is downloaded to a computer, for example, it can bring some viruses along.

If the children want to download apps to their smartphones or the iPad, they have to ask one of the parents to enter the password for the AppStore. However, the father has figured out that the children possibly already know the password. That is why he sometimes checks out what games there are on the iPad. They have installed Anti-Virus software on the computer which limits the availability of content on certain user profiles. Dad is aware that children can accidentally find too violent or inappropriate material on Google, for example. The older children (F7ob19, F7og17) can use the Internet and devices as they like. The younger ones (F7ob9, F7g7) have at least one day per week when they are not allowed to use any devices. F7g7 knows that she cannot use the iPad whenever she wants. They have play turns and the parents tell them when the playing time has run out. The use of the phone and TV is not limited, but F7g7 cannot use the computer by herself because she does not know the password.

Family 8

Finland

Family members

- Mum, high digital user (F8m)
- Step-dad, high digital user (F8sf)
- Girl, 19, unknown digital user (F8og19)
- Girl, 18, unknown digital user (F8og18)
- Girl, 15, unknown digital user (F8og15)
- Girl, 12, unknown digital user (F8og12)
- Boy, 11, medium/ high digital user (F8ob11)
- Girl, 7, medium/high digital user (F8g7)



Narrative

This blended family lives in a detached house about 10 km from the city center. They are a double income family where the mother has completed a degree at the University of Applied Sciences and works as a project manager. The stepfather's education and profession did not come up in the interview. There are six children in the family, four of them are mum's while the stepdad has two children. The oldest girl has moved away from home recently. The biological father has completed a degree at the University of Applied Sciences and is a software designer. F8g7 is interested in singing and swimming which she is going to start to practice after the autumn holiday. She loves to play with her toys such as Littlest Petshop and Lego Friends and she is keen on outdoor activities. Friends are very important to her; she plays traditionally with the friends without any digital activities. "You just cannot game anything because you need to play together with friends."

In the family everyone but F8g7 have their own smartphones. Her phone is a regular mobile phone and she uses it only for calling. The mother has an iPad and the stepdad has a MacBook. They do not have any desktop computers at the moment, because their computer broke down about a year and a half ago. One of the girls is a candidate for the matriculation examination and she has her own laptop. A Nintendo Wii game console is located upstairs and there is a PlayStation 3 in the living room. They have two TVs; one TV is upstairs and it is used only when the children play on the Wii or watch Voice Kids or something like that. Another one is downstairs and it is used more often. They also have several cameras and a CD player in the children's room.

F8g7 is not allowed to use her mother's phone. She can borrow his father's and some of her siblings' phones which she uses to play HayDay, for example, and sometimes to watch video on YouTube. According to F8g7, she borrows secretly F8ob11's smartphone to play MovieStarPlanet and Geometry Dash. F8g7 does not use PlayStation much, no more than once a month she plays Sly on it. More often she watches while her older siblings are playing football on the PlayStation. About once a week F8g7 plays Wii Sports games.

The mother gives an iPad to F8g7 twice a week on Tuesdays and Thursdays which are their game days. The girl is allowed to play for one hour on the game day. When she has a permission to use the iPad, she likes to watch Littlest PetShop videos on YouTube or play HayDay, Geometry dash and MSP, for example. In addition, she does some video recording. The parents may publish their own hobby videos on the Internet, but the children are not allowed to do that. Mum thinks that the children do not even know when they are publishing some videos on the Internet. F8g7 thinks that the mother usually helps with the devices but in the end, she herself knows best how the technology is supposed to be used. She also mentions that new apps and technological knowledge are learned through others.

When F8g7 visits his father's house, she can use her father's laptop. At the father's house there are not such strict rules for the use of digital technology, as the children can spend several hours on the computer. She usually plays MovieStarPlanet and Momio as well as watches Littlest Petshop and music videos on YouTube. F8g7 knows how to search for videos on YouTube by simply typing in the suitable keywords in the search field.

F8g7 likes to sing and to listen to CDs. She watches TV whenever she is bored and it continues for as long as she is allowed to. Disney Channel's series and some of the Finnish TV series are her favorite programs. If there are not any better options, she also watches Pikku Kakkonen. Sometimes the family watches some entertainment program or movie together on TV, but it is not very usual. F8g7 thinks that the TV is the most entertaining device while the radio is the most difficult.

As mentioned above, the children have two game days a week. Sometimes they have extra game time, for example if there is bad weather during the weekend. The mother has synchronized game days with their neighbors. According to the mother, the children spend their leisure time usually outdoors, so it is not very often that they play games even if it is a game day. When winter comes, the situation changes because it is usually already dark after school and not so nice to play outside. Even on game days children are not allowed to play all day. They usually play when they come from school and the

game time ends when the parents come home. F8g7 says that she sometimes does not follow the rules and begs for more game time, but begging is of no use.

The use of the iPad and MacBook is only allowed downstairs. There are passwords on both devices and when they are switched off, the children cannot switch them on. The mother says that it is difficult to supervise the use of smartphones. Sometimes she takes the phone away especially from F8ob11, but she can also take phones from the children to check what kind of apps they have on their phones. The children know that and usually there is nothing on them that is against the rules.

The mother knows that especially F8ob11 can immerse himself in the virtual world and, for example, throw a joystick away when he gets angry. That is why there have to be some rules. F8ob11 has seen some inappropriate material at a friend's house and he got scared a little. Thanks to that experience, he knows now that it is not a good idea to watch just everything on the Internet, even if it is available.

Family 9

Finland

Family members

- Mum, 38, high digital user (F9m)
- Boy, 9, high digital user (F9ob9)
- Boy, 7, high digital user (F9b7)



Narrative

This single parent family consists of a mother and her two sons. The children have two homes, because they live alternately at their mother's or father's place. With mum they live in a semi-detached house about 7 km from the city center. The mother has a university education and she works as a graphic designer. Both boys play squash as a hobby, and F9b7 likes swimming. They like playing with Legos and even the seven-year-old knows how to play chess. Further, the children enjoy outdoor activities very much; they can spend several hours playing outside on a daily basis.

The family owns a desktop computer, which is located upstairs and has no Internet connection. They have two laptops, one of which is mother's and the other one F9ob9's. In addition, they have an iPad, Xbox, three phones and a television. F9b7 uses a phone only for making calls to his parents as he does not know how to send text messages yet. His phone does not have Internet access, whereas the older brother has a smartphone with an Internet connection. F9b7 has a couple of games in his phone but mum thinks that he does not know that. As a matter of fact, neither of the boys plays games with their phones. F9b7 has videotaped a children's program on TV with his phone and saved it so he can watch it occasionally on the phone. He also thinks that he can use every device by himself, not needing help from anyone.

The boys can play games twice a week, but in their opinion it is not often enough. When the family decided on the rules, they chose that one of the game days would be a weekday and the other one a weekend day. So the days are Monday and Saturday, because the boys want to play games at the earliest opportunity. They do not have a specific playing time, but the parents decide when it is enough and the game should be finished. The children use the iPad to watch YouTube, play games on game days and to make their own films. They do funny things and film it, but they have not published their films on the Internet. F9ob9 is interested in making Lego animations with the iPad and would like to learn how to edit pictures. On YouTube boys usually watch Lego Ninjago videos and the children's

program Oggy and the Cockroaches. On game days the children also play on Xbox in which their favorite games are Minecraft and Lego Star Wars. F9b7 likes to play Lego Ninjago on the Xbox as well. Mum encourages the boys to play with the Xbox instead of the iPad. That is because she thinks that with the iPad boys play alone and with the Xbox they play together and playing is thus more social. Anyway, the mother encourages the boys to outdoor activities or a squash contest instead of playing inside with the technological device.

The mother is worried about the boys' use of the iPad and tries to limit it by hiding the device. Unfortunately, she does not remember to do that at all times, and thus the boys sometimes use the iPad a lot when mum is not at home. The boys can use the iPad for something other than playing games even if it is not a game day. Mum takes the iPad away from the boys when she feels that it is time to stop using it. The children cannot download apps to the iPad without mum's approval, because they do not know the password. Mum uses computers at work a lot, but she is not interested in playing games on any device, even if the boys report that she had been hooked on a certain animal game before.

The mother would like to control more what the children can face amongst new online technologies. Nevertheless, she has not done much about it and child locks or a safety mode are not in use. F9ob9 once saw the picture of a half-naked woman on his laptop, because a computer virus got into the laptop. Mum thinks that it was not a very upsetting thing and does not remember exactly how the issue was dealt with. Nor did the boy mention the issue at all in the interview. Later, when cleaning up the laptop, the mother found another dubious picture, but she hopes that she has got rid of the virus by now. The mother has not talked to F9b7 about netiquette yet.

Mum is usually in the same room or nearby when the boys surf on the Internet. During the interview the mother came to notice that the boys could actually sometimes use the iPad when she was not at home. The boys may thus intentionally search for or unintentionally find inappropriate material on the Internet. From the mother's point of view, it is challenging to find out if games and apps are suitable for children. She thinks that it is difficult to understand what is going on with the new technologies and how to control the content.

The family does not watch TV very often together, but the boys like to watch TV series such as Transformers, Galaxi and Dragon: Riders of Berk. F9b7 and F9ob9 watch programs that are aimed at their age, and if they accidentally see something awkward on the television, they just move to

another room. The family occasionally watches movies together, in which case they may connect the iPad to the television and watch programs on Areena or some other website.

Family 10

Finland

Family members

- Dad, high digital user (F10f)
- Girl, 8, medium digital user (F10g8)
- Girl, 5, unknown digital user (F10yg5)



Narrative

The parents' interview was conducted with the father who lives in a terraced house. The father is a university educated engineer and works with computing. F10g8 lives alternately with each parent. She likes playing traditional plays with her friends and they like spend time outdoors with a preference for trampoline jumping, hobby horsing and tag. F10g8 does not have any guided hobbies yet, but she is going to start to play violin or join the Scouts.

They own a TV, a laptop and the father's smartphone. F10g8 has a basic phone herself which she uses for calling and sending messages as well as photographing and video recording. She does not edit the videos because she does not know how to do it, besides she is afraid of breaking the phone. According to the father, the phone is her favorite device. She uses her phone about half an hour per day and threads with her friends can include 5-7 text messages. The father lets F10g8 borrow his smartphone where he has set up a Kid's corner application for her. The games which F10g8 is allowed to play are in the Kid's corner and she cannot use any other applications on the phone. Dad launches the Kid's corner after which she can use it by herself. With dad's smartphone she likes to play Angry Birds and SmartKid Maths, for example. Occasionally, she takes photos and watches pictures on the father's phone.

Watching TV is taking more time than using the phone. She likes to watch Pikku Kakkonen and Galaxi; Avatar: The Last Airbender is her new favorite program. Shaun the Sheep and Bofori are also dad's favorite programs, so they are watching these programs together. According to dad, F10g8 is watching TV about one and a half hours a day. The daughter agrees by saying that she cannot watch TV as much as she wants, but whenever she feels bored she watches TV.

When F10g8 wants to use the laptop, the father switches it on and opens a Web browser. After that the daughter can find Pikku Kakkonen's website by herself. She uses the computer only for about one

hour a week. On the laptop she usually plays MovieStarPlanet, MonsterHigh and the games on the Pikku Kakkonen website. They sometimes read information on the Internet together, but the father searches for the information first. They have not yet carried out the search process from beginning together. If F10g8 wants to do something new on the Internet, dad will do it with her and give advice on how it is done.

The family does not have a tablet at home, but F10g8 has used one occasionally at school where they have played, drawn mind maps and taken photos for image navigation. She thinks the iPad is easy to use.

The father limits device usage. The girls are not allowed to use devices without permission. They are permitted to switch on the TV, but two hours a day is the maximum watching time. They can use other devices for half an hour a day. The girls usually use devices together, but the younger sister is not very interested in new technologies yet.

The father knows that it is difficult to control the use of devices when F10g8 is at a friend's home. One of her friends has Netflix at home and children can use it quite freely. After school there will be lots of children around and they are watching programs all afternoon. It is challenging, because there is not any parent at home. Dad thinks that bullying will probably move to the Internet. He is a little worried about strangers who might get in touch with the girls via MovieStarPlanet or other games. He thinks it is more likely that someone bullies the girls on the Internet than that a pedophile would try to contact them, for instance.

Findings

How do children under the age of 8 engage in new (online) technologies?

There is a TV in every family. Some of the families have more than just one TV. Children like to watch children's programs on television. Some families tend to watch certain TV series together; it is a way to spend family time. These programs are available also on the Internet. Sometimes families also watch movies together.

PlayStation is the most popular game console. Six families own a PlayStation 2, 3 or 4. In four families there were two game consoles. Two of these families have a Nintendo Wii and a PlayStation, while the other two have two different types of PlayStation. Children are usually allowed to play on their consoles, but they often have game days and game time. They use consoles for playing and watching movies (DVD's). They do not usually play online.

In every family at least one of the family members has a smartphone. Usually, parents or older siblings already have smartphones, but most of the interviewed children did not own a smartphone yet. In such case, they have a regular mobile phone instead. There was only one family in which younger children did not have phones of their own at all. Children usually have their own phones, because parents want them to be achievable. Children like to play on smartphones. Even if they do not have a phone of their own, they can occasionally borrow their parents' or siblings' smartphones for playing.

The tablet is quite a common device in the families. Children under the age of 8 rarely have a tablet of their own, but they would like to have one. However, they know what to do with a tablet, because they have sometimes played with their parents', siblings' or friend's tablet. In one case, the child had used a tablet at school and it was therefore familiar to her, although the family did not have a tablet at home. There is at least one computer in every family, while some of the families have a number of computers. Most of the families own laptops. Children use computers to play and visit websites such as YouTube and online TV (Yle, Katsomo).

Handheld game consoles are not so popular. Only a few families have a Nintendo 3DS or Sony PlayStation Portable, and they are rarely used. If the family is going to travel somewhere, they usually use their smartphones or iPads on the road. There were also couple of devices that were mentioned

only once or twice. One family had a vSmile which is an older Wii console for smaller kids and an Internet radio. Another family owns an iPod. Families do not usually own or they just did not remember to mention any DVD or Blu-ray players. Only few families use a DVD player.

Favorite (online) technologies are the ones that enable playing: game consoles, smartphones, tablets and computers. They are interested in (online) technologies that also allow watching programmes and videos. For this purpose, they most commonly use television, computers, smartphones and tablets.

Children can surf on the Internet on their own, because parents or siblings have taught them how to do that. They know how to open the right website, and some of the children know how to search for information on the Internet. The children who search for information on the net by themselves usually navigate using pictures. Only a few of them can use words in some way. For example, F5g7 first enters a keyword in the YouTube search field. Then she picks up some video, after which she decides on the next video on the YouTube list that appears in the right sidebar. Some of the parents know that even if child uses simple keywords, she or he might find videos that are not suitable for children. Every time the child chooses a video from a list, the list changes. When the children use only pictures to choose videos, there is a big risk that the next one on the list does not have the same contents.

The use of some of the devices is not familiar to all the children. Even using a TV can be difficult for children, because new TV's can be very complicated. In fact, F7g7 had difficulties in using their TV, because the family had a new TV which was different from their previous one. F6b7 told us that for him the radio was the most difficult device, but his little sister disagreed. In her opinion the radio was the easiest device to use and she has attempted to teach her brother to use it. As far as F6g5 is concerned, the computer was the most difficult device, and her siblings thought it was difficult because she has not been shown how to use it as many times as needed. Children clearly understood that they had to practice using the devices, but some of them were quick learners. F4g8 said that her mother demonstrated only once how the computer functions and that the next time she needed the computer she was able to work on it by herself. Even though this girl claimed to be a quick learner, she said that PlayStation was difficult for her. This may indicate that the children's knowledge can be divided. Even the same device may bring problems at some point of its use. For example, a child can be very good at downloading games to devices, but when trying to play the games, a lot of help is needed like in the case of F1b7. It is also worth noting that it is not always about a lack of technical knowledge of how to work with the devices, as they are unable to get access to the devices. The

parents may intentionally refrain from providing the passwords to their children to log in to the computer.

Children under the age of 8 are consumers, not producers. They consume content on the Internet, but they are not producing any yet. This may be due to the fact that they may lack experience or skills in content production or do not have suitable devices. Parents may also have prevented children from producing and publishing products on the Internet. One mother (F8m) believed that the children would probably not understand that they are publishing on the Internet and that their outputs would be there for all to see.

Most often the children's knowledge and expertise in using new (online) technologies came from home. The technologies are always present and they usually have many technological options at home. Children often seem to learn from each other, i.e. older siblings teach younger ones. When children get a new technological device, they can learn to use it together by exploring it. In some families one or both parents have taught their children the basics of using new online technologies, but children have deepened their knowledge by practicing and using various devices and applications.

Children do not normally play simultaneously with digital toys and traditional toys. However, they are inspired by digital media and games. They get their play topics from digital media, such as watching Lego videos or playing a digital game, and then continuing with traditional toys, the Legos blocks.

How are new (online) technologies perceived by the different family members?

Digital devices are part of the ordinary life especially for children. They are interested in the new (online) technologies and they use them willingly.

In children's opinion new online technologies, such as tablets, computers, smartphones and consoles, are positive especially as they use these technologies mainly for entertainment purposes. They find it fun to potter around with devices and different kinds of applications and games. In addition, television is considered a positive but traditional device; it may not be as exciting as those mentioned above, but it is used in all families on a daily basis. The parents did not usually mention the radio or CD-

player at all in the interviews. Some of the parents remembered these devices later on, when the interviewer asked questions about music. The children mentioned them more often and also reported that they were using them.

Children do not find any technology especially dangerous, even if they think that some technologies such as smartphones can explode. Some of the parents and children also mention that it is dangerous to use a phone while driving a car. The parents do not think that any device in particular is dangerous. If they think that something is dangerous, it is usually the Internet. The parents are worried that children might accidentally see inappropriate content. One family mentioned the phones, but the reason for considering a phone to be a dangerous device is the access it provides to the Internet. Children consider basic mobile phones to be boring, as they do not have any interesting games and in many cases, no Internet access.

The children have not had any uncomfortable experiences on the Internet so far. Bullying or other unpleasant behavior on the Internet was not mentioned in the interviews. According to the children, they have not encountered odious content on the Internet, even though some of the parents remarked on such incidents. One reason why children do not mention having seen inappropriate material might be that they do not understand that it was not suitable for them. For example, in one family the parents reported how their children had found a video where the Moomins were drunk and used guns. The parents were shocked, but the children just thought it was a nice joke and had watched the video many times. It is not always the inappropriate content that causes difficulties in the families. In another family one of the children had been involved in a situation where his and at least one other player's goods were stolen in an online game. This happened earlier and the whole situation has already been resolved, so children probably do not even remember it any more.

The parents are more focused on how the device is used or what is done with it. They usually do not consider any device to be only positive or negative. However, the telephone is mentioned, and usually it is a smartphone. The parents think that it is difficult to monitor the use of a phone. The phone is usually available to the child and parents are not always there to follow what it is used for.

The use of time is a big issue. Parents are worried that the children will immerse themselves in a virtual world through new (online) technology. Some of the parents think that contacts by strangers are not a current concern. Their children are not using social media and that is why parents think that it is not a topical matter. Only a few parents are worried that some stranger could contact their child.

Some of these parents knows that their child uses the kind of apps that enable strangers to approach the child. The parents mention MovieStarPlanet, for example, where users can chat together. The idea arose in the interviews that it was more likely that their child was being bullied online by some school friends than a pedophile would get in contact with the child. Some parents mentioned that they would be much more worried if they were not limiting the use of the devices.

The parents usually think that the children learn something from games. They mention, for example, English and mathematics. One mother (F6m) thinks that her children learn something about market economy on the HayDay game. Other things that were mentioned included the opportunity to learn coding and collaborative action while playing Minecraft, for example. Parents usually do not mention that there is a possibility to learn hand-eye coordination or spatial visualization, for example. Some of the parents emphasize that they prefer learning in a traditional way such as as handwriting and reading books. Meanwhile almost none of the children mention the idea that playing is in any way connected to learning experiences. Only one boy (F6b7) says that by playing Minecraft one can learn how to manufacture glass, torches and lamps.

What kind of a role do these new (online) technologies play in the children's and parents' lives?

The children find new (online) technologies crucial, as they are part of their everyday life. They have grown up in the midst of technology and they perceive it as a toy and a utility at the same time. Children under the age of 8 do not yet have a lot of technology enhanced schoolwork, but it will increase gradually. New technologies play a big role in the children's lives, but normally they cannot use technology as much as they would like to. That is because of home rules, which often put restrictions on screen time and the ways of using technology. Parents can, for example, prevent children from playing on their PlayStation online in order to avoid unpleasant contacts with strangers.

Many parents use technology on a daily basis both at work and during their leisure time at home. The news is read on the Internet and everyday matters such as banking are managed on the Internet as well. However, some of the parents seems to use technology as little as possible, although television appears to be an exception. Either TV watching is not counted as a use of new technology, or even parents who are not interested in new technology in general are watching television. Some of the parents use devices also at home, because they have hobbies that require the use of some device.

The parents seem to understand that their children need to learn to use devices. Even if the parents sometimes would like to put all the devices away, they know that the children will be needing them in the future and it is better to teach them how to use them safely. According to some of the parents, it is especially difficult to supervise the use of smartphones. That is why some of them would like to go back in time and use only regular phones. The parents appreciate the fact that their children are always reachable because of the phones. Hence they do not want to abandon phones entirely.

Some of the parents consider that technology is completely irrelevant in terms of family life. Others see that the technology has an influence on the family. For example, the sofas and arm chairs are positioned around the television in the living room. Some of the parents seem to think that if there were not any devices, there would be much less quarreling in the families. Now parents need to be resolving disputes related to the use of devices. Disagreements regarding the turns to play and allowed playing time are very common. After all, many of the parents understand that there would still be quarrels even if there were not any devices, only the reason of the quarrels would be different.

The families are usually watching television together. One of the parents, usually the father, might play on a game consoles or iPad with the children, but whole families do not seem to play digital games together. Some of the parents say that they do not play, because siblings play together. The siblings help each other with devices and older siblings sometimes teach younger ones to use some of the devices. The parents search for information with their children. It is not evident if the whole family is doing it together or more generally, a single parent with a child or children.

According to some of the parents, a decline in communication is caused by the use of new (online) technologies and it is thus considered a negative thing. There is a chance that the ability to talk to each other vanishes when everyone is communicating with and through their devices. On the other hand, the parents are also experiencing technological devices as a facilitator in everyday life; the phone is an easy way to keep in touch with the children, and the TV can baby-sit if necessary.

Some of the parents are also aware that they must limit the use of technologies. F3b7, for example, says that his mother sometimes does not come to enter the password on the computer, because she concentrates on using her own phone and does not hear her son calling for help. The parents can immerse themselves in the virtual world in the same way as their children do. Continuous use of the devices can limit the time spent together with the children. Some of the mothers talk about the fathers' use of devices, nagging that they use them too much. The children also mention that the parents have

more screen time than they have. A positive effect of technology is seen to be, for example, in that the parents can get support in bringing up their children. They can also search for information and advice in the problems they face.

The children seem to be quite happy with the devices they have. Only one child (F1b7) said that he would like to have a tablet which they did not own yet. Other children did not talk about devices that they would like to have. Some mentioned that they had used a device that they did not own at a friend's house or at school.

How do parents manage their younger children's use of (online) technologies?

The parents seem to have different roles when they are dealing with the children's use of new technology. Mothers usually say when and how many children can use devices. Some of the mothers are quite precise about the rules and know exactly what is not appropriate for their children. Meanwhile, fathers are often not as strict and they might lose their sense of time when they are playing with their kids. In some interviews mothers suggest that fathers use devices too much and let their children do inappropriate things. Fathers do search for information together with the children quite as the mothers also do, but they play games more than mothers. Mothers usually do not play digital games at all or they play very rarely. Some of the children mentioned that the father had taught them how to use the devices.

The parents usually decide which apps or games children are allowed to use. The parents pay attention to the age limit and other descriptions of the games. Furthermore, they try to find out the content of the games. Some of the parents follow the age limit precisely, while others pay more attention to the content. Many of the parents do not allow their young children to play any war or shooter games. One mother (F6m) mentions that when they have downloaded a game, she listens to kind of language they are using in the game. If it is not appropriate, she removes the game. In one of the families an 11-year-old girl (F2og11) decides which games and apps are downloaded to the tablet. The parents trust that this child can choose games and apps which are in accordance with the rules. Sometimes the mother checks the apps and games installed on the devices.

The parents do not use child locks very often. In most cases the passwords set on the devices are not revealed to the children. Some of the parents have a Kid's corner in the smartphone or every child

has his or her own folder on the computer or iPad containing the apps which she or he is allowed to use. There can be passwords on a smartphone, iPad or computer but the game consoles are usually ready for use all the time. The parents only take the cables or controllers away, if they notice that the children are using them too much. To be able to download games or apps, a password from the parents is often required, but not in every family. In one family (F1) the parents had not known that the child downloaded apps to the father's phone until the child downloaded a paid application that they saw on the bill. One family (F7) reports that they use software that prevents access to websites or videos that contain drugs or sex, for example. Another family (F4) mentions that they have set some kind of a safety mode on the Internet. Some of the parents have not heard about a safety mode on YouTube, and none of them are using it.

The rules are mainly related to time. The children are often allocated either a weekly or daily time limit that they can spend with new (online) technologies. Sometimes the parents do not determine time limits so precisely, but control device usage based on their own feelings. When they think that the child has used devices enough, screen time is finished. Some of the parents also limit television programs that the children have permission to watch. Similarly, games, applications and websites are under strict supervision in the case of some of the parents. The use of the devices is prohibited after a certain time of the day in some families. Sometimes the device may only be used in a certain room such as the living room where the parents can supervise their children's use of the device more easily. The parents may also set rules for the use of devices during meals. As a result of the interview, some of the parents began to think that they could talk with their children and ask them what they thought about the rules.

Some parents supervise their children's use of the Internet very closely. They will not leave their children alone even for a couple of minutes; only if the child is using a specific website, he/she may be alone for a moment. In some families the parents check the browsing history and try to supervise Internet usage in this way. One mother (F8m) reports that she can ask her child to give her phone at any time to see if there are inappropriate apps or games. Watching TV and listening to music are not limited to the same extent as playing on a game console or using the iPad. For example, one mother (F1m) says herself that they do not control TV usage so much. In one family (F2) the mother sometimes points out that there is an age limit in some of the episodes of the day-to-day TV-series that the children are allowed to watch. When she tries to prohibit a specific episode, the children do not obey nor does the mother demand them to obey. In some families the parents have a number of

ways to control their children's use of devices, while in others the parents barely seem to know how to manage the situation.

When the interviewer asked about rules related to digital devices and the use of the Internet, the parents usually did not talk much about television, radio or CD players. Some families are talking about 'screen time', which includes gaming and use of the Internet regardless of device.

Digital devices are a part of the punishment system in the families. It is often sufficient that the parents threaten with the loss of a device, if a child does not behave properly. Sometimes the parents order that the child has to do something, such as homework or guitar lessons, before they are allowed to use devices. Digital devices are not part of a reward system. If the child earns a reward, it is something other than gaming time or a right to use devices. It might be as it was in one family, for example, pancakes or the family going to the movies (F8).

According to some of the parents, no-one challenges the rules, whereas in other families children complain about the rules, but in vain. An opposition to the rules often arises when there are older children in the family. Parents seem to feel that things are still easy with the interviewed children under the age of 8; older siblings argue more about the rules than the younger children do. Some of the children do understand quite well why the rules are such as they are. Sometimes the rules are not so clear to the children, and there are also kids who cannot explain why they are not allowed to do something.

Some parents use technology to assist them in educating their children. They may choose educational games for their children, such that they think children could learn something from. They search for information together on the Internet, and sometimes parents may, for example, allow children to play a sport game on the Wii on a rainy day. In this way the child gets exercise undetected. Getting practice for tests at school by using technological devices was mentioned in one family (F8). The devices help the parents to get the children practice a little more and in a different way than just by reading books. But more often the parents do not encourage their children to do anything online. The parents seem to restrict and protect their children more than encourage them in the correct use of new (online) technologies.

The school has recommended some kind of a learning game for the children. Some of the parents have played it together or have allowed their children to play the game. The parents know that the

children use devices at school, but they do not talk about it a lot and it does not seem to be a problem to the parents. One mother (F6m) was a little surprised when she heard that her child had taken a photo at school. Children are usually not allowed to use their phones during the school day. When she realized that it was about schoolwork, she did not talk about it anymore. This mother was also quite suspicious about video recording in the interview. She emphasized that any videos where her children can be identified shall not be used anywhere.

Some of the children have seen inappropriate content on the Internet. The parents told about some situations where the children had seen, for example, pictures of a half-naked woman or a video where the Moomins were drunk and used guns. Some of the situations had happened to the older siblings. On certain occasions inappropriate material had been seen outside the home. Friends can tempt the children to do something they actually do not want to do. In addition, different kinds of rules can complicate parents' aspirations to limit children's device usage.

In the end, some of the parents tried to find excuses for their choices. They do know that their children use devices quite a lot, but they try to convince that they are controlling what their children are doing and how much they are using the devices. It was difficult to get some of the parents to say what the rules really were. It seems that the parents like to point out that they do have some rules, there are not any problems with the younger children and they really do know what the children do with the devices. Some parents confess that they should do more and they should supervise their children better. Some felt that they did not have sufficient knowledge or skills to do so. It appears that some of the parents do not know about child locks or safety modes, while others are very well aware of them.

Surprising findings

It is sometimes hard for parents to be knowledgeable enough about digital technology. For example, there is no clear definition of a smartphone, and some of the parents therefore have difficulties to understand whether a phone is a smartphone or not. However, it might not be such a significant piece of information in most cases. For example in one family (F5) both parents were working as software engineers and they approached the question from a professional point of view. Thus they probably thought more about the technical rather than commercial definition of a smartphone. They knew that the phone was a touch screen phone that the child used to access YouTube and thereby there was Internet access on the phone. In another family there was a different kind of situation. In that family mother said that her children's phones were not smartphones, but the older child claimed he had a

smartphone and surfed the Internet with it. In this family the parents do not really know what kind of devices the children have and what they can do with them.

Online games also seem to cause some difficulties to the parents. They did not always know whether the game was on the Internet or if it had been downloaded to the device. After a short thinking the parents were usually able to name at least one online game that their child was using. Some of the parents also understood that it was possible in some games that the child could chat with strangers, because they are played online. But after all, parents concluded that the interview made them to think consciously about both the benefits and the disadvantages of the online technology.

One surprising finding was the way in which the parents create rules with their neighbors. Many of the families have noticed that their children always visit a home in the neighborhood where there is a game day. The parents have therefore been in contact with each other, and agreed on joint rules. They have decided on the game days together, hence all the children who spend time together have the same game days. This makes it easier for the parents to supervise their children and they cannot play games every day. F8m also mentioned that when at least some of the neighbors have equally strict rules as they have, children need not quarrel so much against the rules.

One of the girls' favorite games is MovieStarPlanet where the player can dress her game character, take care of her pets and so on. It seems that traditional plays have moved to a digital format. The way girls used to play with paper dolls, the player can now do the same thing in MovieStarPlanet, for example. Many of us have taken good care of soft toy dogs or cats when we were children. Some time ago there were Tamagotchis, but nowadays children do not need a separate device to take care of their pets. They can just do it on their computers, tablets and smartphones; the player in a game can even have a whole farm not just one animal. In many of these games there are lots of different things that can be done. In MovieStarPlanet, for example, the player can dress her character, take care of her pets and even film a movie. In Minecraft, the player can build things, but at the same time he or she can fight against enemies and destroy somebody else's buildings or villages. We have come a long way from the first pinball game where the player could only try to prevent dropping his or her ball.

Method

This section describes how the Finnish team of three interviewers and a guiding researcher from the University of Oulu carried out the study in the City of Oulu in Finland.

Procedure

The Finnish research team joined in the Young Children (0-8) and Digital Technology study in mid-September 2014. The study conducted by the team followed the guidelines and ethics stated in the contract with the LSE and the European Commission as well as the ethical guidelines of the University of Oulu. The necessary information for parents and children was translated into Finnish and edited to fit the Finnish culture and the purpose of the study. The artwork produced for the study, except for the book, was used in the study. The study included the following documents and procedures:

- Obtaining informed consent from both parents and children, plus reminders to all participants that they could refuse any questions and withdraw at any time
- Use of cards, play materials etc. to put children at their ease;
- Use of a video camera to record devices in the home was used but faces or other identifying details were avoided;
- Confidentiality;
- Anonymity (via anonymized transcripts and reports, and encryption of all personally-identifying data including video-recordings– these were retained only for the duration of the project);
- Data sharing – only anonymized data transcripts and codes to be shared within the national and comparative project;
- Risks to the researchers (addressed by two researchers visiting the home together);
- Children received stickers as a reward for the participation but parents were not given any incentives.

There were three interviewers in the Finnish team, but only two of them were present during each visit. The interviews with the children took place in their homes in the evenings as agreed with the parents. The interviewers had participated before in literacy projects led by the first author (Future School Second Wave & Joy of Reading). The whole team met a few times before the interviews and during it to share procedures. They also established a Facebook page and shared ongoing events, news and problems on a regular basis. Two of the interviewers participated in transcribing the data. The

team met and discussed the initial findings. This report has been produced by the whole Finnish team.

Sampling procedures

The first author approached the principal of the University Training School and asked his help to recruit families and children for the study. The principal talked to four of the teachers working in the school and teaching pre-primary, first and second grade classrooms. The first author visited the school and met with two of the teachers and their pupils. She told briefly about the study and asked for these teachers' help in finding children and their families to be interviewed. Two teachers were contacted by e-mail. The first author wrote a brief invitation letter to join in the research (see Annexes). The invitation was sent to children's parents in both printed form and electronically. The first author contacted by phone the parents who had showed an interest in joining. She explained the study in a little more detail and agreed on a time for the visit. The parents and the child signed the consent to the study during the visit before the actual interview (Annexes).

Because the Finnish team joined the research just before the interviews had to be started, there was no time for additional recruitment of families for a larger variety of backgrounds. But the families who responded at a very brief notice and without any special incentives were motivated to participate in the study.

Sample

Family code	Family income	Family Member code	Sex	Age	Year school/max level of education	Ethnicity
1	not reported	F1m F1f F1b7	female male male	7	Completed university Completed university Year 1	Finn Finn Finn
2	20 000-40 000	F2m F2f F2og11 F2g8	female male female female	11 8	Studying Studying Year 5 Year2	Finn Finn Finn Finn

3	60 000-80 000	F3m F3f F3ob16 F3ob14 F3og13 F3ob10 F3b7	female male male male female male male	 16 14 13 10 7	Completed university of applied sciences Completed university of applied sciences Unknown Unknown Unknown Unknown Year 1	Finn Finn Finn Finn Finn Finn Finn
4	20 000-40 000	F4m F4f F4og17 F4og15 F4ob14 F4ob12 F4ob10 F4g8 F4b6 F4yg4 F4yb3 F4yb1	female male female female male male male female male female male male	 17 15 14 12 10 8 6 4 3 1	Completed secondary Completed vocational Unknown Unknown Unknown Unknown Unknown Year 2 Kindergarten Unknown Unknown Unknown	Italian Italian Italian Italian Italian Italian Italian Italian Italian Italian Italian Italian
5	> 80 000	F5m F5f F5g7 F5g5	female male female female	 7 5	Completed university of applied sciences Completed vocational Year 2 Kindergarten	Finn Finn Finn Finn
6	> 80 000	F6m F6f F6b7 F6g5	female male male female	 7 5	Completed university Completed university Year 2 Kindergarten	Finn Finn Finn Finn
7	> 80 000	F7m F7f F7ob19 F7og17 F7ob9 F7g7	female male male female male female	42 42 19 17 9 7	Completed Bachelor's Completed university Unknown Unknown Year 4 Year 2	Finn Finn Finn Finn Finn Finn
8	> 80 000	F8m F8sf F8og19 F8og18 F8og15 F8og12 F8ob11 F8g7	female male female female female female male female	 19 18 15 12 11 7	Completed university of applied sciences Unknown Unknown Unknown Unknown Year 7 Year 5 Year 2	Finn Finn Finn Finn Finn Finn Finn Finn
9	not reported	F9m F9ob9 F9b7	female male male	38 9 7	Completed university Year 3 Year 1	Finn Finn Finn
10	40 000-60 000	F10f F10g8 F10g5	male female female	 8 5	Completed university Year 2 Kindergarten	Finn Finn Finn

Implementation of the protocol of observations

All the participating families were interested in the subject of the study and therefore, they were welcoming and willing to discuss with the interviewers. All the interviews proceeded following the same formula: introduction, ice-breaker, simultaneous interviews with the children and the parents, activities with the children while the interview still continued with the parents, closing, final questions and giving gifts to the children. Each visit lasted about 1.5 hours, which seemed to be a very long time in some cases; both the children and the parents got tired.

Two of the three interviewers were present in every interview. To ensure similarity of the procedure, a detailed agreement on the elements of each interview was made in advance. The interview started with a short introduction with one of the interviewers explaining the purpose and aim of the study and requesting that both the parental and child consent forms be signed. One of the interviewers or parents read the child consent form to the child, while the parents read the parental consent by themselves. After all the forms had been signed, video recording was switched on.

The ice-breaker activity was carried out as suggested in the European Schoolnet activity book. The interviewers gave the cards and a timeline of the day to the families, and they placed together the cards at certain points in time. The parents and the children talked together during the activity, so the parents most often led their children with their daily activities and times. The children typically knew how to read a clock, whereas they had difficulty recognizing images and there were lots of pictures missing such as eating and playing with different devices. The ice-breaker was a good way to start the interview, because it smoothly led both the interviewers and the families to the subject.

After the ice-breaker was finished, the interviewers usually took the children to another room for their interview, while the parents stayed in the room where the ice-breaker had taken place. This turned out to be a critical moment, because the parents had had the impression that the interview was supposed to be performed together with the children. However, this issue did not jeopardize the interview, because the parents were informed what would happen in the children's interview.

The parents' interviews were conducted by the same interviewer every time, while the other two interviewers alternated in doing the children's interviews. All the participants in an interview were involved at its start, but the siblings could choose to leave during the interview. The duration of the interviews varied; sometimes it lasted longer with the children due to familiarization at the beginning

or a guided walk around the house at the end. It also seemed to have an effect on the length of the interview whether there was only one or both parents in the interview; in addition, the mothers were often more talkative than the fathers. The number of interviewed children also had an impact on the length of the interview.

In the parents' interview there was not enough time to take notes. It would have been easier for the interviewer to remember all the devices that a family owned, if the card game had also been used in the parents' interview. Video recording helped a lot, but despite it the interviewer was in need of some memory support during the interview. The room where the interview was held also had an influence on the discussion. Because the parents usually stayed in the shared areas of the house, other members of family could use the same environment or moved through the room. The parents' interview was interrupted a little whenever that happened. Also phones, doorbells or other similar things had their effect on the interview. In general, the parents were easy to approach, because they are facing questions related to new online technology on a daily basis. They talked willingly about their family rules and even the differences in their attitudes to these rules.

In the interview with the child, the researcher had to focus on keeping the children's interest alive, especially when they started to work on a technological device. The devices were so inspiring to the children that they were immediately caught in the virtual world. The children recognized and knew well almost all the devices on the cards, in fact they had used most of them themselves. The children were asked to arrange the cards in a row according to what they liked the most and how much they enjoyed using each device or toy. The card game was very good, because during the rest of the interview the interviewer could use the cards to support the discussion. For the children the cards worked as memory refreshment. At the end of the interview, the children were able to show the devices of their choices to the interviewer. However, not all the devices were shown, because it would have required permission from the parents. This in turn would have interrupted the parents' interview. And again, the guided tour around the house disturbed the parents' interview as well.

At the end of the interview the parents and children gathered together. The interviewers answered any questions, thanked the family for taking part in the research and gave stickers to the children in return. In addition, the interviewers agreed with the families that they would get the report. Right after leaving the family, the interviewers discussed the method and any interesting things that had come up during the visit. In this way the interviewers were able to get an overall picture of each family and find out interesting things on which to focus later.

Implementation of the protocol of analysis

Two of the interviewers viewed the video data and transcribed it verbatim from eight parents' and seven children's interviews. Any data that was not transcribed due to time limitations was watched very carefully from the videos to make a reliable family portrait. This data was also viewed to confirm or disconfirm the observations made on the basis of the transcribed data. Lack of time did not, however, allow any rigorous analysis of the data. Our results therefore represent initial findings based on our data.

Observations from the methodology: How could the study be improved?

Ethnographic studies are always both time consuming and demanding in many ways. First of all, it is not easy for researchers to conduct research in the privacy of the interviewees' homes, nor is it easy for the interviewees to let an unknown person to enter their home. Generally stating, Finnish people tend to be quite abstinent and do not let observers in their private space easily.

On quite the contrary to our expectations, recruiting ten families for the study from only one primary school was successful, even despite the limited time frame. However, during the interviews it was noted that some parents were a bit reserved to open their home for further observation (as in going around to look for devices in different rooms). In spite of this, the method used in the study (the home setting) provided access to information which would not have been reachable outside the home environment such as in the school environment. However, a more comprehensive understanding on how children use technology in different circumstances requires gathering data also e.g. in the school environment and with friends.

The data on each family was gathered through only one visit in the homes of the families. It is a well-known fact that young children's behavior is very situational and can change in relation to the context in question. Therefore, data should be gathered through several visits in the home environment to establish a trusting relationship between the researcher and the families to prevent superficial interpretation of the children's experiences, knowledge and skills related to their use of ICT-tools. For a more profound understanding, the children and the researcher should also get to know one another before the actual interview protocol is executed, so that the children would be confident to express themselves authentically. In an ideal situation, through prior interaction and gained

experience, the interviewer would learn how to best interact with each child individually, and provide optimal comfort for each child to receive authentic responses from the children. In regards of further research, the interview could be supported with additional data such as videos, photographs, diaries, and artifacts such as drawings or animations from a longer period of time.

It is also essential to consider the ethical background of the children, meaning that they are not only seen as data or objects in research, but instead, individuals who have each interacted with the research team individually in slightly different home settings. Even though young children do not necessarily understand what it means to be part of such research, the children's feeling of safety, privacy, and ownership to the research is important, and so the research team felt that their consent was especially important in regards of the research. It was noted that one child, although willing to participate in the research, turned out to hesitate in the signing of the consent, and so, little negotiation from the parent and researcher had to be held before the agreement was finally made.

Delicacy was noted in regards of the background information of the families, such as in the question of the family incomes. One family refused to provide their income despite a typical middle class home setting. It was noted, that the families showed discomfort in answering the question on income generally as well. It might work better to leave the form to be filled in later, so such facts would not be revealed directly in front of the researcher.

In regards to the interview questions, the researchers thought that there were quite many questions overall, and many of them were such that the children could provide simple 'yes' or 'no' answers to. To receive a more thorough understanding, the interviewer had to often provide additional questions, and show pedagogical competence to receive fruitful answers. However, regardless of this, even these attempts did not always work. Furthermore, the interview protocol also consisted of repetitive questions which led some children to become bored during the process. With the research team, it was thought that more open questions would have produced more authentic responses and interesting stories from the children on their use of technology. Moreover, in the ice-breaker activity, the provided pictures actually limited the children's story of their experiences of their day. It would have been better to give the children a chance to freely describe their day. Additionally, the selection of the pictures would have needed to be much broader. Again, as mentioned earlier, children and/or their siblings could take a video or pictures of their day which could be discussed later on with the interviewer. This would provide better understanding of children's daily life with the technology.

This way, the use of technology would not concentrate on the children's technical skills too much, but would also provide important information on the content and the quality of the use of the devices.

To conclude, despite the obstacles and limitations in the methodology and methods, this pilot study gave important information on young children's use of digital technology, and provided important elements on how develop the use of such methodology. In regards of further research, it would be necessary to gather data through a longer period of time by using several ethnographic techniques as support.

Discussion

The media usage of 0–8 year-old Finnish children have been studied in three years' intervals by using parent surveys (Suoninen, 2011; Suoninen, 2013). The findings of these studies have demonstrated that there is no change in children's use of printed media or digital media. Similar findings were also observed in a survey targeted to pre-primary and first grade children's parents (Korkeamäki, Dreher & Pekkarinen, 2012). In the current study, the purpose was to examine 6-8-year-old children's use of digital technology in the children's home environment by viewing children as participants with their siblings and parents. We discuss our findings in the light of earlier studies.

Devices, access and usage

It has been a common finding in Finland and other countries, that the TV plays a central role in media (e.g. Common Sense Media, 2011; Korkeamäki, Dreher & Pekkarinen, 2012; Ofcom, 2010; Suoninen, 2011). In her latest study, Suoninen (2013) was no longer as interested in the usage the TV in the home environment, as it has lost its prior dominant role due to the ubiquitous media of the Internet services, such as YouTube and free on-demand programme services. These programs can be watched with the help of several technologies, e.g. with iPhones. Due to this change, the parents of this study may have regarded TV as an old technological device, and did not count the watching of TV as use of technology. However, every family had at least one TV-set and the parents reported that the family watched TV together. The parents also mentioned the dominance of the TV in the furnishings of their living rooms, which was noted to also help the use of other technological tools such as iPads, if the family happened to have several of them and the family gathered together to play with them.

In her survey, Suoninen (2013) found that in 99% of the homes, the families had access to the Internet, and thus, the children started to use it at a very early age. In this study, all the families had access to the Internet. In fact, many families had several ways of accessing the Internet, e.g. through: computers, laptops and tablets. Commonly, children use computers for playing and visiting websites, such as YouTube and web-TV (Yle, Katsomo). Similarly, this was found to be the case in the Media Barometer (Suoninen, 2013). In fact children's favorite technologies were those which enabled them to play with the technology, such as: game consoles, smart phones, tablets and computers. Moreover, handheld game consoles were not as popular as they used to be about ten years earlier (Ermi, Mäyrä,

& Heliö, 2005; Matikkala & Lahikainen, 2005). Indeed, in this study the children were interested in online technologies, which allowed them to both play and watch the programmes and videos with the devices. In that sense, the computers, smartphones, and tablets dominated the usage of other ICT-devices.

According to the data, every family had at least one smartphone, although the children most often had a regular cellular phone (only three of the children had their own smartphone). In one family, the younger children did not have their own phone at all. Usually the children received their own phone when they attended the first grade (Korkeamäki, Dreher & Pekkarinen, 2012, Suoninen, 2013). Typically, parents and children keep in contact through calling with their phones. In doing so, the parents were able to keep track of their children's whereabouts.

According to the findings, the children knew how to get onto the Internet, if they only had the required access – some parents had not provided the password for their children. But whenever children were able to access the Internet, they knew how to search for the needed information. Suoninen (2013) found a substantial change in the usage habits of accessing the Internet by analyzing a three-year-spectrum. In her earlier study (Suoninen, 2010) the Internet was popular for playing games, but three years later, the Internet was mostly used for watching audiovisual programmes. Most often, children had learned to use the Internet from their older siblings or friends, but in some cases, the parents had taught the children the basic ICT-skills, which the children themselves had developed further. However, it is worth noticing that the children are consumers of the media instead of being producers of the content, as was found to be the case with a little older children (Palmgren-Neuvonen, Jaakkola & Korkeamäki, in press).

Parents and children's views on use of technology

Earlier studies have demonstrated that in comparison to mothers, fathers are more involved in the use of technology, especially in playing digital games with their children. Suoninen (2013) found that in single child families of 7-8 –year-old children, most of them used the Internet regularly with their age-mates. However, use of the Internet among children of the same age below school age, was very rare. So, younger children with no siblings generally did not use the Internet with their peers. The children who had siblings at home, however, used the Internet even with the latter ones and half of

the 3-6-year olds, and almost two thirds of the 7-8-year-olds with siblings regularly used the Internet with their age-mates or younger children.

In this study the parents had somewhat neutral opinions about technology: they did not consider technology as particularly very good or bad, but rather found importance in the many purposes of the technological devices. It seemed that from the children's point of view, technology was mostly for entertainment. For example, they thought that phones that did not have games were boring. Both the parents and children were trusting with the technology, and the children thought that the only dangerous thing about the devices would relate to them exploding due to overheating (in other words, physical danger was realized, not the dangers of the content of the www-sites). The parents' confidence may have depended on the idea that young children do not visit harmful Internet sites, although they had had some accidental negative experiences. However, the parents did express slight worry on the topic of bullying, which in their opinion, may become a problem when the children enter to the social media.

The parents were most worried about the time spent with the technology instead of playing traditionally. Children usually did not play virtually and traditionally at the same time. Playing with technology was rather gaming than playing. The parents thought that by using games, the children would learn something unintentionally, e.g. coding and collaborative action while playing, for example Minecraft. Some parents think that educational games can provide learning of important school subjects, such as mathematics and English language. Interestingly, some parents mentioned that they appreciated more learning by reading books in print and handwriting than using technology as a writing tool. In contrast, in an earlier study, especially pre-primary school children's parents encouraged their children to play the games which were designed for learning (Korkeamäki, Dreher & Pekkarinen, 2012).

Although the parents seemed to have mostly positive attitudes and experiences with the technology, they indeed, controlled and limited children's use of it. The mothers seemed to play a bigger role in setting up the rules and watching after their use. Fathers were more permissive than mothers, and fathers also more often joined the children's gaming. Parents mentioned that the monitoring of the use of smartphones was the most difficult. It had also surprised some of the parents that children were able to go to the Internet with their phones. This demonstrates that the parents' knowledge on technological devices might not be on as high level as it should be. Monitoring the use of the Internet

with computers and tablets was most commonly controlled by passwords. Some parents used software for controlling the usage.

In controlling the programmes, the parents often trusted the criteria and age limitation of the games, provided originally by the game-makers. But they also controlled the content which meant that even though there was no age limitation, the parents did not allow their children to watch programmes which included violence or sex. Similarly they limited the use of inappropriate games e.g. with shooting. Some parents were so strict with the rules that they did not allow children to use technology at all on their own. As mentioned above the living room, which was earlier devoted to watching TV, was changed to be a place for using other technologies, such as tablets. This is also evidence of the role of the technology in socializing in the family life, although the most common view of it was that it had separated people or at least made the face-to-face interaction among people less common. One additional new type of interaction had emerged among some families: they had set similar rules with their neighboring families. This way the parents avoided their children's arguments about unfair rules in their own family.

Conclusions

The findings of the Finnish families studied here are generally in line with the recent parents' surveys about the use of technology at home (Korkeamäki, Dreher & Pekkarinen, 2012; Suoninen, 2013). Families have many technological devices at home which offer online audiovisual programmes even for very young children. In this context, TV has lost its dominance and even children's TV programmes are not necessarily watched as live broadcasted but rather at a more suitable time using on-demand programme services (Yle Areena of the Finnish national broadcasting company) or other programme services available on the Internet (e.g. YouTube). In addition to the audiovisual programmes, various digital games are popular among the children. It seems however, that hand held console games are also losing their popularity and games which are available on the Internet conquer the place of these console games. Digital games really play a big role in the children's use of technology in this study. Some children even claimed that phones which do not afford gaming are boring. Parents have also had quite positive attitudes towards gaming, because they think that children will learn important substance of school subjects and also social skills while playing.

Contrary to the assumption that technology separates the family members and isolates them into their own rooms, in this study, the interviews revealed the opposite. The families have technological tools, such as tablets or iPads, often in their living rooms, where several family members are active participants in the same game or they watch audiovisual programmes together, which are easily available as explained above. In some families, this arrangement was also considered a safety issue if the parents were able to control their children's engagement. The role of older siblings was also significant – they resembled assistants in teaching the younger siblings. In one family, an older sibling was the guider and controller in regards of playing, and seeking and recommending appropriate programmes for the younger siblings. Generally, the parents were not very worried about the safety of using ICT-tools, although they mentioned, that the use of smartphones was difficult to control. One surprising finding was that the parents did not always know what the children are able to do with their devices. Moreover, some children were not aware of the fact that the game they had been playing was readily available in the Internet. Interestingly, the parents were also confused about the availability of various types of devices, services and suppliers.

Quite many of the parents in the study were very keen and regular users of digital technology. Nevertheless, they cannot be regarded as techno overenthusiastic in such a way that would want their children only playing with these modern devices. On the contrary, they were worried about the children using enough time engaging in other activities or hobbies, such as playing traditionally. Therefore, they controlled the time their children used with these devices, and had set rules and screen time limits for them. It is worth noting, that although the parents willingly supported gaming within the certain time limitations, they did not regard computer gaming as equal to playing in the traditional sense. It would be interesting to further study why they think that way. Do they maybe think that computer gaming is more limited and does not withhold enough space for the children's own choices and creativity, but instead, is more limited in regards to ready-made rules and options. Most of the time spent with the new technology was for entertainment purposes: watching audio-visual programmes and gaming. Information seeking played a minor role in the interview data. However, the parents reported that in some cases, a question related to children's interests or needs emerged and the parents searched for information on the Internet. In these occasions it seemed that the parent had been searching the information and the child had more of an observer's role. It remained unclear how much children were able to use Internet independently. But there were also a few children who were efficient independent users of search browsers, such as Google, and used them according to their needs for finding videos for instructional purposes or for their entertainment. In order to meet their goal children used different strategies depending on their ability to read. A child who was a beginning reader, wrote a key word to access the site which was useful for her whereas a child who had not yet cracked the code used the sidebar instead. More specific focus would have been needed to find out what the children's needs and skills are to use the Internet for searching information. The children's homework was not related to these types of tasks but the children's teachers reported that in school they had found a big variation in children's skills in general in this respect. These finding is also evident in studies in other countries (e.g. Dodge, Husain & Duke, 2011). This is not so much a challenge for parents as it is for schools. In fact, the Finnish National Core Curriculum, which will put to use in 2016 (see Board of Education), focuses strongly on multiliteracies and the use of technology in schools. This is important because it will not only be a question of teaching 21st century skills, but also an obligation to teach making choices appropriate for child's own wellbeing. Therefore, it is important to work together with the parents and continue researching their opinions and practices at home.

Because the new technology had developed so quickly, there is not enough research on what the consequences of technology in social relations and in learning are. Instead, there might be several

urban legends of the effects of technology (Kirschner, 2014), for example, about the effects of gaming for learning. There is evidence that games are effective in teaching certain skills, such as recognizing letters and their sounds (Richardson & Lyytinen, 2014), but they do not necessarily teach deeper understanding of knowledge. However, collaborative working supported by technology may serve in gaining skill to search information and understanding the meanings more deeply.

It is worth pointing out that there is still a lot to do in teaching how to use technology at home and other informal environments as well as in formal learning environments in kindergarten and schools. Especially important is that teachers in all levels work in partnership with the parents as has been proposed in the new National Curriculum Framework (Board of Education). In fact, it would be very beneficial to establish a research project to study how to work in partnership between institutions and parents to reach the aspiring goals set in the curricula, instead of ending to frustration of not much happening in the field despite the effort of Mediamuffinssi, for example (Pääjärvi, 2014). This proposal is also supported by the findings of this pilot study as parents expressed that the interview woke them up to think about the practices with the technology at home and especially with the online technology. Interestingly, kindergarten teachers had the opinion that media education should be seen as the parents' task and not the teachers' (Kylmänen, 2011).

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Annexes

Invitation for parents' participation

Hyvät vanhemmat!

Euroopan komission on rahoittanut 6-8 -vuotiaille lapsille ja heidän vanhemmilleen tehtävää tutkimusta uuden teknologian kuten tietokoneiden, älypuhelin, tablettitietokoneiden ja digitaalisten pelien käytöstä viidessä Euroopan maassa. Suomi kutsuttiin mukaan tutkimukseen viime viikolla Oulun yliopiston kasvatustieteiden tiedekunnan kautta. Kutsu osoitettiin allekirjoittaneelle.

Tutkimuksen tarkoituksena on selvittää uudenteknologian tuomia hyötyjä ja sen mahdollisia riskitekijöitä. Tässä tutkimuksessa lähetystään asiaa on aivan uudella tavalla ja siinä lapset ja heidän vanhempansa ovat avainhenkilöitä.

Tutkimuksessa haastatellaan lapsia ja heidän vanhempiaan kotona n. kaksi tuntia. Haastattelu sisältää tutustelun pientä leikillistä materiaalia käyttäen. Haastattelu tehdään lokakuun puoliväliin mennessä ja se äänitetään. Tämä viestin tarkoituksena on pyytää teitä ja lastanne osallistumaan tutkimukseen. Se on luonnollisesti täysin vapaaehtoista. Siihen osallistuvat pysyvät tutkimuksen kaikissa vaiheissa nimettömänä ja tutkimuksesta voi vetäytyä milloin tahansa.

Olisin todella iloinen, jos perheenne ja lapsenne voisivat osallistua tutkimukseen ja auttaa sen tavoitteiden toteutumisessa. Ne luovat pohjaa suosituksille, joiden pohjalta kehitetään vielä laajempaa tämänkaltaista EU:n tutkimusta.

Mikäli haluatte lisää tietoa tutkimuksesta, vastaan mielelläni kysymyksiinne. Myönteisessä tapauksessa lähettäkää viesti lapsenne opettajalle Wilmaan niin pian kuin mahdollista, mieluiten ensi perjantaihin (26.9.) mennessä tai viimeistään ensi viikon maanantaihin (29.9.) mennessä.

Jään innolla odottamaan vastaustanne.

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Child's consent

Suostumus tutkimukseen osallistumisesta

Tutkimuksen nimi:	Pienet lapset (6-8 -vuotiaat) ja digitaalinen teknologia
Tutkija:	Riitta-Liisa Korkeamäki
Sponsori ja kumppani:	European Commission, Joint Research Center (JRC) (Euroopan komission yhteistutkimuksen keskus)

Tämä on suostumuslomake lasten tutkimukseen osallistumista varten.

Tässä kerrotaan vähän siitä, mitä tutkimuksessa tehdään ja mitä sinulta kysytään. Tutkimuksella halutaan saada selville, mitä sinä ja sinun ikäisesi tekevät sellaisilla laitteilla kuten tietokoneilla, älypuhelimilla, tablettitietokoneilla ja pelikoneilla (esim. PlayStation). Tähän tutkimukseen osallistuu ikäisiäsi lapsia seitsemästä eri maasta yhteensä 70 perhettä.

Osallistumisesi on vapaaehtoista. Saat keskustella tutkimuksesta ystäviesi ja perheenjäsesi kanssa ja voit tehdä siitä kysymyksiä ennen kuin allekirjoitat tutkimukseen osallistumisen.

Tämä tutkimus tehdään sinulle **kotona** siksi, että ympäristö olisi sinulle tuttu ja myös nuoremmat ja vanhemmat sisaruksesi, jos heitä on perheessäsi, voisivat osallistua siihen ainakin osan aikaa.

Tutkimus aloitetaan niin, että keskustellaan ensin yhdessä vanhempien kanssa ja sitten erikseen sinun ja vanhempien kanssa ja lopuksi vielä yhdessä. Voitte käyttää keskustellessanne haastattelijan tuomia kuvakortteja tai muuta mukavaa materiaalia. Haastattelija videoi keskustelun, että kaikki tärkeät asiat i saadaan talteen. Videoita ei näytetä kenellekään, vaan videolta kirjoitetaan tärkeät asiat muistiin. Sitten videot hävitetään.

Sinun nimeäsi ei kerrota kenellekään ja kaikki ne tiedot, joita sinä annat tämän kotikäynnin aikana, pidetään salaisina. Vain tutkijat tutkivat niitä. Myöhemmin siitä kirjoitetaan raportti, jonka sinä tai vanhempasi voi lukea sinulle.

Suostumuksen allekirjoitus

Suostun osallistumaan tähän tutkimukseen. Saan tästä itselleni oman kopion.

Päiväys

Lapsen allekirjoitus

Lapsen nimi painokirjaimin

Vanhemman allekirjoitus

Vanhemman nimi painokirjaimin

Tutkija

Päiväys

Suostumuksen vastaanottajan allekirjoitus

Suostumuksen vastaanottajan nimi painokirjaimin

YOUNG CHILDREN (0-8) AND DIGITAL TECHNOLOGY

*A qualitative exploratory study - National Report -
Germany*

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Executive summary

Parents are motivated to keep their children safe, sound and provide them a good education as well as childhood. Still many parents are insecure with Information and Communication Technologies (ICT) and its impacts on young children and adolescents. As we can apprehend from our data behaviour which originates from gambling or gaming addiction can serve as indications for an upcoming excessive behaviour and long term psycho-social consequences. When children start to behave like described in section 3.6 (page 54ff.) it is time to literally pull the emergency brake. To develop more focused and appropriate methods for pedagogy and psychology we need more evidence at hand. To prevent long-term issues impacting on whole generations because of lack of expertise, methods and knowledge we strongly need to further establish researching children and their use of ICT. For a first hand approach and basic information on the subject this report gives advice on an interdisciplinary level.

Key findings

Children in our sample engaged ICT in different ways. Starting with the family setting over to the grandparent's homes and ending with the time with friends as described in Section 3.0 (page 21ff.) Despite the broad range of new media technology found, most households had at least a combination of Smart TV, CD/MP3-player, DVD-player and a Computer. Children did chose Consoles and Tablet PCs over all other options when available, but still favoured offline-toys and games, too. Especially when those where related to mutual activates with parents, siblings or friends. Depending on the age most children were able to use ICT on their own. As we progressed with our data collection we recognised that the older the children the more skill they had already in use of ICT. Those skills where acquired by shadowing parents or older siblings, still older children showed more advanced skill in this technique and learned faster to handle ICT. Being slower in learning process did not keep younger children from demanding it from their parents or siblings.

While parents tend to have a critical view when their children handle ICT, children perceived those technologies as fun and a source of joy, delivering a whole new range of exciting possibilities. The more fun a device was able to deliver, the more children were

likely to describe it as a positive experience. On the contrary children connoted devices as negative when they had encountered bad or scary content. Still they do not worry about ICT and accept it as a natural part of their social environment. Parents on the contrary seem to attribute ICT primarily by the time children spend with it and if the technology is appropriate for the age. Many parents were concerned about long term issues when their children used new media technology. One family in our sample reported severe psychosocial consequences originating from excessive use of ICT like aggressive behaviour when having no access or called upon to stop, problems to focus when not handling an ICT-device and sleep disturbances (page 32f.). As a consequence the parents decided to regulate and monitor their children and could tell of an ease of situation.

While children accept new media technologies as a natural part of their environment many parents have still to learn to use them. Most parents do only use ICT for business activates and communication, while especially the younger ones also use them for leisure time, too. In some cases we observed parents using devices as babysitter for a certain time. Children most the time use new media technologies for entertainment and joy, as well as mutual activities and communication. Smartphones are the melting pot since they provide several options like gaming, music, watching videos and communication at once. Consequently families prefer more offline activities when being together than ICT related ones. If parents and children used new media technology together, parents kept the role of a tutor most the time. When left alone, children liked to use ICT a lot but in most cases were regulated by their parents. Rules were set stringent an imperatively in many cases but some parents tried a more flexible approach aiming for a more autonomous intercourse with ICT. In general rules and regulation were bound to the children's level of consciousness and perception to use ICT safely and the content itself. Further they seem to originate from health concerns in a first place, but over the course of the study we could observe reduction of complex inter-social situations and concerns of negative long-term consequences because of parental insecurity as predictors for rules as well. Despite the circumstances how and why rules and regulations where created many children tried to circumvent them whenever they had the chance, even if overstepping would mean sever consequences.

Recommendations

ICT and related content are – in terms of being a moving target – a pendant to the internet and thus scientifically difficult to grasp. The consequence of this ongoing change is the stable condition of ongoing innovation and development. Thus, no overall advice can be given in terms of an explicit medium and technical device. Moreover as general recommendation evidence based knowledge should be transferred to children, parents and society to equip them with the best chance for a worthwhile development. Therefore, research findings need to be brought on the level that allows for advices for parents and someone needs to be the one that transports the information. Information reaches parents through political decision and thus in their everyday life, in school, at the kindergarten and especially at home. Politics should safeguard an up to date legal framework, which benefits family and parents that archive relevant knowledge through special parental educational courses which were designed on latest research. Direct or indirect financial motivation for the participation might be a modulator.

Proposal of implementations

Guidance in how to handle children and ICT is often asked but seldom given. We try to ease the parent's situation by handing over some basic guidelines for media education and media competence as described in section 3.6.2 (page 56ff.). We recommend that parents try to weave in those basic guidelines in their everyday education. Keeping children from ICT will not prevent problems on a long-term. Instead parents should socialise their children step by step with ICT serving as a guide and protector. Education, rules and regulation have to be aligned to the children's interest in new media technologies and should support the child to develop the ability to reflect and a critical distance. Parents should always be aware which devices their children use and give an orientation which content can be consumed and which time budgeted is at dispose. Additional children need to process the experienced situations and emotions. Parents can support this by showing decent interest in children's ICT use and let the children explain the undergone situations in drawings or roleplaying situations.

If children start to neglect other liabilities and activities and ICT is becoming capital for them this indicates a problematic situation coming up. Also regulating negative emotional states due consumption of ICT, more frequent and extensive sessions are major criteria. Tension, unrest, aggression focusing problems as well as sleep disturbances and loss of self-regulation can be strong indicators for an excessive use, too. If children show an accumulation of some or all of those criteria, parents can find help at the Hotline of the Outpatient Clinic for Behavioral Addictions, Department of Psychosomatic Medicine and Psychotherapy, University Medical Center of the Johannes Gutenberg University Mainz as described in section 3.6 (page 54ff.).

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“Society is a human product.

Society is an objective reality.

Man is a social product.”

Berger & Luckmann, 1966

1. Introduction

Media use and new technology provide risks and chances to families and society. Unfortunately there is nearly no detailed evidence on the effects of new technology use available, yet. Therefore, a pilot study was conducted in the framework of the Joint Research Center (JRC), which is funded by the European Commission. The project is listed at the Empowering Citizens' Rights in emerging Information and Communication Technologies (ICT) with the project number 572. The division Empowering Citizens' Rights in emerging ICT's (ECIT) deals with an identification of new threats to children. Development of recommendations to empower children's rights by preventing and mitigating these emerging issues through education, school and community co-vigilance, as well as reconciliation of digital and personal interactions (Chaudron et al., 2014).

Research focusing on the benefits and challenges associated with children's use of the Internet has, so far, mainly targeted 9-16 years old (see, for example, the EU Kids Online research carried out since 2006). Yet, research shows that children are going online at an increasingly younger age. However, "young children's lack of technical, critical and social skills may pose [a greater] risk" (Livingstone et al., 2011, p.3). In spite of the substantial increase in usage by very young children, research seems to be lagging behind. Therefore, research targeting 0-8 years old exploring the benefits and risks of their online engagement is imperative (Chaudron et al., 2014).

In collaboration with a selected group of academic partners in different European countries, the present study is a pilot qualitative study that aims at exploring young children and their families' experiences with new technologies. In particular, we will look at their (online) technological engagement as well as the potential benefits and risks associated to their (online) interactions with new technologies. Its results will serve as a basis for recommendations on what should be looked at when launching larger EU studies on the benefits and challenges associated to young children's use of new (online) technologies (Chaudron et al., 2014).

2. Method

2.1. Why qualitative research?

Qualitative research is used for exploration of not well investigated areas of the field. It leads to the generation of new hypothesis and deep-insights of the investigated subjects. Due to society's development, technical innovation and interaction effect between subjects and media devices the field is changing rapidly. Lack of investigations in the age group of 0 to 8 years olds require family centered qualitative investigations.

2.2 Why Thematic Analysis?

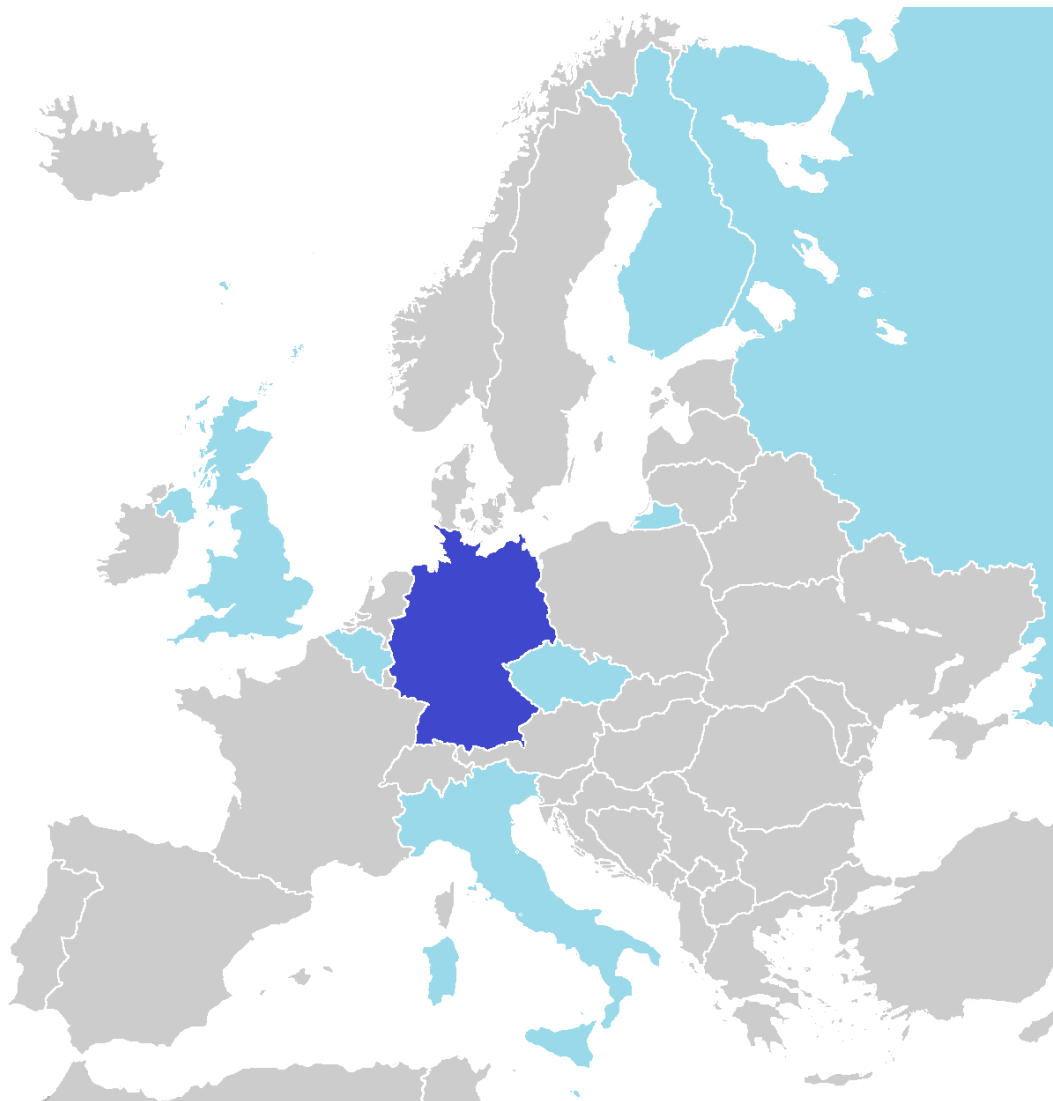
Thematic analysis covers the relevant domains that are addressed when qualitative research is discussed. These domains are: Flexibility and it is relatively easy and quick method to learn. Thus, it is accessible to researchers with little or no experience of qualitative research. Results are generally accessible to educated general public, which might support suggestions for stakeholders or policy makers. It is a useful method for working within participatory research paradigms. Thematic Analysis can usefully summarize key features of a large body of data, condensing extensive data sets to their essence. Similarities and differences across the data set can be highlighted, which might be of use for cross-cultural comparison of later publications. Unanticipated insights can be generated and in-depth characterized. It allows for social, pedagogic as well as psychological interpretations of data (Braun & Clarke, 2006).

2.3 Procedure

This study aims at exploring young children and their families' experiences with digital technologies such as smartphones, tablets, computers and games. The specific goal of the study is to collect information on 1) how children between 0 to 8 years old engage with (online) technologies, 2) how family members perceive new (online) technology, and 3) to identify potential benefits and risks associated with their (online) interactions with new technologies. The main aim of the project is to generate data to address the overall question: *In what ways, if any, are children and/or their families being empowered by the use of new (online) technologies? In other words, what benefits or risks can be identified from the research, regarding young children's use of digital technologies at home?*

As this is a pilot study aiming at exploring children's interactions with digital media, qualitative interviews will be conducted. In total, this study will involve seventy families (10 per country) and will be simultaneously implemented in seven European countries and Russia, and performed by researchers from selected universities: KU Leuven (Belgium), Masaryk University Brno (Czech Republic); University Medical Center Mainz (Germany), Future School Research Center (Finland), Università del Sacro Cuore Milano (Italy), Moscow State University (Russia), University of Edinburgh (UK), London School of Economics (UK), University of Sheffield (UK) (please see figure 1 for participating countries and the country of data collection and analysed for this national report – Germany).

Figure 1: Participating countries



The reference for making the selection of the listed countries are the EUKIDS Online Country classification for use and risk¹ published in 2011 and EUKIDS Online Country classification of online opportunities, risk, harm and parental mediation (Helsper et al., 2013).

The two classifications group European countries in term of similarities and differences and help in mapping and understanding the landscape of the children's (aged between 9 and 16) internet use and safety in Europe.

The first cross-national classification (2011) distinguishes four groups of countries, based on the percentage of children in each country who used the internet daily, and who encountered one or more risks: (1) Lower use, lower risk, (2) Lower use, some risk, (3) Higher use, some risk and (4) Higher use, Higher risk.

The second cross-national classification (2013) enriches and deepens the previous one with four different clusters: (1) clustering of online opportunities, (2) clustering of risk and harm, (3) clustering of parental mediation strategies and (4) overall classification of countries based on the opportunities, risk and harm, and mediation dimensions and leads to a classification of countries based on the presence of different types of children and their home environments.

As shown in table 1 (page 5), the selected countries represent a large part of the different clusters, diversity of online opportunities, risks, harm and parental mediation as indeed, for this exploratory and qualitative study that targets children from 0 to 8 years old and their family, it is very important to test similarities and difference on parameters like online opportunities and parental mediation strategies and to compare the results with the older children group classification. Such comparisons would be precious for the elaboration of hypothesis regarding influential factors for country differences in internet opportunities taken up, risks and harms encountered and parental mediation like cultural differences, digital technology diffusion, and family dynamics, (Haddon et al., 2012; Helsper, 2012).

¹ Lobe, B., Livingstone, S., Ólafsson, K. & Vodeb, H. (2011). Cross-national comparisons of risks and safety on the internet, London: LSE, EU Kids Online.

Table 1: Participating country classification

		UK	IT	DE	BE	CZ	FI	RU
First Classification EU Kids Online Country classification for use and risk	Lower use, Lower risk							?
	Lower use, some risk							?
	Higher use, some risk							?
	Higher use, higher risk							?
New country classification of online opportunities, risk, harm, and parental mediation	Unprotected networkers							?
	Protected by restrictions							?
	Semi-supported risky gamers							?
	Supported risky explorers							?
Opportunities	Advanced							?
	Restricted learners							?
	Diversity							?
	Moderates							?
	Young networkers							?
Risk and Harm	Lower risk/harm							?
	Higher risk/harm							?
	Sexual risks							?
Parental mediation	Restrictive mediation							?
	Passive							?
	All-rounders							?
	Active mediation							?

Based on Lobe et al (2011). *Cross-national comparisons of risks and safety on the internet*. www.EUKidsOnline.net & Helsper et al. (2013). *Country Classification: Opportunities, Risks, Harm and Parental Mediation*, LSE, London: EU Kids Online

2.3.1 Observation Protocol (OP)

All interviews followed an observation protocol (please see Appendix A), but because of the explorative nature of the study, each research team had the freedom to adapt it according to specific interview contexts and needs (e.g. country, culture, family context, etc.) keeping in mind that the aim was to find answers to the research.

The interviews were divided into three parts. A short family introduction took place in which the children and parents took part in a joined discussion and activity. Subsequently, parents and children got divided and they engaged into two different activities. Parents had

a short interview with one of the researchers; the other researcher discussed new (online) technologies with the child/ children supported by age appropriate tools such as card games. A conclusive session was implemented to gather the whole family and the two researchers for a conclusion.

Family visits were audio-recorded. Apart from using a recording device researchers were advised to make field notes during their visits. These were necessary to provide more in-depth background and aid the researchers in remembering salient events. Field notes contained the description of what has been observed. The descriptions were aimed to be factual, accurate, and thorough without being judgmental or cluttered by trivia. The date and time of the observation was recorded, and everything that the observer believed to be worth noting was included. Informed consent must have been obtained from participants before any observational data were gathered. A verbatim transcript of all the interviews was carried out. These transcripts will constitute the basis for further analysis. Finally, every participating country wrote a national report based on the analysis of the ten family visits they performed. This report mainly provides answers to the research questions stated above, plus short a 300 word case studies about each of the families' interviewed.

2.3.2 Ice-breaker

After a short introduction, the children and parents mutually performed a short ice-breaking activity. Page 10 of the Activity Book - Play and learn: Being online² and its stickers has been chosen as a way for the family to determine the activities done as a family all together in a typical day requesting to match time and activities thanks to stickers provided with the book. This was set as a common start for all interviews. After this activity parents went in another room with observer 1 and children stayed in the living room (or the other way around) with observer 2, unless there was a dissent by the parents or the child(ren), which was mostly not the case Children aged below 4 years were generally not separated from their parents.

² Kindly provided by insafe and available online via <http://www.saferinternet.org/activity-book> ; Italy used a printed version of page 10, other countries used a booklet, digital replicas of the children's produced activity booklets are provided as an attachment to that report and available in Appendix C.

2.3.3 Card Game

A Card game displaying cards of tablets/ laptops/ PCs/ smartphones as well as traditional toys³ was presented to the children. They were asked to put all of the pictures in a line, starting with the picture of the item they liked using the best, followed by the second best and so on to the right end of the line, where they were asked to put what they liked using least.

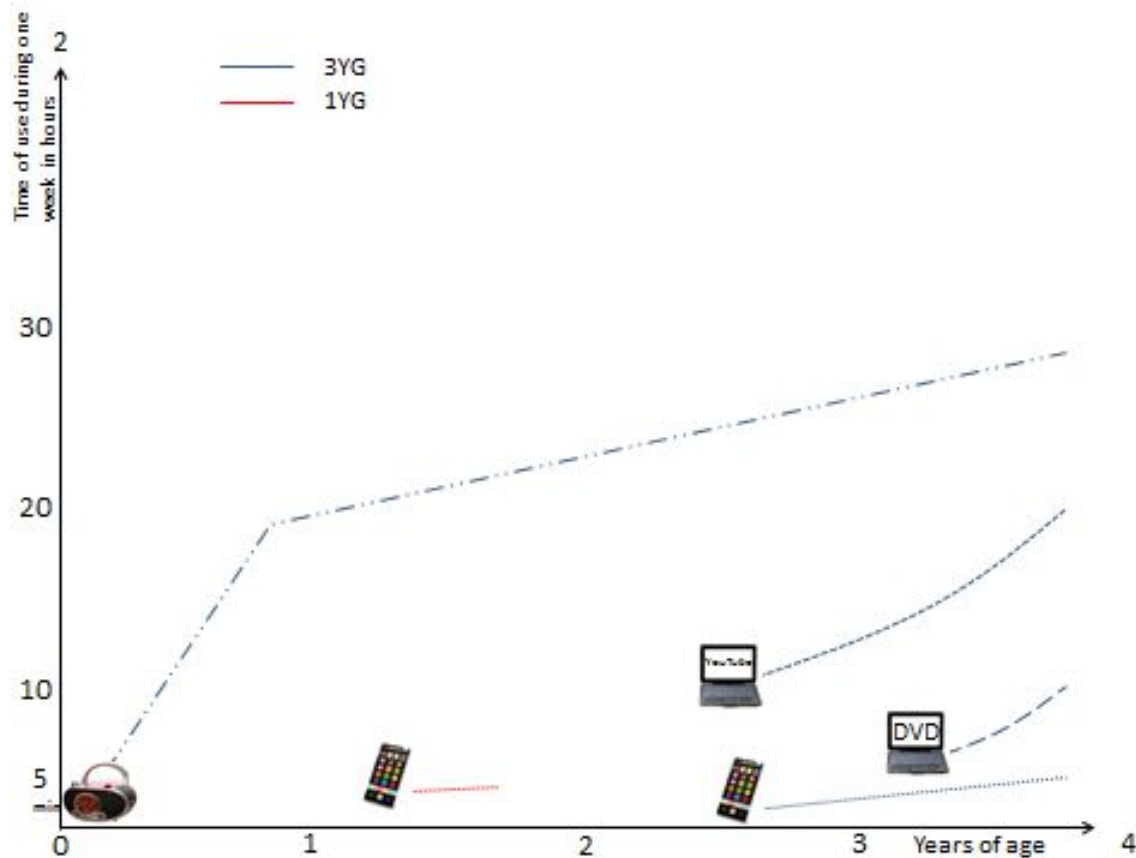
2.3.4 Device employed and activities

During the interview it was important to identify types of devices and new technologies that children used, to explore when and why they used them. A great opportunity was offered to find out about the child's perceptions of new as well as more traditional technologies such as the TV while talking about these devices and observing children interacting with them. . It was important to try to get an appropriate overview on the technologies children used, their contexts of use and the child's perceptions of these technologies, but it was also emphasized not to cause feelings of discomfort to the child by any activities or questions.

We used a sheet of ICT use in the parental interview which showed good retention as well as strong potential to produce in-depth and extensive narration on parent's side. The sheet consisted of a blank for indication of "years of age" on the abscissa and "time of use during one week in hours" on the ordinate. We decided to have a blank version for the starting point to avoid determination. Commonly we picked the devices that were addressed during the card game for the work with the Sheet of ICT Use and started with the device that was used the most to the one used least of all. In case of having more than one child in the household we started with the oldest child and asked the parents later to invite the participation of the younger sibling(s). If twins were present, we did not specify for an order of elaboration (please see figure 2, page 8, all sheets can be seen in the Appendix B, but will also be used during the report for the illustration of the results). The Sheet of ICT Use caused several aha-experiences for parents, while they elaborated their thoughts and narration on their children's use (please see results 3.1.3, 3.1.4, 3.3.7, 3.4.2 and 3.5.3 for further information).

³ The card game used is available in the Appendix (section D)

Figure 2: Exemplary Sheet of ICT Use – G04



2.3.5 Closing

After the interviews were conducted, parents, children and researchers met again in one room. Participants were asked if there was anything else anyone wanted to add or if there were any questions. The researchers thanked the participants and overhanded an incentive bag provided by the JRC.

2.4 Sampling and participant characteristics

The American Academy of Pediatrics suggests that parents should discuss media use and media associated development together with their children. During this process media use in very young children should be observed and discussed critically. Parents should be remembered how imported the free play is for their children's development regarding cognitive and emotional maturing and their stimulation through personal story reading.

There are data suggesting that media use in children younger than 2 years is associated with enhanced risk for developmental delay and cognitive problems (AAP, 2011).

A hybrid approach will be used in the recent pilot study in terms of methodology. The analysis method used is Thematic Analysis (Braun & Clarke, 2006), but most reasonable segments of Grounded Theory are included (Strauss & Corbin, 1990; 1998). These parts are: 1) Theoretical Sampling (Strauss & Corbin, 1990; 1998), 2) Coding techniques transferred to the interview itself to generate more detailed narrations (cf. Strauss & Corbin, 1990; 1998). This approach is innovative but allows the experienced interviewer to generate more detailed in-depth narrations.

- 1) The theoretical sampling was aimed to provoke a broader variety of narrations regarding media use. Therefore, a continuum covering similar proportions each displaying unregulated, moderately regulated and strongly regulated media use was aimed.
- 2) Coding techniques suggested for the Grounded Theory analysis that might be also considered for the data gathering process are:
 - a) Far-Out Comparisons (Strauss & Corbin, 1990)

Instruction: Match something to the narration of the participant that seems totally unrelated and let the participant connect the dots.

MD: It is somewhat abstract, but how would it have been, if the development of the children would have taken place in other settings?

M7: Very abstract.

F7: Of course, I think our children did that well. They also went to crèche early. They have no problem for approaching others.

M7: and they are, right, very open. I do not know whether others are different. They grow up in all fields, social behavior, sharing, respect or looking that how about the little one, who need help, they stick together. For example, what he did concretely, „YB“ had arthritis in the summer, he was not allowed to run. It was a week-long free in holiday, well 5 days. They said, why is that? It was due to his injury, he had to use a wheelchair. The therapy was conservation and a little painkiller. We had barbecue at the weekend in and the kids were really eager, so they played football, adults against children. And he sat in his wheelchair at the side, that was insanity, and all say, "YB" we need you, you're here really important, you have to cheer for now, and do you need anything? One said that he need piper, they brought piper, they held together so extremely. I think ((do not understand)) in the social behavior.

- b) Try to Systematic Comparison of Two or More Phenomena (Strauss & Corbin, 1990)

Instruction: think about the narrations and try to set those in context to something that is closely related to the families behavior so that they can describe it very well. The idea is to have a sharper picture by aid of the comparison.

MD: How will you assess your consumption in comparison with other or befriended families? What are the TV rules?

M7: The rules are clear.

F7: I think we watch relative less TV in comparison with other family that is my feeling. In weekdays I cannot judge it but in weekend. Others sit before TV the whole day in weekend. I think no more than other families.

M7: Very clearly, we think that is good.

F7: In my opinion, there are relative more meaningless things in TV.

M7: Yes.

M7: Yes. So I think it is because we can really regulate it, simply due to the selection. And when in between - what I know on the weekend: It's totally rainy and lying on the sofa, eating a piece of cake and watching a movie, then we preferred to watch a DVD and regulate so, yes ...but it is others somehow, it does not run simply beside.

F7: In the end we decide, what we find good for both children.

- c) Explore Waving the Red Flag (narrations including never, hardly, seldom, etc.) (Strauss & Corbin, 1990)

Instruction: Identify narrations including “always”, “usually”, “seldom”, etc. and try to explore the meaning of this signal word as well as the related narration.

*F7: Possibly they begin to watch 5 minutes earlier because the Sandmännchen begins. They can watch the children channel and usually watch different broadcasts till to 30 past 7, normally it is then finish. But **sometimes** not, they were allowed to watch a little longer and also in holiday. And then there is also certain broadcast till the “Logo” ending, well it is a news broadcast for children. But they were only allowed to watch children channel.*

M7: Then it is 8 o'clock.

F7: And then it is short before 8 o'clock.

M7: And that's the longest they are allowed. But only if we are ready with dinner, otherwise they are not allowed.

(...)

*M7: It is more about not sitting quit and kidding during dinner. Because when they are in front of the TV they are paralyzed and that's something that we do not like, if they beforehand cannot sit quite during the meal and later are able to do so in front of the TV. That's it (short pause). **Sometimes** we are even consequent. (...)*

MD: You just said, **sometimes** you are consequent, in which situation would you say you are not?

F7: For sitting quietly.

M7: Now keeping short silent and sitting quietly. Otherwise they do not need TV actually, mostly man must also say that, and again there are some reasonably table rules.

F7: Sometimes there is just three recent warnings.

M7: Yes, right.

MD: Can you describe the situation?

F7: Well, when the boy is active during eating. He wants to stand up and he distracts himself relative quickly. We hope that he can keep sitting quietly. We said no, you should keep sitting quietly. He can certainly stand up for toilette, but cannot get something or show something. And in other situation often when they are tired, especially when the boy is tired, he falls out of chair and back and forth.

M7: When they shake the legs so much and they kick against each other somehow. I met the 3 time, I do not know, whether it occurred in last time or it actually occurred when there was no TV watching.

F7: When we go inside, we want to watch now, and it is already 5 after 7 o'clock or something. Then they are not quietly and we will say no, take it slowly, we must pay attention that they do not to TV quickly.

2.4.1 Family Portrait Gallery

To ground the findings and to give a flavour of the diversity of family circumstances involved, this section will present the ten interviewed families within anonymised short narratives (please see table 2). We interviewed 13 mothers and fathers and 17 (+1 one year old) children, albeit we merely visited 10 families for this pilot study.

Table 2: Family Characteristics

	Family code	Low – medium-high family income	Alpha Family Member Code	Year school/ max level of education	Migration background
Alfa Family	G01MDCS	Medium	M, 5YB (01), 5YB (02)	High- and formally mid-level	no
Bravo Family	G02MDCS	Medium	M, 7YB (03), 7YG (04)	High- and formally mid-level	mother
Charlie Family	G03CS	Medium	M, F, 4YB (05)	Formally mid-level	no
Delta Family	G04MDCS	Medium	M, 3YG (06), 1YG (07)	High- and formally mid-level	no
Echo Family	G05MDCS	Above Medium	M, 6YG (08), 4YB (09), 1YG (10)	High-level	mother
Foxtrot Family	G06MDCS	Medium	M, F, 6YB (11), 4YG (12)	High- and formally mid-level	no
Golf Family	G07MDCS	Above medium	M, F, 6YG (13), 8YB (14)	High-level	no
Hotel Family	G08MDNS	Above medium	M, 5YG (15), 6OG (16)	Formally mid-level	mother & father
India Family	G09MD	Medium	M, 4YG (17)	Formally mid-level	no
Juliett Family	G10MDBT	Above medium	M, 7OB (18)	High-level	no

2.4.1.1 Alfa Family – G01

Rural area, Germany

Family members

- Mother, 43 years of age
- Dad, 48 years of age
- Twin boys, 5 years of age

Narrative

The Family lives in an owned House in the middle of a small village in the countryside. The main body of the family is structured by the mother, which is part-time employed, and of higher education, the father which is an employee and of formally mid-level education and two twin boys, five years of age, visiting the kinder

“Sometimes they watch TV in the morning for half an hour. Especially those days when I need time to get ready.”

-Mother, 43

garden. In addition to a shared bed room, the twin boys have a dedicated room for playing. A modern designed house with an open living room and kitchen area with several electronic devices like radios, smartphones and tablet and PC contributes to the family's activities.

While the mother is used to and skilled with today's electronic devices like Computers, smartphones, tablets etc. the father is less interested in those devices with exception of the TV. The twin boys are highly aware of all the technology in the house. They seemed to be fixated on the TV since they kept asking and arguing with their mother on the whole course of the interview. Reception and use of TV, tablet or smartphone is regulated by the mother. Children are granted TV reception for half an hour in the early morning when the mother takes her time to set up for the day and additional time when the father comes home from work. Using the mother's smartphone and tablet PC seemed even more regulated. The mother told us that the last time the boys used them was months ago. Regardless, the twins named several favorite games they liked to play on those devices. Despite those rules and regulations the boys seem to eagerly find a way - or at least try - to circumvent them.

2.4.1.2 Bravo Family – G02

Urban area, Germany

Family members

- Mother, 43 years of age
- Father, 58 years of Age
- Twin boy and girl, 7 years of age

Narrative

The Family lives in an owned house in the working-class neighborhood of a bigger city. It is composed of the mother with an immigrant background and formally mid-level education keeping the household, the father which is an employee and of higher

“This week you do not need to ask for the Nintendo 3DS.”

-Mother, 43

education and a twin boy and a twin girl seven years of age, visiting elementary school. A big living room with a big TV as well as separated spots for the households Laptop and the children’s Nintendo 3DS constitute the center of the family’s residential designed house.

While the mother seemed to reject nearly every new media technology, the father seems to use and like it. The children are well aware of all the devices in the living room but did not seem to care too much about them. They made clear that they enjoy playing on the Nintendo 3DS and were able to tell about several situations and best practices for the games they have. Especially the boy was able to explain difficulties and level structures of his favorite game and seemed to be a more experienced user and more excited than his sister. Rules and regulations about when and how long the children play are made by the mother. The children seem to agree with those regulations but left the impression that they would play more 3DS if they were allowed to. The father seems to be of a different mindset than the mother. When he is at home he watches movies with the children and takes them out for the cinema. This behavior seems to be tolerated, yet not appreciated by the mother. On the contrary, the children seem to enjoy those activities.

2.4.1.3 Charlie Family – G03

Suburban area, Germany

Family members

- Mother, 33 years of age
- Father, 34 years of age
- Boy, 4 years of age

Narrative

The Family lives in an owned house in a middle-class residential neighborhood in a smaller city. It is composed of the mother which is an active employee and of formally mid-level education, the father which is of formally mid-level education and a four year old boy still visiting the kindergarten and day-care center. The

“When he got home from kinder garden the first thing he did was searching for the Tablet”

-Father, 34

house is of residential design with an open living room and shared dining area where several devices as a big TV with attached Nintendo Wii, a Tablet PC and the parents Smartphones could be found.

Mother and father seemed to be skilled in everyday use of all kinds of digital devices originating from their business activities as well as their leisure time. The boy was well aware of all the devices in the house. He seemed to be excited about all technological devices but cared most for the Nintendo Wii, the TV and the Tablet PC. While he was eager to tell all the experiences he had made with all the devices, his parents revealed serious concerns about his fixation and usage of new media devices. In coherence with the boy’s excessive and unmonitored usage they observed attentional disorders, sleep disturbances and an aggressive behavior when having no access to the devices. If it came to stop using any one of the boy’s favorite devices, there was always loud and heavy arguing about it. With those issues in mind, the parents began to regulate and monitor the boys time spent on any one device. In addition they started to provide mutual activities as -for instance, playing a board game before bed time instead of watching TV. They were able to tell that all the former listed issues decreased significantly after that.

2.4.1.4 Delta Family – G04

Urban area, Germany

Family members

- Mother, 32
- Father, 33
- Two girls, 3 and 1 year of age

Narrative

The family lives in a semidetached house in a middle-class residential neighborhood which is part of a working-class district. It consists of the mother which is part-time employed and of higher education, the father who works independently and is of higher education and two girls three and one year of age, which are visiting the kinder garden. A modern designed house

“I think it is not bad to keep children away from Smartphones as long as possible. They do not know how to deal with them.”

-Mother, 32

with an open and big living room where the children have a dedicated play area is the center of the family’s living. Several digital devices like a Hi-Fi system a Laptop PC and the mothers smartphone where allocated in the living room.

Mother and father seemed to be skilled in everyday use of all kinds of new media devices originating from business activities and leisure time. The girls are well aware of all the devices and their allocations in the house. The older girl did know that several video clips are stored on the mothers smartphone an expressed that she enjoys them. She performed a demonstration of several videos and showed some basic skills in handling the device. She was able to start new videos out of a variety of several thumbnails specifically choosing her favorites. Her one year old sister was strongly involved in the whole process too. In general the usage of new media devices in the household seemed regulated and monitored. The girls were allowed to use the Radio/CD player and especially the older one showed decent skills in using it. When it comes down to watching a video online or via the mothers smartphone the girls are monitored and regulated and seem to agree most the time.

2.4.1.5 Echo Family – G05

Urban area, Germany

Family members

- Mother, 38 years of age
- Father, 40 years of age
- Girl, 6 years of age
- Boy, 4 years of age
- Girl, 1 year of age

Narrative

The family lives in an owned house in an upper-class residential neighborhood in a big city. It is composed of the mother with an immigrant background which is part-time employed and of higher education, the father which is an active employee and

„You cannot always enforce the rules but one has to try.“

-Mother, 38

of higher education and the two children. The six years old girl visits the elementary school, the four years old boy visits the kinder garden. A modern designed house with a big living room and a shared dining area with direct kitchen access do contribute to the family's daily activities, while children have their own rooms. Several new media devices like a TV, a Laptop PC and the mothers smartphone were allocated over different spots and rooms of the house.

Mother and father seemed to be skilled in everyday use of all kinds of new media technology originating more from business activities than from leisure time. Children were well aware of the devices allocation and function. They expressed that they liked to watch TV, play on the mothers' computer and smartphone. Sometimes they share the smartphone and take turns while playing. Both are also interested in classical music and reading and do understand the second language of the mother very well. Rules for new media are setup by the mother in most the cases. The girl seems to agree a lot with them, whereas the boy does not all the time. If the children step over the mother prefers clear and direct consequences and penalties.

2.4.1.6 Foxtrot Family – G06

Sub-urban area, Germany

Family members

- Mother, 34 years of age
- Father, 38 years of age
- Boy, 6 years of age
- Girl, 4 years of age

Narrative

The family lives in an owned house in a sub-urban middle-class residential neighborhood in a big city. It is composed of the mother which is an active employee and of higher education and the father which is active employee and of formally mid-level education. The four years old girl visits the kindergarten while the six

„He started to watch TV with two years. She started earlier, perhaps with one or one and a half year.“

-Mother, 34

years old boy is in first grade elementary school. A modern designed house with a spacy living room and shared dinging area is the center of the family’s daily activities. Several new media devices like a TV, a Hi-Fi system, the mothers smartphone and a PC where allocated to different locations in the house. While the children have their own rooms, toys and handiwork could be found in the living room, too.

Mother and father seemed to be skilled in everyday use of all kinds of new media technology while they left the impression that they do not care too much about it. Children’s were well aware of all the technology and new media devices in the house. As he told us, the young boy is a skilled PC user and able to write text on his mother’s Laptop PC. He also enjoys surfing in the Internet with his parents and prefers watching music clips in YouTube over watching TV. Children are allowed to watch TV and use new media only under parental mediation, while the parents monitor the content for the appropriate age and substance.

2.4.1.7 Golf Family – G07

Urban area, Germany

Family members

- Mother, 37 years of age
- Father, 40 years of age
- Boy, 8 years of age
- Girl, 6 years of age

Narrative

The family lives in an owned house in the urban middle-class neighborhood of a big city. Mother and father are active employees and are both of higher education. Together with the eight years old young boy and his six years old sister they compose the young family. Both children visit the elementary school and

„If the video game is good, I decide for the video game, if the computer is broken or the game is no fun, I go for Lego.”

-Boy, 8

the day care center. A modern designed and open house with combined living room and dining area provide for the family's mutual activities. While the children have their own room toys, board games and handiwork could be discovered in the living room besides new media devices like a TV, a Hi-Fi system, parents Smartphones and a Laptop PC.

Mother and father seemed to be skilled in everyday use of new media technologies originating first from business and second from leisure time activities. Both parents stated that the children can deal better with the fast development of new media and its technologies and seem to have a knack for them. Both children were well aware of all the technology in the house and the spots whereas the movable ones could be found. They showed great interest and excitement could tell of several Console, Computer and Mobile Games they had either played or watched. While the girl is experienced with different kind of games the boy is even more. He could tell the difference between a boring and a fun Video Game and could mark specific features which have to be in the game to make it fun and exciting for him to play. When it comes down to using new media the children are regulated by the parents which make the rules. Most the time both children agree with the rules but from time to time there is an argument about how long and when.

2.4.1.8 Hotel Family – G08

Suburban area, Germany

Family members

- Mother, between 30 and 40 years of age
- Father, between 30 and 40 years of age (not present)
- Girl, 5 years of age
- Girl, 6 years of age

Narrative

The family consists of the mother and the father and their two daughters. They live in a flat within an owned house in a suburban area. Both of the parents are self-employed and of mid-level-education. The younger girl is visiting the kindergarten and the older one attends school. The flat is very

„Yes... and the most important thing is reading, mum said or ... learning.”

-Girl, 7

tidy and modern but cozily furnished. Technical devices like TV, laptop, Tablet PC or a CD player are present but not in the center of attention.

The parents' use of the internet at home is primarily based on their job which makes it necessary to keep informed. In this area of life internet plays an important role. However, in their leisure time the parents place great importance on joint family activities. This is especially due to a severe illness one family member suffered from. This illness left its mark on the history of this family. In the course of the illness a tablet PC was used for the supportive communication between the family members – especially between the two girls. Today, both of the girls are involved in many leisure time activities during the week aiming at a positive effect on the development of the children. The parents restrict the use of technological devices consequently while making their reasons lucid to the girls. Mainly, technical devices are used in presence of the parents. As a result, the girls seemed to be not very interested in the technological devices they have at home although they know many devices from befriended children and display solid skills in ICT use. They are rather interested in playing games or reading books. Using those devices seemed to be something special and exceptional for them.

2.4.1.9 India Family – G09

Urban area, Germany

Family members

- Mother, 46 years of age
- Girl, 4 years of age

Narrative

The young girl lives with her mother since the divorce of her parents and goes to kindergarten. The mother is of mid-level-education working as a full-time employee during the times the girl is not at home or already asleep.

„I think children need to have so many abilities and they need to do so much...”

-Mother, 46

The grandparents are living in the flat next door and play an important role in the life of mother and daughter as they are visiting them several times a day. The flat in which mother and daughter are living provides several ICT devices starting with TV, learning PCs, consoles and handheld devices being classified as a meta-device including music a camera as well as games. Technical devices are used by the mother in a rather pragmatically way as she uses the computer almost exceptional within the context of her work. Furthermore, her mobile phone is only used for urgent reasons when being outside. She told about herself not to be interested in this. Her opinion towards her daughter's use of technical devices is open-minded and relaxed. She doesn't attract her daughter actively to technical devices but doesn't refuse the access to them either. In their leisure time, mother and daughter use to go outside, do handicrafts or play games. Creative activities are an important part of their lives. Therefore, the young girl attends both a course in dancing and early music education encouraging her to develop freely. Technical devices for children (e.g. child computer) are used by the young girl although her skills are limited. They are sometimes given to her as a present from relatives and friends who have used it before. However, those devices seem to be not yet appropriate to her age. The young girl doesn't have contact with real computers. Concerning mobile phones, she enjoys looking at pictures but doesn't know any games on this.

2.4.1.10 Juliatt Family – G10

Urban area, Germany

Family members

- Mother, 30-40 years of age
- Father, 30-40 years of age (not attended)
- Young boy, 7 years of age
- Grandmother, 60-70 years of age

Narrative

This family consists of the highly educated parents and their 7 year old son who attends school. Both, mother and father are working in elevated positions. The grandmother is an important and supportive person within this family. Although she is living in another city, she is visiting the family quite often which

„We took the console away after he experienced it with his father, but we decided it was too early”

-Mother, 30-40

emphasizes the good relation between them. An owned house the family is living in is classically furnished with an open and bright living room. Technical devices are not in the center of attention. The family possesses a now unconnected TV, a cassette player, a computer, a tablet PC and a games console which is not in use.

The parents themselves are rather media illiterate using media mainly at work or in order to check the suitability of media offers for their son. Due to the parents' educational background a specific system of values is established within the family. Among other things this is characterised by a restricted consumption of media.

The son's abilities in using the technical devices result partly from being taught by his parents and partly from teaching himself. Usually, he doesn't use the TV as he uses either the computer or the tablet PC for watching videos. Especially concerning videos there is a daily time limit. He also listens to music or radio plays with the tablet PC. Besides that, he learned for example to read a clock by playing educational games on it. After purchasing a games console it has been used for a few days only, as the parents had doubts whether it could be damaging to their son.

3. Results

This section is structured by the four main research questions and its sub-sections and will highlighting the commonalties and differences across families. Additionally surprising findings will be presented and set into analogies to recent research.

3.1 How do children under the age of 8 engage with new (online) technologies?

Three different ways to access ICT could be described. I) A very guarded and guided family setting, where control takes place and parents mainly consider what would be good or less supportive for their children's development. II) The access at the grandparents' homes, where children are also framed by the values that are relevant for their family system, but the rules are generally more lax interpreted so that the children have more freedom in use and access to the devices. III) Access through a friend's home, here children are being confronted with new technical devices, which may raise desires. In case of strictly regulated households regarding ICT and new media use these parents actively cut-back the time that children are sharing with these children in order to also limit their thirst for new devices as well as minimize behavioral consequences caused by the consumption of parent-perceived not-appropriate consumption.

3.1.1 Which (online) technologies do they have at home and which are used by the young children and why?

During our visits we noticed a broad range of new media technology available in each household. In our sample, children did not make use of all technologies all the time due to parental monitoring and/ or regulations. Nevertheless, most children told us that they would like to use them more often or longer. In some cases parents purposefully chose not to have a particular technology like a TV or Game Console, because they did not agree with the technology at all or did not see them as appropriate for their children.

In most households a combination was common consisting of radio and CD/MP3-player as well as a TV and a DVD-player which both are used by young children. Primarily children use radio and CD/MP3-player for listening to music or audiobooks and seem to

enjoy that. TV is used mostly for reception of cartoons as well as various children's channels and seems to be rated higher in comparison to listening to a radio or a CD-player.

Equally common in appearance was a computer or laptop in the household. Children seem to use them with joy for a broad spectrum of activities like watching DVDs, watching YouTube, playing games, writing and surfing on the internet.

Nearly every household had at least one Smartphone and/or a Tablet PC at its disposal. Children were excited and eager to use those technologies mostly for reasons of playing games or watching videos, which they seem to enjoy very much.

Consoles and handhelds were rarely found. If they were provided, children used them with excitement and eagerness and seemed to have a lot of fun with playing offline.

"We started watching YouTube with "Program with the Mouse". There are a lot of nonstop videos on the internet. Most the time we decide between 10 and 15 minutes is enough. I was at her side all the time at the beginning. I admit that this changed recently. I am not longer at her side all the time when she watches but still keep track on my watch."

- Delta
Mother, 32

"Respectively the boy is one and a half year earlier. He watched the same shows and series as his sister did. That is because I can mark that point exactly. He started to watch with his sister."

- Echo
Mother, 38

Some stories are associated with family communication via ICT. This is mainly when family members, especially grandparents, are abroad and communication plays still an important role within the family. In this case it is used for social attachment. But it is not only the situation when family members are abroad, ICT is also used if a family member is not able to interact face-to-face with another family member due to severe illness. Beside family communication in such cases ICT is a handy time filler since children's urge to explore the world was not satisfied.

MD: Did she use it ((iPad)) very much during the time in hospital? Or has it been rather...

M8: You have to think of a child who normally should be on the playground and in the kindergarten. And suddenly it is said "No you are not allowed to go there!". "Mum, am I allowed to go to the playground?" – "No, you aren't!". "Is ((a friend of YG)) allowed to visit me?" – "No, she isn't allowed to be in the ward". For her it has always been said "no". And in this period of time I didn't mind, if she used it the whole day. The main thing was that she was happy. Sometimes she has been looking three or four episodes of "Lauras Stern" at a time. But what do you want to do with a 4 ½ year old child, which has always been in the garden, in the sandbox...She has been doing everything...She has been to the kindergarten, she had her friends...she was allowed to do everything...And suddenly, from one day to the next, it was said "No, you aren't allowed" for one year of time. ((tells about the illness))

*- Hotel Mother,
30-40*

Especially the need for connection to the sister was reported during the children's interview. They clearly delineated ICTs positive impact on the family during a challenging time.

YG5: Then I missed (older sister).

YG7: Then she cried, she cried all the time. And then she asked... she asked...well, on the iPad dad made photos from me and showed them to (little sister) in the evening.

NS: For you being not so alone?

YG7: Yes, and for her being not too sad.

YG5: And she made videos like "I love you, (little sister). Bye!"

NS: Your dad made a video from you ((YG7 is meant)) and showed it to you ((YG5 is meant))?

YG7: And then she stopped crying, but this is a long time ago.

*- Hotel Girl,
7*

3.1.2 What are children's favourite (online) technologies?

Which technologies children favoured did not only depend on their disposal. Education as well as alternative activities provided by the children's environment had a severe influence on this topic. To avoid biasing by only discussing new media technologies it must be mentioned, that children still favour traditional offline toys and games, especially when they are related to mutual activities with parents or other siblings.

If children had access to consoles or handhelds whether regulated or not, due their homes or their social environment they did chose them over all other technologies. When a TV and/or DVD-player was present children did rate it high albeit other technologies which could be used for gaming in addition to reception. Consoles and Tablets for instance overruled or equaled most the time. Smartphones and Tablet PC's were also highly popular especially regarding gaming and video reception. In few cases those devices were also used for surfing on the internet and typewriting.

"He likes computer but does not like watching TV very much. He also uses sometimes CD player. And he does not use cell phone. He has a children cell phone recorder which he seems to like a lot."

- Foxtrot
Mother, 34

"I always like phones. Phones. I always like phones. Phones. I also love TV. I wish and I dream of that we can have a TV in our bedroom. Mom and dad have one. I also want to have one."

- Alpha
Boy01, 5

3.1.3 What (digital) skills do children possess? What are they able to do on their own? And what can they manage to do with someone else's help?

All children who were at least four years old were capable of handling new media technology. It worked the better the less complex it was. Nearly all children were able to handle the TV, the Radio or Hi-Fi System and CD-player for the purpose of watching, listening to music or CD-audiobooks. If the devices' advanced functions were not covered by the children they could be achieved with parental or other sibling's guidance most the time.

A few children between three to four years of age showed quite advanced skills in using Game Consoles, Smartphones or Tablet PCs. They were able to handle basic functions as well as advanced functions like starting applications or videos for their amusement. Sometimes parental or other sibling's guidance is needed at first. Sometimes it is enough to learn from parents and internalize the appropriate procedure. In one case a child was

able to handle the family's Tablet completely on its own including the navigation in Video Games main menus even if it was its first try.

Older children with age above six showed distinct skills in handling Computers, Tablet PCs, Smartphones and Consoles; they were not only able to use the devices' basic functions. Some did already handle the advanced functions quite well on their own and some were at least capable to do it under parental or other sibling's guidance.

Like I said before, after I recognized that he is capable of handling the Smartphone on his own I transferred the data onto an SD card. Maybe they're able to tell them by heart but at least they do not watch online anymore.

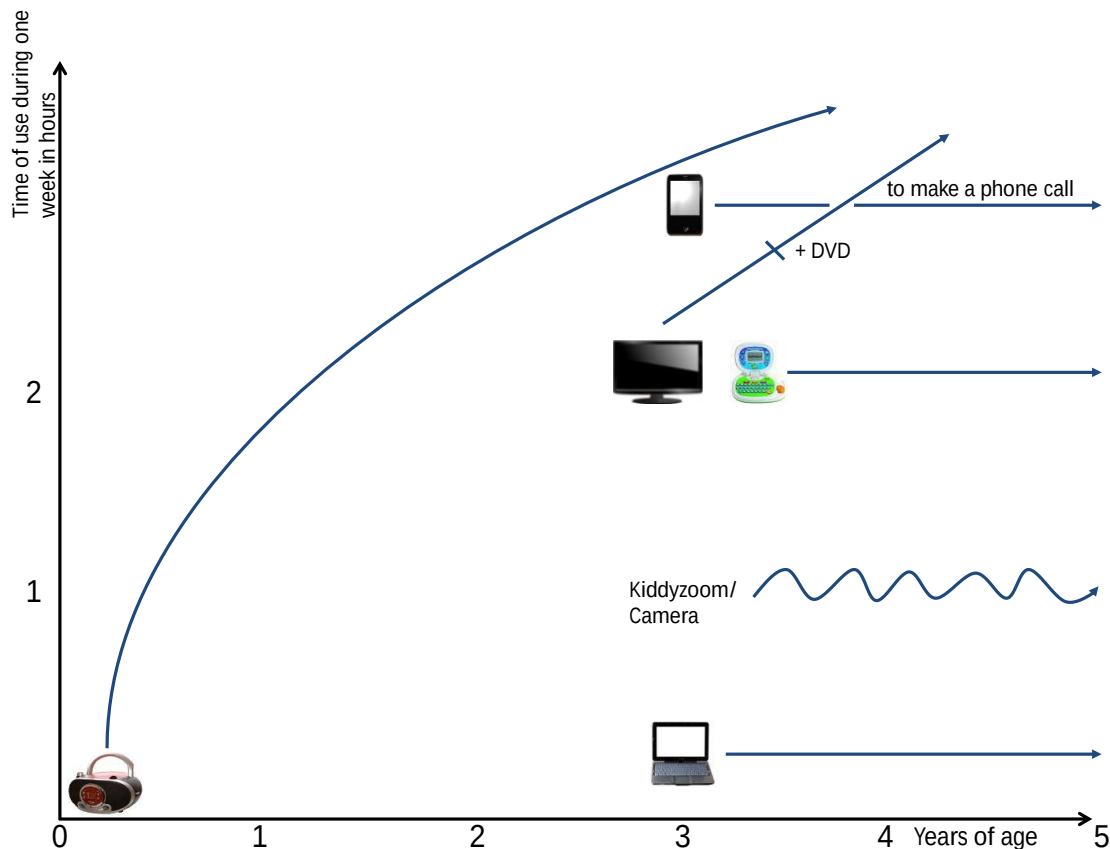
- Echo
Mother, 38

He knows that how to use computer to watch videos. At first it must be connected. And then he should write something and there are already some videos. And then press something to start.

- Foxtrot
Mother, 34

Even some very young children were able to handle quite a broad variety of media and ICT devices with surprising knowledge about degree of functioning. For example some children were owner of meta-devices, which combined several functions of other ICT devices such as a Kiddyzoom; meaning a camera that allows children taking pictures, playing games, also in combination with photographs taken and listening to music. The mentioned or similar devices were reported to be of highest interest for the children, while not being perceived as ICT device due to the lack of internet access. This applies even to the parents (please see figure 3, page 27).

Figure 3: Sheets of ICT use – G09



The more commonly reported iPad was often used with educational apps and learning games such as learning the clock or learning how to paint.

NS: Do you know what you can do with the iPad? Are you able to switch it on on your own?

YG5: No.

YG7: I know it.

NS: You know it?

YG5: You can look on the internet ... whether you can find something. Sometimes there are videos in it. You can draw something.

YG7: Yes, but you have done it only once. When you've been a baby, you...

YG5: No.

NS: Drawing with the iPad?

YG5: We have a "Malwerk", a "Malwettbewerb"...

YG7: No, not "Malwettbewerb".

YG5: It is! It is called "Malwettbewerb". And I won. ((older sister)) has lost.

NS: How does it work?

YG7: We don't have it anymore.

YG5: We have it on the iPad!

YG7: But we are not allowed to play with it.

YG5: We are. Shall I open it?

3.1.4 Where does their knowledge of and expertise in using new (online) technologies come from?

Children's knowledge mostly originates from learning due shadowing their parents or other siblings while handling a specific device. Older children seem to be more advanced in this kind of learning procedure although younger children under the age of four were highly demanding. Often other siblings functioned as a tutor explaining the procedure and function of a specific device to the children. They showed them how to properly and safely use it. Meaning and function of new media devices was also learned either via the visited kindergarten or school or in special workshops while the latter was not predominantly the case.

“And there was my nephew. He's over 20 now and has a knack for technology and all that stuff. My husband is not a technical crack either. He ((nephew)) showed the children all that stuff, how it works.”

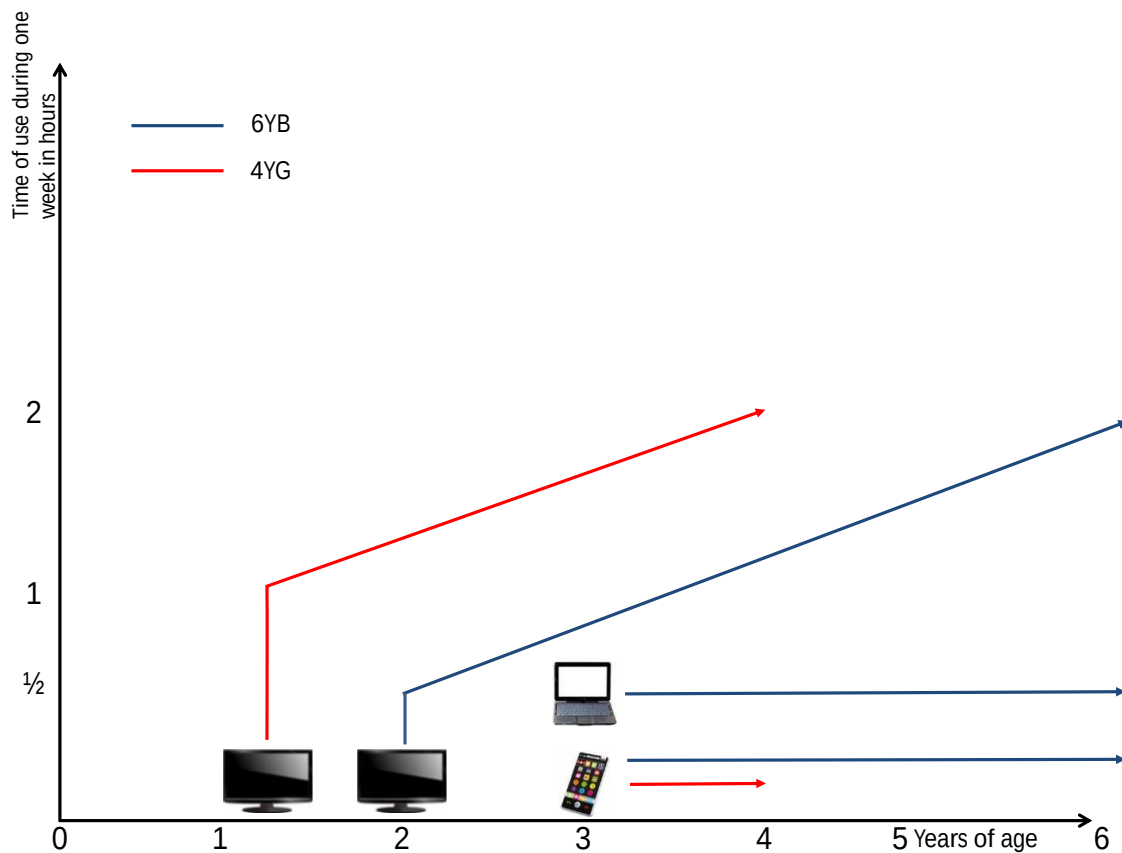
- Bravo
Mother, 43

They recognize that selection depends on the Smartphones available. My husband and I try to synchronize as often as possible. But they do understand that not every car has the same capabilities of playing music from a Smartphone. Recently the boy did recognize an USB stick. When I asked him how he knew that, he explained that it is for the computer and that one can watch the pictures on it. He knows probably from the kindergarten. They've made a media workshop last year. I think he overheard it there.

- Echo
Mother, 38

Parents reported commonly that children were shadowing them or their siblings and thus learn from very early on how to use the relevant devices. It did not really matter, if it was a TV or a smartphone, even very young children were able to handle the devices if they had the chance to observe older siblings while using. In general young children prefer the sibling's puppet or toy. In consequence, the Smartphone also reaches their area of interest (please see figure 4, page 29).

Figure 4: Sheet of ICT use – G06



3.1.5 What is the relationship between children's online and offline practices?

The majority of children in our sample preferred more than one technology or device but used only one or two at the same time. Commonly, this was a combination of listening to a device playing any kind of audio and playing with an offline toy, which we categorized as a common behaviour. The more complex the process of using a device was the higher the possibility that especially younger children could not understand the context in which it was used. For instance, children did understand that a camera makes photos but could not understand how those pictures got on their parents' PC.

„She does not know the relationship between the photos which were downloaded from smartphone. She may know how you can use the camera to make pictures. But she has no idea about why she can watch the pictures again later in computer.“

- Delta
Mother, 32

3.2 How are new (online) technologies perceived by the different family members?

Parents are generally skeptical about the use of ICT and new media, they reflect on risks in terms of use as well as psycho-social risk for the development of their child. Children perceive new media and ICT as fun and source of joy. In consideration of their social environment especially in the kindergarten or primary school new devices are all around or at least topic of conversation even in that age group. Interestingly, it is not necessary for the device being used for consumption; it is rather for the content. But, in regard to age related content, even in families that are eager to provide age-appropriate material an event of non-age-appropriate related consumption scares the children and pushes them away from the application.

3.2.1 What perceptions do young children have of new technologies?

In general children were able to understand that new media devices open a whole new range of possibilities to them. Starting with Video Games and audio content the range seems to extend to activities like typewriting and surfing on the internet. While younger children were focused more on trivia like colours and movement, older ones started to choose specific devices according to their content and applications.

„In earlier days he showed a specific broadcast, which was “Pur+” in one episode the topic was disease, which scared him, since that time he avoided viewing the broadcast again. He told me that he does not want to see it anymore and he is obviously feeling better through this decision.”

- Juliett
Mother,
30-40

3.2.2 Do they perceive any technologies as particularly “positive”?

Children in our sample approached technology in a variety of different ways. In the majority of the cases, children’s perception of a device or technology was not depending on the technology alone. The more fun and joy a device was able to provide, the more it

was perceived as particularly positive. Gaming and entertainment were highly rated with regard to associated positive attributes.

Educational devices or educational content were not generally boring or negatively connoted. Most of the children perceived them less entertaining. Concerning this, children rated these technologies and contents preferably neutral.

In terms of negative or dangerous associations children did not state a particular technology or device. Albeit we know about children who stopped using devices because of the scary or bad content.

3.2.3 Are children worried in any ways about any particular new (online) technologies?

We do not know of any expression concerning worried children about new media technologies in either positive or negative association. Most children seem to accept those technologies and devices as part of their parents', their own or sibling's everyday life.

3.2.4 What perceptions do parents have of new technologies? Do they perceive any technologies, digital content or apps as particularly "positive" or "negative" for their children?

The perception of a technology or device being positively or negatively associated by the parents depends on various factors. Content and time of usage seem to have an impact as well as the technology itself. Many parents argued that their children are not yet ready for a particular kind of technology like a Console or Handheld for instance. They have also been afraid sometimes, that the children could be influenced in a bad way if they use a specific device too much or too early on. On the other hand some parents seem to have no concerns about content, technology and the dimension of activity. They have particular positive associations of the device being educational or having offline character.

"With music I can bring him down. When he's overexcited or upset, give him a pair of headphones and turn his children music on and everything is fine."

- Echo
Mother, 38

"I think that there is a difference in listening and watching things. If you imagine a wolf in your head it can look like a comic figure or can be colored in any way. It can be a funny wolf, too. It is

a different situation if one can imagine and if this is scary or not or if there is a distinct picture displayed. For me this makes the difference.”

- Echo
Mother, 38

3.2.5 Are parents worried in any ways about their children`s experiences with new (online) technologies?

Most of the families in our sample regulate the usage of new media technologies and devices because the parents are worried about the time spent the content and the healthiness of their children.

Especially the aspect of children`s healthiness is impacting on this topic. Parents are concerned about their children “sucked into” Games and gaming devices as well as being fixated on those devices. Many parents feel literally “overwhelmed” by the sum of applications and possibilities children nowadays have with new technologies. They try to maintain control as long as possible and protect their children from bad influences.

One family already had to deal with excessive use and its psychosocial consequences. The parents reported that their child (age of four) suffered from aggressive behaviour when having no access through to deficits in concentration when having to focus on something which was not related to the device. With the emergence of sleep disturbances the parents decided to severely intervene. The sleep disturbances were concomitant with the child having bad dreams, in which he argued with his parents about the device. They started to regulate usage time as well as device and monitored the received content closely. Additionally, the family made the decision to spend more time with active mutual offline, non-new media related activities like board games.

„I had observed it when we were with another befriend family for tea. The boys played Nintendo and he was totally sucked into it. That frightened me you know? That he was physically involved into this game, literally“

- Bravo Mother, 43

„I think we`re not an exception in terms of new media compared to the main stream. I can imagine that my children are capable of managing new media devices earlier than others. Parents should be conscious about what children are doing with them. I think we tend to underestimate the impact of those technologies.“

- Delta
Mother, 32

Some parents themselves are not very interested in new media or even in ICT and thus do not set learning opportunities for the children to get in contact with the devices. This happens, although they know that their children are consuming the devices - and especially their content - at other places.

M9: [...] In principle, I think it's positive that she takes a close look at it. It's the same with mobile phones. When she is with her father, there is a mobile phone without buttons. With him I think she watches TV more often and plays with the mobile phone. But she doesn't have it here at all. In principle, she has to concern herself with it as it doesn't get less but rather more.

MD: Mhm.

M9: Due to the fact that I am not interested in it at all. I don't give her a special opportunity to concern herself with it. When we are at home in the afternoon, we are doing something together. Sometimes there is half an hour, maybe, in which I have to tidy up something and she occupies herself on her own. But otherwise, we are outside or make handicrafts or play a game. That's why... there is no time for it. The free time, which we have together, is filled with other things. [...]

- India
Mother, 46

3.3 What role do these new (online) technologies play in children's and parents' lives?

Various presentations of use and perception were shown through the field work being described in detail during this analysis. As already stated, the interest of the children is more content-related instead of focused on the device. Family (abroad) communication, distraction, joy, mutual activity and in some cases babysitter functions were observed.

3.3.1 How important are new (online) technologies for the children themselves?

From the children's point of view technologies and their content are a vital part in everyday life. Especially gaming and entertainment devices and their content are eagerly perceived and consumed with great excitement. Nowadays, children grow up in a world in which new media technologies like Smart TVs, Smartphones and Gaming Consoles are broadly distributed. Bearing that in mind, those technologies play a vital part in a child's everyday life.

“He keeps asking for it frequently. I ask for something and tell him to play outside or with his toys or we read a book. Because of this watching TV remains within this one slot in the evening where I need the time to bring the baby girl to bed. The longest time he watched a movie was on train.”

- Echo
Mother, 38

3.3.2 How important are new (online) technologies for the parents themselves?

Contrary to the children who grow up with new media devices and technologies, parents had to learn how to handle them in different phases of their lives. Older parents often use new media for business activities while younger parents are closer to the technological gap and therefore use new media devices for leisure time, too. Applications like WhatsApp and Facebook are used for socializing but mostly do not affect the children's life yet.

“I use my smartphone every day and only for the work. I receive my emails with iPhone...you can use it, but you must know what could happen with it.”

- Alpha
Mother, 43

“I tried to play with his GameBoy once. It was really difficult. I did play Mario when I was younger! That's why I like the game. But I stopped playing. I do not have the time anymore.”

- Bravo
Mother, 43

In general, smart phones are the melting pot of ICT use, since they provide opportunities for watching movies, looking at pictures and communicating with the family.

MD: We didn't draw in the use of the computer and the mobile phone. Is it possible to see a line?

M9: [distracted by YG] Well, computer not at all. Actually, computer is...I work with it. It happens very rarely that it is switched on when she is at home or rather when she doesn't sleep. When this happens, it's because I have to send an e-mail or look something up. Otherwise, she doesn't have any point of contact except we are looking at pictures. This is very seldom as well. Concerning the mobile phone, as I said, I use it just in case something happens in order to have a possibility to call someone if anything should happen. And the other thing is rather playful. She wants to look at pictures all the time. Actually, she thinks you can look at pictures with it. @ Actually, that's true. Games, I think, rather less. But I can't assess this. Concerning my part, I am of course able to assess this. [...]

- India
Mother, 46

3.3.3 How important are new (online) technologies for family life?

Families coordinate and communicate via different technologies while Cell and Smartphones are most common. Smartphones are mainly used for calls and staying in touch with the kids. Usually, parents own and use a Smartphone while children have Cell Phones.

“We do have a Smart TV. One could use it to surf on internet but I did not install it yet. It would not be used by any one of us. I would probably use it but my husband would not. That’s why it is not installed. Maybe sometimes when the boys ask for it.”

- Alpha
Mother, 43

3.3.4 Are there any technologies employed by the whole family or when the family members are together?

Using Smart TV’s is a common mutual family activity, with parents sitting together with their children while watching TV. Other new media devices like Tablet PCs are also used for mutual entertainment. Gaming Consoles may fill this spot on rare occasions but are generally of less concern.

Non-new-media-related mutual activities like going for a wander, playing or making sports in the park, making trips or playing analogue games are even more common.

“She knows that father and mother work with a computer. And she plays sometimes with a computer for children. She uses the computer sometimes with mom in order to watch a video like bear family.”

- Echo
Mother, 38

“They watch TV with their dad. Most the time on the weekend when the weather is bad.”

- Bravo
Mother, 43

3.3.5 Does young children`s use of (online) technologies interfere in any way with family life?

Use of new media devices interferes in several ways with every day family life. On one side there are the traditional conflicts and negotiation processes about which device or content is used when and for how long. From a pedagogic point of view, this is perfectly

normal. On the other hand, problems can easily be amplified with unmonitored or unregulated usage of new media severely impacting the family's life when children start to excessively use it.

"They watch it, they also use it. Sometimes I think in the morning. But not every morning. Then we have breakfast together. We eat together, a toast or something. This morning I had no tasks in the house left, and then I watched 15 minutes ((TV)). I sat in the sofa and drank my coffee. Sometimes, also in winter, we sit there at 7pm, watching the children's channel. Things like the little prince or so. They know that at 7pm we can watch a movie for 20 minutes. We are always watching movies together because I like it myself."

- Alpha
Mother, 43

3.3.6 Do these technologies support and/or hinder family life in any ways?

Children like to use new media devices a lot. Most of the times they are regulated by their parents and cannot use them for an unlimited time. Albeit we were able to observe a major amount of them trying to circumvent those rules and regulations whenever possible. Only if parents let their children slip by those rule too much, problems are coming up.

3.3.7 Is parenthood affected in any ways by the use of new (online) technologies?

New media and its related technologies and contents are a whole new challenge for parents of each generation. New media devices like Tablet PCs, Smartphones, Smart TVs and Computers can provide a literally innumerable amount of activities and possibilities to children. Amongst the top of those activities children rate gaming and entertainment. Parents have to deal with those new activities by teaching and strengthening their children's new media competency.

New media cannot only provide fun and entertainment. It is also possible to support children's learning process and can be used for additional tutoring if the appropriate application is provided.

Gaming and entertainment seem to be of less importance from a parental perspective. Nevertheless, playing and fun have their origins in childhood itself and are a part of each child's nature. For them it is a way to understand their environment, playfully probe their behavioural roles and explore new exciting situations and objects. There is nothing wrong

with playing and using new media technologies as long as children have the appropriate age to understand what they are doing and as there are no psycho-social consequences like the following:

1. Not caring about activities or persons as long as they are not related to new media technologies.
2. Aggression when having no access to new media technologies.
3. Lack of concentration when not using new media technologies.
4. Sleep disturbances.

Also based on parental and children's narrations, lack of self-regulation can be added as an indicator for a problematic handling of new media technology. Still we need to further explore this topic because it is not clear yet how exactly and under which circumstances (like being scared or bored for instance), child self-regulation applies.

In addition, children also need to be guided when developing an autonomous media competence and while learning how to use new media technology safely, properly and without psycho-social consequences.

"I think it is very easy for teenagers to get access to a Smartphone and a corresponding contract. I think that's irresponsible because rules of education for children get shifted more and more. I think that the corporations use that and that we have to ensure that parents are capable of educating their children in using and understanding new technologies. I think we absolutely need to prepare parents to teach their children."

- Delta
Mother, 32

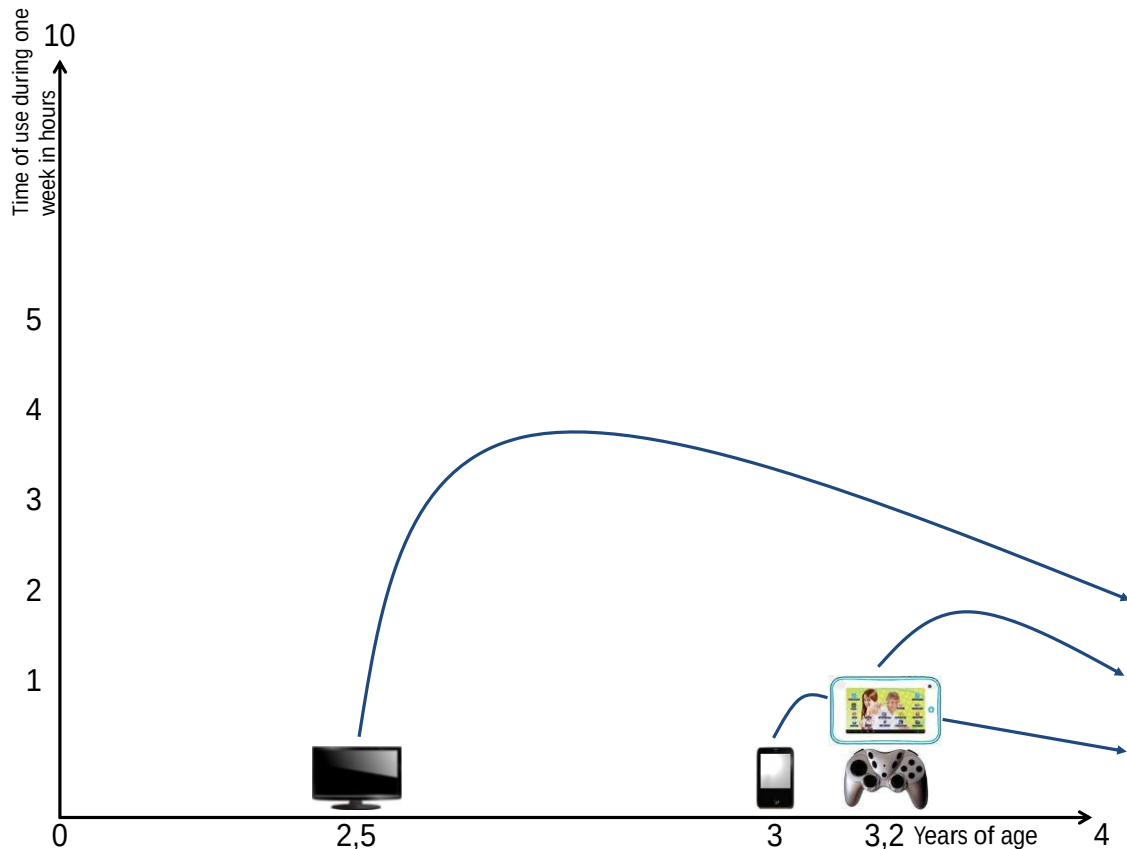
"One time I simply tried with the Sandman. I think I was ill with my throat and therefore could not read the bed time story. That was the first time that they were watching actively. From this point on there is a trend to ask from time to time for the Sandman, or when it fits my schedule. When I feed the baby the two older ones watch the Sandman Show. It is easier for me this way."

- Echo
Mother, 38

Unregulated use which is indicated not only by an intense time of use, but also and more precisely through psycho-social consequences – even in this early stage of development – requires regulation through parents, if the child is not able to self-regulate. In the displayed

sheet of ICT use the cut-back of usage time is obvious. Interestingly, parents noticed that TV use caused some problems in earliest childhood and this happened again with other ICT devices half a year later, while at least some regulative measures – in terms of TV use – have been implemented (please see figure 5).

Figure 5: Sheet of ICT use – G03



3.4 How do parents manage their younger children's use of (online) technologies?

The opinion of the interviewer is quite obvious. It is thought that new media have positive and also negative sides. Children could garner much knowledge through new media, by watching TV or surfing on the internet (YouTube) or by playing games. There is also news for children that they can know the events of the entire world. So that prohibiting the use

of new media to children is not good and not necessary. Children learn the new things very quickly and the impact of new media on them is also strong. The exposure to new media should be controlled by the parents and schools and the society. Because the cognition and emotion of children do not develop complete. They may not handle well with the new media for example cell phones, social networks and so on. The contact and communication in the reality are very important for children's development. They should have limited access to the internet and network before they could handle them well. Children can slowly learn and develop their competences about new media. All they need is the right guide from parents and society.

M4 "I think it is not bad to keep children away from phones as long as possible. They can get the phone at 12 or 13 years old. But I think it is also too early. They do not know how they should deal with the smartphones. Therefore, people should go along with the children. And it is stupid if we forbid them to use the phones, if I transfer the role of the child. If she is 9 or 10 years old, she has no chance yet. But with 12 or 13 years old, then it is OK:" "I think there should have barrier from Facebook or WhatsApp, or the whole social media websites. I do not know whether it is technically possible. The camera could be somehow turned off. There should have advanced rules for some games which child cannot actually"

- Delta
Mother, 32

MD: I've never seen this kind of device. Sounds interesting! And there are spelling games on it, you said before?

M9: Yes, but I don't use it with her yet...it's the same with numbers. I think it's too early for her. This will come by itself. I think...now she slowly starts with party games and this is connected to counting as well. And counting develops on its own, more or less.

MD: Right.

M9: And letters...if she is interested in it and wants to know about that, I will tell her and she will ask. But otherwise...I think children need to have so many abilities and they need to do so much...

MD: That's right. You don't have to put pressure on them.

M9: I think, it's about two years until she starts attending school. And these skills will develop early enough. She still has time. You don't have to exaggerate. (NP) I am quite relaxed with it...with all of these competitions among ourselves...this is not my world.

- India
Mother, 46

3.4.1 Do parents share activities/values, encourage, and educate children with the help of (online) technologies?

Social economic background and received education are major factors impacting on how and why parents manage their children's new media reception and use. Still this question cannot be explored on only one dimension. We observed parents using new media

technologies, Tablet PCs for instance, together with their children. Predominantly, those activities were of entertaining character. Parents did in majority function as a guide or at least as a monitor and supervised their children when being engaged. If new media technology and content was used for educational purposes, children were on their own most the time.

Whether a new media technology or application is trustworthy enough to leave children alone depends on its content and parental perception. If parents have the impression that content is harmless and does not endanger their children, it is ok to leave them. If there are concerns about this matter, parents are eager to protect their children and prohibit or regulate and monitor usage. That of course is only the case if parents have already developed a consciousness about new media and its impact on children and their education at all.

„We do not offer the smartphone, but if she asks for it, we recognize that. And when she's older, we can give her access to the television and newspaper on her own.“

- Delta
Mother, 32

If the baby girl is around our TV stays off. Albeit she recognizes the colorful pictures and enjoys them. I think it is too much input for her. I don't like it for her age.

- Echo
Mother, 38

3.4.2 What rules are set?

Regulation and monitoring can be made of a broad variety of rules and constraints. Highly rated, especially when younger children and siblings lived in the family, are stringent rules where no room for interpretation is left. Those rules included imperatives to stop using a specific new media device like a Smart TV or Table PC or Game Console. Restricted access to those new media technologies and contents could also be observed. The majority of children in our sample did not have unlimited access to Smart TV or gaming devices of any kind including Smartphones. They were only allowed to use them within stringent rules concerning the questions when and how long.

Some parents showed a more flexible and encouraging behaviour in establishing rules. In majority, children with age five up had a wider sphere with less constraining rules, but were still monitored by their parents. It is part of their education and – as far as parents see it - will help them to develop an autonomous media competence.

“There is a cute animal, which is your favorite program. We have it on the calendar or weekly schedule. The children can watch it to given times in a week. It is half an hour maximum a day for TV.”

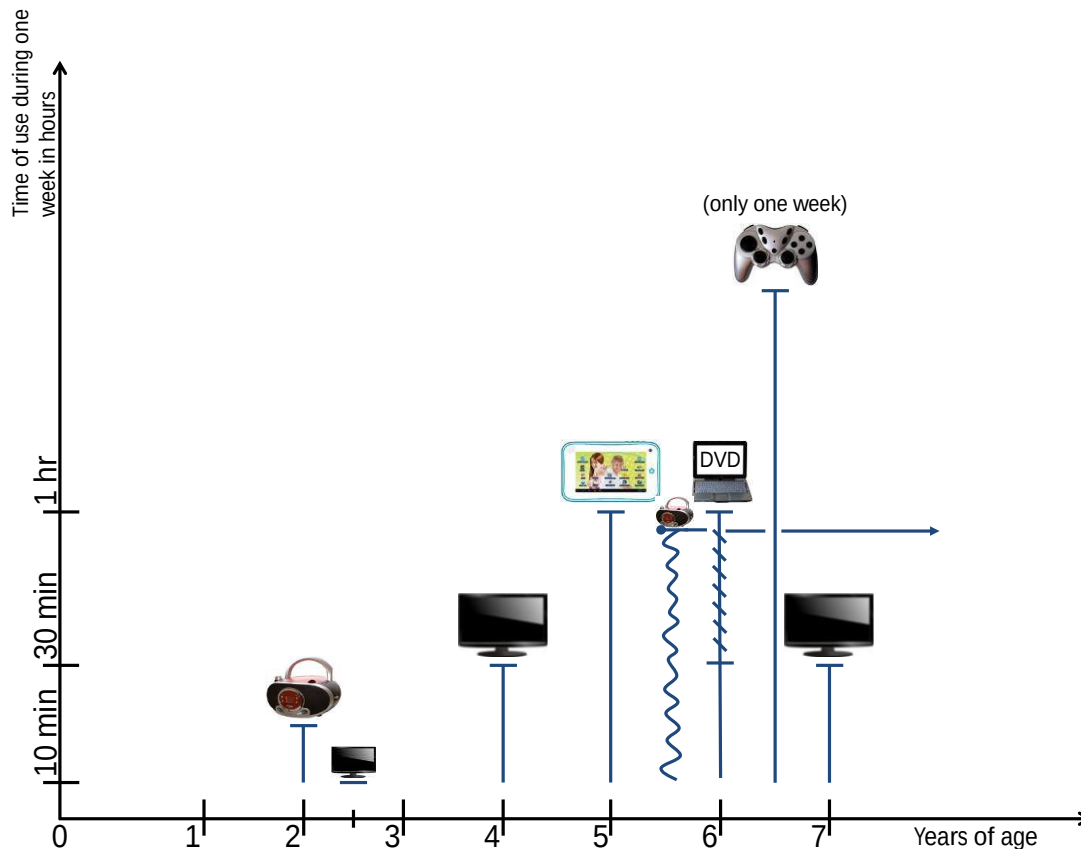
- Delta
Mother, 32

“We try to keep the consequences close to the incidents. When he is allowed to play with the Smartphone and I catch him doing other things, I take it away from him. I try to keep the consequence connected to the cause. In my opinion the children have to recognize that doing wrong is connected to the penalty directly.”

- Echo
Mother, 38

If parents are skeptical during the consumption of their children, they generally reflect on the use and decide to take the device away that might cause some unwanted effects on their child, even after short periods of use, as displayed in Figure 7 in regard to the game console (please see page 42).

Figure 6: Sheet of ICT use – G10



3.4.2.1 Why and when are these rules created?

The majority of parents wish to keep the children safe, sound and sane. They like to educate them and prepare them for their own lives. Regardless of the fast, nearly exponential development of (new media) technology and our society, this value is still one of the highest rated reasons why rules are established.

But not only children's healthiness is predicting the establishment of rules. Reduction of complexity in every day's interaction between parents and children could be extracted from our sample as an afterimage. Parents tend to fasten or loosen rules from time to time in order to reduce the complexity and ease a (Socio-environmental) situation.

Parents were concerned about the negative consequences of new media technology (and content) and its impact on their children's emotions and development. Inquiry on those

statements did reveal that the majority of them do feel insecure and poorly orientated in the wide field of new media technologies and devices.

“A child has to come down and relax at the end of the day and when this overflow does prevent that, it cannot be good. I must not put her under the stimulus of a TV broadcast. This kind of stimulus can be avoided. On one side it is better for the child, on the other it is better for my nerves. I do not need a child around which is prone to temper tantrums and screaming because of a something I can control with my own actions. That is the point for me, even if it sounds a bit egocentric.”

- Echo
Mother, 38

But it is important to mention, that rules are even contextual and not a general construct that effects every situation in children's life. Children are very aware of this context sensitive decisions.

MD: In the time after hospital she turned her attention to other things again, right?

M8: Definitely.

MD: She often went outside, right?

M8: Yes, she knew that it was a state of emergency in hospital. [...] When we are back home, it will be eaten at the table again (NP), TV won't be watched for several hours...She has been to the kindergarten again right away and she had her activities again, like swimming, English and violin and this and that. This normality has been back for her suddenly. (LP) And after such a history with your child, you don't attach value to TV – whether you own a Plasma TV or...I don't know what else there is today. I am not up to date. 13 years ago, this TV we possess came onto the market and it still works. That's why we still have it here. We spend more time outside than watching TV. (LP) In summer we are outside constantly.

- Hotel
Mother,
30-40

3.4.2.2 How are these rules made?

We observed that that the majority of parents did not negotiate the establishment and substance of their rules. Some parents had a more pedagogic approach when establishing them, aiming partially for children's comprehension, partially imposing. Still –even if this is perfectly normal- children acted out protest in a broad variety ranging from crying, screaming and aggression over to enervating their parents if not d'accord with their parents decisions.

“It has to be comprehensible for the children. They have to understand the connection between action and penalty. Otherwise the penalty is senseless. One does read a lot literature with lots of theories about education. Empirically children have more insight in the process and a better understanding when action and penalty are directly connected. If I am a child and I do not put my toys away as I was told, I will recognize when my toy is taken away from me that this is connected to my behavior.”

- Echo
Mother, 38

“You cannot always enforce the rules but one has to try.”

- Echo
Mother, 38

3.4.2.3 Do these rules vary according to the type of technology being used?

In our sample a broad variety of new media technology and content could be found. Highly rated by children and parents were Smartphones, Tablet PCs, Game Consoles, Smart TVs, Computers and Hi-Fi Systems. Despite those being different devices with different purposes parents are not overstating this. In majority the received content or possibilities of the technology decides which rule is connected to using and how stringent this rule is established or enforced.

Parents in our sample tried to detect which level of consciousness and perception is needed to use a device safely. The more complex and versatile a device is the more parents try to shift its usage to a more advanced age.

Another predictor was the content itself, for instance if it is child-oriented or not. Content which was perceived as more advanced was mostly prohibited or strongly regulated for children.

“I think it is not bad to keep children away from phones as long as possible. They can get the phone at 12 or 13 years of age but I think it is also too early. They do not know how to deal with a Smartphone. Therefore, people should go along with the children. And it is stupid if we prohibit them. With 12 or 13 years of age, it is Ok I think.”

- Delta
Mother, 32

"I think it has to be similar to everything else. There has to be distinct rules for everything and for distinct rules there have to be clear consequences. I do not think that this is a question of new media I think it is a matter of overall education. Why do children prefer to sit and watch TV? If my boy asks me to watch the Sandman I say "You can do that but then it will be too late for your bedtime story." Most the time he is "No! I'd like to have the bedtime reading". It's a simple question of offer and demand."

- Echo
Mother, 38

3.4.3 How parents use devices with their child. What is your typical role in the interaction?

In general parents are in the role of a guide or tutor when they interact together with children. Again this requires the parents to develop a consciousness concerning new media technology and how to educate their children properly to enable them to use it safely.

"He surfs on the internet with his father e.g. Maus HP or music on YouTube."

- Foxtrot
Mother, 34

Parents guiding their children and setting a secure frame for usage is common.

MD: When he has tablet in his hand, I mean the film and certainly there are potential other things. Do you have parental control or something?

M1: No, because they have not held it in their hand themselves yet.

- Alpha
Mother, 43

3.4.4 What are children's understandings of and responses to the rules set by parents?

Children most of the time do not agree with the rules their parents make, even if they know them and are aware of the consequences. This does not imply that they were not included when those rules were made and disagree because of that. Most of the children in our sample had a distinct understanding for all the rules and all the consequences when they step over. Children are quickly fascinated and the exploration of anything new lies within their nature. If this also makes fun and immerses them, like playing a Video Game for instance, children simply do not like to stop even for good reasons.

*“YB01: I always use mom’s computer and watch something with it.
 CS: Do you watch movies with it?
 YB01: Yes.
 CS: With the Computer.
 YB01: ((Agrees))
 CS: Do you play games on the computer?
 YB01: Yes.
 CS: And does mom have rules for how long you can play with it?
 YB01: Only short time.
 CS: Only short. And does mom tell you when you should stop?
 B01: ((Agrees))”*

- Alpha Boy01, 5

*“CS: Is that for you ok when mom says it is enough to for playing?
 YB02: I always want to play with it longer.”*

- Alpha Boy02, 5

3.5 Advice for parents

Media and social changes are facing children and adolescents, along with their parents and teachers, with new (pedagogical) challenges. Numbered along has to be a competent dealing with digital media. For the purpose of social belonging, an appropriate media use referring to the age group also has to be considered (Dreier, Wölfling & Müller, 2013).

Often, an excessive use is judged hypercritically by the parents. This judgment is hampered anyway by the fact that children and adolescents are “always on(line)” (Dreier et al., 2013a). Here, it has to be stated that an excessive media use can have developmental-specific backgrounds so that an intense use cannot per se be equaled with pathological use. But if an internet-addictive behavior is emerging, the level of psychosocial functioning is distinctly reduced (cf. Tsitsika et al., 2013; Dreier et al., 2013b). High durations of use admittedly correlate with a pathological use of the internet, but this cannot be perceived as a sufficient condition indicating any pathology (Durkee et al., 2012). As protective factors, the ability of self-regulation as well as motivation for change regarding the excessive behavior can be considered (Dreier, Wölfling & Beutel, 2014). Parental advice is often requested, but seldom provided, thus we want to add a section covering this important topic based on our findings as well as clinical experience.

3.5.1 Psycho-social consequences of over- and unregulated media use

During the last decade the accessibility and media and ICT use of younger children and children until an age of eight was growing rapidly. The technology-driven societal development effected families and the communication within this small-world social system. The American Academy of Pediatrics proposed several dimensions of potential developmental risks caused by unregulated exposure of media. At that point the effects have been mainly described as indirect ones. Research on media and ICT risks pointed out that there is an enormous potential to traumatize young children due to media violence, which may lead to aggressive behavior of the up-growing recipient consequently displayed though severe scientific evidence. Moreover the early contact with ICT and new media contents, which also consists of sexual-related material, presentation of drug use images as well as age-inappropriate actions, even in age-classified media, result in psycho-social burden (AAP, 1999).

The repetitive presentation of highly sexualized content, intense tobacco and alcohol consumption, unhealthy eating habits may normalize deviant attitudes and abnormal behaviours in minors (AAP, 1999). This culminates in an adverse adjustment of social values, which itself effect society's constitution.

Recently, also direct consequences of an unregulated media reception were scientifically described. Especially SNS and communication-based internet use as well as internet gaming behaviour causes in vulnerable younger children – and also in adolescence – negative effects up to severe psychopathological distress in those affected and their families (Internet Gaming Disorder; DSM-5; APA, 2013). This was also shown in several epidemiological as well as clinical studies addressing adolescents, for instance EU-NET-ADB conducted in seven European countries (Tsitsika et al., 2013). Problematic as well as pathological use is associated with rising social insecurity, loss of interest and an irresistible urge to consumption. Self-regulation displays a stable psycho-social state of development and was shown to be a correlate of resilience resulting in a minimization or avoidance of psycho-social burden in adolescents (Dreier et al., 2013).

Early media consumption may affect the brain development negatively. It also might delay necessary psycho-social developmental stages. Current findings indicate that language

acquisition and associated cognitive abilities are effected by an unregulated use of media and ICT (AAP, 2011).

Based on those findings, the media and ICT use of children under an age of eight strongly has to be observed with the delineated constructs and its highly negative consequences for the child's individual and the families' development in general. Thus, it has to be seen critically, if children are faced with unregulated, inappropriate material or devices, even if these devices were presents from older siblings or befriended families.

MD: What is the learning laptop doing?
((Laptop is prepared and started))
Laptop: Oh, I love to take a bath. Can you help me? Which shape has the sponge?
YG: Shape?
M9: Which shape has the sponge?
YG: (NP) ...the sponge?
M9: Can you see the sponge?
YG: Where? Show it to me!
M9: No, on this picture up here. Do you see the sponge? This is the sponge. And which shape has it got? (NP) Look, there is a square, a flower, a triangle and a circle.
YG: I try this... (pushs a button) Laptop: Triangle! Oops, try again!
YG: No triangle?
MD: No.
YG: Then I don't know it.
M9: Look, how does it look like?
YG: Mmh... (NP)...Green!
M9: No, not the color – the shape! But green is wrong as well. @
Laptop: Circle, you are very good!
YG: Circle.
Laptop: Think, think, think! With which letter does the word "soap" start?
YG: Soap? (pushs a button)
Laptop: Yellow! Think, think, think! With which letter does the word "soap" start?
M9: These things are... @ That doesn't work.
YG: Soap? I don't know. Which button do I have to press?
M9: You have to push those letters.
Laptop: Square! Think, think, think. With which letter does the word "soap" start?
YG: I try... (pushs a button)
Laptop: Oops, try again! Think, think, think.
M9: Look, "soap" is written there. It's this loop.
Laptop: Bye!
YG: Well, I am looking, if I have something else.
M9: That's what happens @.

- India
Mother, 46

3.5.2 Craving

In order to characterize an excessive use more properly, the “Model of Four” has been developed in a qualitative study among 124 children and adolescents in seven European countries (Dreier et al., 2013a). The model discriminates between adaptive and maladaptive strategies of internet use and allows a classification of the excessive internet use behavior. These types of excessive use differ from each other on the dimensions of “Online Craving” and “Offline Engagement” and can be further identified by adaptive and maladaptive strategies of use. Maladaptive strategies are considered to be 1) bending of parental control, 2) trivializing, and ultimately 3) legitimatizing of the excessive internet use. Adaptive strategies are 1) self-control, 2) prioritization, and 3) testing of offline-alternatives (Dreier et al., 2013a). The parameters self-regulation and motivation for change, Online Craving and Offline Engagement, as well as the adaptive and maladaptive strategies of use allow a designation of the behavior of use to the scheme of four fields of the “Model of Four” and also an exact classification of the excessive internet use behavior (Dreier et al., 2013b).

After parents, teachers, and pediatrics have made a classification, that assessment can be refined regarding the clinical conspicuousness of the excessive internet use, if required. This is possible due to available complementary vivid citations fitting the defined diagnostic criteria of the DSM-5 (APA, 2013). Based on this classification of internet use, further targeted steps can be derived (Dreier, Wölfling & Beutel, 2014).

As indicated above, craving serves as one of the main classification criteria to differ between adaptive and maladaptive use in adolescents. Developmental stages affecting the up-growing young child during the period of earliest childhood set their mark for later developmental stages. Situations where craving for ICT use generally occurred were associated with boredom susceptibility in minors.

CS What is he usually doing on a normal day at the weekend? A normal Saturday or a normal Sunday?

F3: (NP) When we are at home or when we are going outside?

CS I would love to have both.

M3: The first thing he is looking forward to in the morning is to switch on the TV because he is not allowed to do this during the week. Actually, there wouldn't be the time in the morning. Let's put it like this. He is really looking forward to it and then he lays down on the couch there and is very happy about being allowed to switch on the TV.

- Charlie
Father, 34

In some cases unregulated use resulted in aggressive behavior as well as sleep disturbance, which lead to direct consequences implemented as a parental mediation, that cut back the use among other things like the following quote illustrates.

*CS: Do you engage in sports in a club?
YB3: Yes.
CS: What is it you are playing in there?
YB3: Cars.
CS: Cars?
YB3: And watching TV sometimes, but now I can't play anymore, because I threw the remote control up against the ceiling.
CS: You threw the remote control up to the ceiling? Why?
YB3: Because it got out of my hand.
CS: It got out of your hand? And now you are not allowed to play computer games anymore?
YB3: With the TV.
CS: But are you still allowed to watch TV?
YB3: Yes, watching TV is still allowed.*

- Charlie
Boy, 4

3.5.3 Self-regulation as predictive factor

The degree of self-regulation was in-depth described in parents while they reported about the end of the consumption by their children. Being capable for the assessment of self-regulation even in early years seems to be a good predictor for self-regulated use in stressful life-events during later developmental stages.

Interestingly parents reported that the content was held responsible for the self-regulation in terms of fearing or inappropriate material - even in strongly regulated households. This

is due to that fact, that the consumed material is meeting FSK regulation criteria, but is nonetheless to be seen critically.

MD: How was that?

M5: How was that “YB”?

YB: Good.

M5: And Peter Pan? Did you watch that one to the end?

YB: ((shakes head))

M5: Wasn't that good?

YB: It was.

M5: And why didn't you watch it to the end?

YB: Because there was this bad guy.

M5: Ok. I assume that this was Captain Hook.

M5: And when the bad guy came you stopped watching?

YB: When the bad guys are coming I stop.

M5: The children have a good self-regulation.

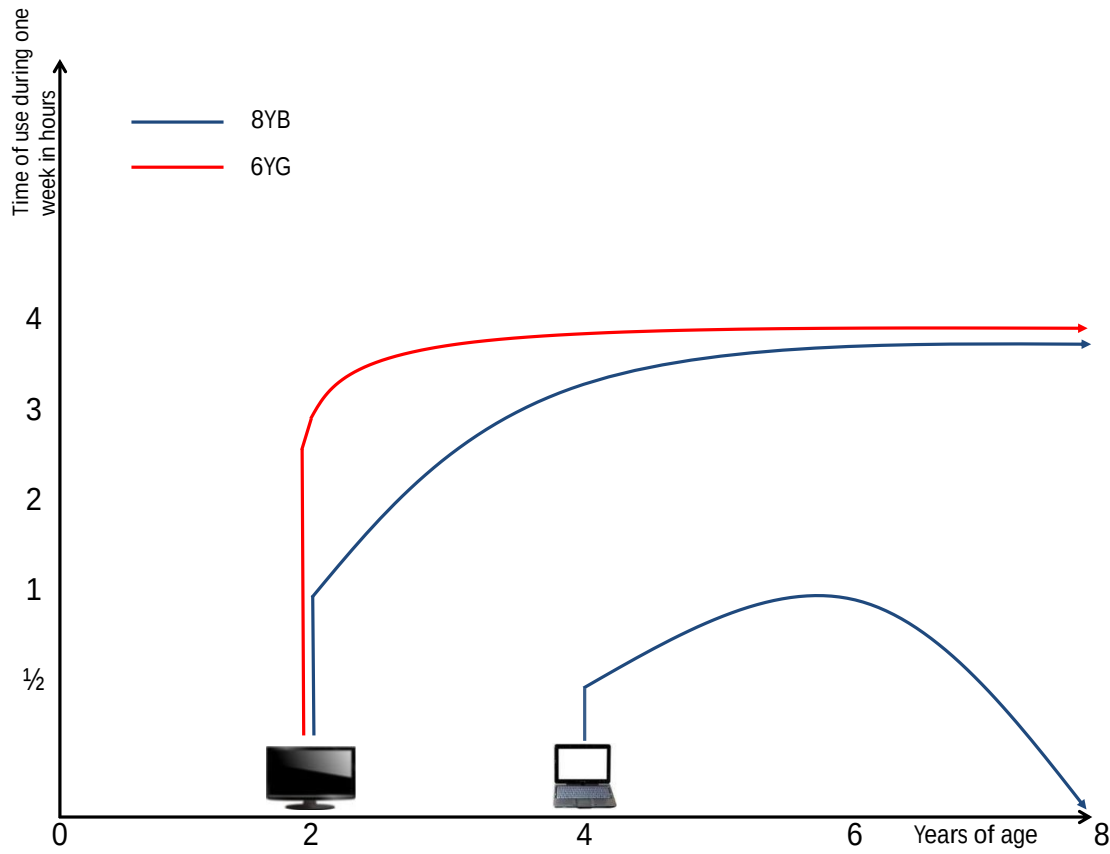
MD That is a good keyword. Where else can you witness your children self-regulating in terms of media?

M5: “YG01” is very emotional. If she watches Laura's Star and the main character is in danger -although she knows that there will be a happy ending, I have to be at her side. She couldn't watch it alone. It is the same with Books. One cannot simply read every one book to her. Especially in the evening. Bedtime stories including, for instance a wolf or bad things is a no go for her. Accordingly watching TV is regulated in the same manner. In addition the time is a relevant factor. Most the time she loses interest anyway after half an hour of watching TV.

- Echo
Mother, 38

If self-regulation was implemented, children were also able to transfer it to other devices. In the Sheet of ICT Use in family 7 a saturation of use was achieved in terms of computers (please see page 52).

Figure 7: Sheet of ICT use – G07



3.5.4 Pedagogic thoughts on early ICT and media use

As we can apprehend from our samples data, frequent use of new media technology is already taking place in children's everyday life. Further it indicates as strong desire of the parents to control and regulate the use of new media technologies and contents for their children. On the other hand, children seem to be very excited about the possibilities and adventures coming with those technologies. As it is observable in many situations, interests of the children are not necessarily identical to the interests of their parents. Arguing and negotiation about when, where and why are a part of each educational process. With the emergence of new media technology and related content this process is transforming to a more complex level, where more knowledge and expertise is strongly needed. It may be a rough challenge for parents which are Digital Immigrants themselves, still learning how to approach and handle new media technology, to keep pace with the easy naturalness of children adapting. Children are fast learners in terms of new media technologies, but as our data also implicate, miss the critical distance and reflection in handling it.

In reference to the limited time and scope of the study, the majority of families in our sample showed established and civil structures. In consequence we have to ask how families with a lower socio-economic status, focusing on education, income and residence handle the use of new media technologies. Our data indicates that even in families with established structures the babysitter function, means parking the children at a device like Smartphone, Tablet PC and Console etc. takes place on a regular basis. The question about which new media technologies are regulated and which not, at which age children have access and how does that impact on their development is still not answered yet. Research in Gambling and Gaming Addiction determined that procedures including waiting related tension connected to ease and excitement when winning or rewarded are easily adapted by a human brain. Especially Free-to-Play-Games, which are holding a majority of the Mobile Gaming market, show more and more mechanics which are similar to the procedures named earlier. Children and adolescents are strongly endangered to succumb to such procedures because of their lack of critical distance and reflection. Also regulation of negative affective emotional states by making excessive use or relaxation which can only be achieved by use of new media technology it is a clear indicator of a problematic behavior and must be addressed immediately. Having this in mind the phenomena of younger siblings co-piloting their older ones when using new media technologies does impact even more and calls for focus and more expertise.

The data and knowledge we have today in regards to when children use new media, where they do that, how they approach and handle it, who accompanies or supports them and why they use new media technology at all is rather thin and does not suffice the subject. To guaranty upcoming generations a good media education and enable them to establish an autonomous media competence, it is indispensable to enhance our knowledge by further qualitative and quantitative research. Only with more and long term evidence we can start to develop new methods and guidelines which enable children, parents, educators, teachers and pedagogues to develop a skilled and safe approach on the subject of new media technology.

3.6 How to find the balance?

New media technology and content are inherent parts of children's everyday life. Watching and surfing with a Smart TV or playing on a Console or Tablet PC are only a few choices out of a steadily growing number of activities with new media devices from which children can choose every day. Using new media technology and content gives children the opportunity to explore and satisfy their need for curiosity and entertainment.

But what fascinates children and young adults when using new media technology? Children most of the time will find a situation of clear and reliable structures and rules when dealing with new media technologies and its content. Self-paced decisions without parents or siblings interfering are a good basis to explore procedures and consequences on their own. Especially when playing Video Games, children can reach goals and claim achievements of which they can be proud of. If there a siblings or friends involved in the activity their appreciation may contribute to the children's self-esteem. Developing new skills and attaining new knowledge as well as discovering new adventures and excitements are key motivations (Bergmann & Hüther, 2008).

Children use new media because of a wide variety of reasons, but how can one make a distinction between intense and excessive use of new media technology? Right now our knowledge about how often and when children make use of new media technology is based on a rather thin ground. In our sample we did encounter children which were regulated and monitored as well as children which were – at least over certain periods, not. Over the course of the last decades psychology researched excessive and pathological use of Internet and Gaming to face Internet Addiction as a growing public health concern. Affected subjects of Internet Addiction are suffering from psycho-social distress in many ways (Müller, Beutel & Wölfling, 2014). In relation to the evidence, Internet Gaming Disorder has been added to the DSM-5 appendix as a research diagnosis (APA, 2013). Despite Internet Gaming Addiction's focus on pathological online and computer gaming, the defined criteria can be transferred to our object of study as indicators and alerting signals for an upcoming excessive and problematic use bringing along psycho social consequences. Six criteria for Computer Gaming Addiction have been categorized in 2006 by Grüsser & Thalemann and are congruent to actual DSM-5 criteria for Internet Gaming

Addiction (Grüsser & Thalemann, 2006). Grüsser and Thalemann revealed five criteria, which are also presented in the DSM-5s' Internet Addiction diagnosis. These fit young children's excessive use of new media technology and can be transformed to our subject of study.

1. Narrowing behavior pattern

Using new media devices and content is of capital importance for the child. Thoughts are dominated by constantly thinking about the device or content and the craving to use it. Other activities and social liabilities strongly shift into background or are entirely neglected.

2. Regulation of negative affective states

The new media device or consumption of its contents is used as a stress coping strategy to regulate negative emotions by substituting them with positive arousal and relaxation.

3. Tolerance development

The desired effect (i.e. regulation of negative affectations) can only be achieved by using the new media device/content more frequently or with increasing duration.

4. Withdrawal symptoms

Reducing or stopping the use of new media device causes tension, unrest or vegetative symptoms. In our sample we could observe symptoms like aggression, problems to focus on anything else which was not related to the new media device or content and sleep disturbances.

5. Loss of control

Use of the new media device and self-regulation is no longer controllable by the child himself.

3.6.1 I can observe an accumulation of some or all criteria on my children, what now?

If parents observe the criteria enumerated above on their children it is time to pull the emergency-brake and consult a professional institution. In Germany the Outpatient Clinic for Behavioral Addictions, Department of Psychosomatic Medicine and Psychotherapy, University Medical Center of the Johannes Gutenberg University Mainz is a good contact point. The clinic is specialized in treatment of Behavioral Internet Gaming and Gambling Addiction and has an excellent trained staff at its disposal. Concerned parents can contact the clinics ambulance hotline by dialing +49 800-1 529 529. Beyond first contact and addressing important questions, the hotline staff is able to redirect parents to regional institutions and help centers if necessary. By providing support on the search for an appropriate treatment, the clinic is able to offer immediate low-threshold help and ease of situation.

3.6.2 Media Education

Children today are born into a world full of new media and nearly endless possibilities to use them to their own benefit. In regards to the attempt to get a hold on different generations dealing with new media technology the terms “Digital Native” and “Digital Immigrant” are predominantly used when discussing the matter. Digital Natives are raised in a world where new media technology is omnipresent. They accept those technologies right from the beginning as a natural part of their environment. On the opposite there are Digital Immigrants which can learn and master all the new media technologies but will never be a native (Prensky, 2001).

While we encounter a lack of expertise and knowledge in regards how children are dealing with new media technology, we know from our sample that they have to undergo a learn process to make a good use of it. This particular process contradicts the two dimensional theory of Digital Natives and Digital Immigrants. If a learning process is mandatory, which is the case for all new media technology, the two terms include all children into both groups. They are born in a world full of new media technology and accept it as environmental surrounding making them Digital Natives. On the other hand they have to learn to use this new media devices and contents to gain an advance from it, which also makes them Digital Immigrants, because no child is a master from the beginning. This two

dimensional perspective may be of use when observing the structural changes over particular generations but it does not fully suffice in terms of social pedagogy and media education.

In 2013 the term of the Digital Transformer was defined, since the dichotomous classification of immigrants and natives did not fit the empirical grounding anymore. This is due to the fact, that adolescents can be assigned into the group of Digital Immigrants but aligned themselves with skills and competences of Digital Natives complicating their assessment. The research indicated that personal interest together with macro-sociological influences of society can result in a transforming process, which prompted these adolescents to transform their knowledge from that of Digital Immigrants into that of Digital Natives. Thus these adolescents can be characterized by the creation of the term Digital Transformer, since they were not born as Digital Natives, but displayed equivalent knowledge repertoires (Dreier, 2013).

Consequently, we have to draw the picture anew. If children do not naturally learn how to use new media technology on an advanced, save and autonomous standard, they cannot be described as Digital Natives alone. They are Digital Transformers, prompted by personal interest or their life world to transform all information about using new media devices to use it and achieve an ongoing progress.

3.6.3 Basic approaches on media education

Media socialization is covering all aspects which are impacting children's and young adult's development (Süss, Lampert & Wijnen, 2009). Children are challenged by their environment when growing up and need to acquire specific skills in dealing with new media technology. Media socialization is influenced not only by parents, social economic background, friends and the society. Children affect their media socialization and development of media competence on their own. Pedagogic approaches - especially media pedagogy - encourage children in dealing with new media devices to integrate them in their everyday life and enable children to use them safe and properly.

Advancing from the concept that children cannot be excluded from using new media technologies and based on findings from our sample, a couple of basic pedagogic concepts

and approaches might offer an adaptive approach for parents, relatives, teachers, educators and pedagogues alike to prevent psycho social and long term consequences.

- Children can learn to digest experiences made with new media technology by acting out in monitored role-play situations or by drawing their emotions and experience's.
- Parental monitored reception of content is also a good way to ensure that critical situations can be addressed by children's and parents alike.
- Mitigation of new media impact can be achieved by briefing children in new media technology mechanics and raise their attention to critical situations and content.
- Giving children the chance to reflect their new media technology use by keeping a diary or simply speaking with them about their positive and negative experience's on a regular basis, keeping the children's not the parents perspective in view (Süss, Lampert & Wijnen, 2009).

3.6.4 Media competence and education

The aim of media literacy is to enable children and adolescents to keep a critical distance towards new media technology, allowing them to comprehend and responsibly handle new media technology. Media competence is basic for a good education and a constitutional when children start to develop an autonomous personality. In regards media competence should be seen as a part of general education not as a special set of skills or as a competence which develops on its own.

Media competence is influenced by factors like age, socioeconomic status, education and gender. Especially age and education have a major impact on how we handle new media technology. Older generations or those with meager education are making less use of new media technology. Language can be of influence too. Being capable of speaking English can enhance the competences when dealing with new media devices and content. Beside those primarily personal factors size of the subjects (social-) network and the family constellation are of constitutional importance too (Süss, Lampert & Wijnen, 2009).

To develop a good media competence one will need a good media education. Parents often ask for instructions how they can educate their children properly. Süss, Lampert and Wijnen designed guidelines in 2009 on how to basically approach media education with children and adolescents. Following we try to give a brief overview over those suiting our sample and findings.

1. *Media is a part of it:* New media technology is part of each child's environment. Do not attempt to keep your children away. Instead socialize your children step by step with different new media technologies keeping pace with tier development and event horizon.
2. *Media in every day education:* Parents are paragons in handling new media technologies and can help their children to orientate. It is of major importance when, how and why children make use of new media technology depending on the children's:
 - Personality and interests
 - Lived-in world (family, kinder garden, school etc.)
 - General education model and conviction of parents
 - Overall media education concept

Educational values for instance in terms of rules and regulations and autonomy have to be in line with the overall media educational concept.

3. *Media orientation:* New media technology is fascinating. The younger and inexperienced children are in handling it, the more support they need. Children can use new media technology on their own but parents should always be aware of:
 - What device or content do children use
 - Give an orientation for content which can be consumed and a time budget
 - Give the children the chance and space to process the experienced new media technology or content. Do not only ask "How was it?". Show some decent interest in what they are doing and let them explain it to you.

Drawing and roleplaying are also adaptive methods to allow children to process and reflect experienced situations. Beyond entertainment, media is able to support parents in

educational matters, especially when dealing with life-related problems like handling fear, coping with the demands of adolescents and adopting sex-roles. It is nothing wrong with children using new media technology as long as it is appropriate for their age and event horizon and in good balance with other activities and down phases. Boredom is perfectly normal in human's everyday life and can lead to phases of intense creativity. But children have to learn to endure such moments without substituting them by entertaining themselves with media devices (Süss, Lampert & Wijnen, 2009).

Media competence is not only influenced by media socialization, parents or relatives. It is influenced by institutional instances like kinder gardens and schools too. Educating children and skilling them in media competence is no longer a family only matter. As society we are called upon to develop structures and processes which enable following generations to make a good use of the technological advances we achieved. It is the political mandate of today generations to support future ones in developing a good media competence. We strongly need more expertise and evidence regards to how, when and why children make use of new media technology. With more expertise and knowledge we could begin to develop more appropriate methods and techniques in media education and support families in dealing with new media technology.

4. Discussion

Even though there are rich narrations and a nice data set collected, the chosen analysis procedure Thematic Analysis is rather descriptive instead of being capable to enlighten in-depth causal condition. Some hot spots and underlying condition were still discovered and elaborated; nonetheless there is space for improvement. But, in relation to the project's approach, being a short-term pilot identifying research domains that should be even deeper elaborated in a main study, the chosen procedure is appropriate and as presented serves several surprising findings and serves as severe as advice for the relevant domains as well as implications that should be considered for the main study.

We noticed that the interview schedule, even if it was half-standardized, is setting a framework that is too narrow for the interview process. Especially in very young children their attention span was limited particularly the use of ICT during the home visit and

interviews draw their attention even farer away from what we desired, even though this is a finding. Passages that were closely linked to a game or something to be explored were drawing their attention and they were eager to present their skills as well as their devices. Thus, the decision should be taken to give the interviewer more freedom in order and areas of exploration during the field-work.

As we already know half-standardized interviews works well with parents. Structure also may produce excellent narrations. Therefore, we tested the Sheet of ICT use and were appealed by the quality of the narration, connecting the dots of the relevant storyline as well as breeding several aha-effects during the parent's elaboration. Thus, the Sheet of ICT is a tool, which is strongly recommended for further research in the ICT area, being capable to tickle a story covering the domains of I) use, II) psycho-social development and III) the family systems dimension in a very detailed and concrete way.

In terms of improvement, a broader variety of family's background would be desirable for future research in the field, since the family is setting one of the important frames for their children's development. Bearing this in mind, we included a heterogenic sample, in terms of migration background, age, number of children, accessible devices, degree of regulation and types of schools visited. Nonetheless e.g. the variety of income was rather more homogeneous coving rather medium- or higher-income families.

5. Conclusions

Use of new media and ICT is providing chances but also bears risks. Chances are easy to assess since family communication as well as peer-interaction profit from technological development. Negotiation processes during parenting are common and the plurality of positive impacts on families is impressive.

Downsides of these technological innovations for sure do not affect every family directly, but even the save once are reflecting about the appropriate proportion of use and age-adequate consumption of ICT and new media material. Beside this reflected frameworks of consumptions, some families - and unfortunately children - are facing psycho-social problems induced by ICT and new media consumption.

Research about positive and negative effects of media consumption of children has a long tradition. Some results of physical and mental health and also behaviour are already obvious and are commonly reported by leading researchers. For instance, there are many instances of violence in movies, television, video games and websites which can affect one's level of psycho-social status. ICT and new media consumption is directly effecting the quantity and quality of parent-child interactions, which are essential for developing secure attachments (Napier, 2014). Excessive exposure to the external environment hampers the value system of children, making them prone towards materialistic possessions. Materialism was expressed as a set of personality traits such as possessiveness, envy, non-generosity. Media produced materialism impact the children mostly in early and middle childhood. The unfulfilled requests of children for materialistic things make them dissatisfied and unhappy, which later on cause conflicting situation in family. The exposure of children to new media and ICT at small age also makes them susceptible towards external environment by generating materialism. This materialism is leading to excessive consumption and impulsive purchase by children (Vandana, 2014). Due to the severe impact on the psycho-social developmental level, advice for parents was formulated based on our findings. The pedagogic, psychological as well as sociological thoughts on the question "How to find the balance?" are giving advice for both kinds of families, those that are struggling with problems caused by ICT and new media and those how are in the right balance, but got insecure due to an unexpected event in their child's development or a new technological advice or innovation that they could not classify with their current parenting frameset.

It is important to state, that there is no need in questioning ICT and new media use, as long as there is lack of psycho-social consequences. If these occur, self-regulation needs to be implemented or improved through parental rules. And boredom susceptibility should be minimized through better coping mechanisms as well as an implementation of diverse domains of the child's interest.

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Appendix

A) Observation protocol

Please remember that the protocol goes beyond a recording of events and provides an overall context for the data. Therefore, think of the following during each family visit:

- **Describe the setting**, i.e., where the observation took place and what the physical setting was like;
- **Identify and describe family members**, i.e. family constitution, age of children & parents, ethnic background, schools/day-care children attend, parent`s work, etc.);
- **Document the interactions** between observers and observed putting special attention on these 5 categories:
 1. Digital-related activities
 2. Devices used
 3. Children`s skills
 4. Family rules
 5. Any other surprising, unusual or unexpected aspect
- **Be alert to** unanticipated events that might require refocusing one or more questions/areas of interest.

Family name (Pseudonym) : _____

Observer 1 Initials |_|_|_|_|

Observer 2 Initials |_|_|_|_|

Family constitution: *(circle all that applies):*

Father

Mother

Other adult (specify) _____

7-year old child

Younger sibling(s) (age) _____

Older sibling(s) (age) _____

other: _____

Audio file: |_|_|_|_|

Date |_|_|/|_|_|/|_|_|

Introduction (10 min.)

All together:

- Introduce yourselves
- I am _____ from _____ (Observer 1)
- I am _____ from _____ (Observer 2)
- Explain general purpose of the study in a child-friendly way. For instance mention that one of the objectives is:
 - To learn if children and their families use (devices such as) mobile phones, smart phone, iPad, game consoles, and what they think of them...
 - To learn about what if children and their families like/don't like about the internet, smartphones, i-pads, etc.
- Mention who is involved in the process (JRC, other country participants)
- Explain why the participants' cooperation is important
- Ask family members to introduce themselves using first names and ask how old the children are
- Explain aims of the discussion and expected duration (1.5-2.5 hours max.)
- Remind participants that it is important for us to hear everyone's ideas and opinions. There are no right or wrong answers – just ideas, experiences and opinions, which are all valuable.
- It is important for us to hear all sides of an issue – the positive/nice and the negative.
- Confidentiality is assured. "What is said in the home cannot be traced back to the home"; "if you don't wish to have a specific piece of information appear in the report let us know", etc.
- Ask if they have any questions
- Check position and functioning of recording device
- Check for everyone's consent to participate and be recorded and have informed consent forms signed by parent(s)

Ice-breaker (all) (15 to 30 min.)

After this short introduction, the children and parents will stay together to perform a short ice-breaking activity. Page 10 of the *Activity Book - Play and learn: Being online*. and its stickers has been chosen as a way for the family to determine the activities done as a family all together in a typical day requesting to match time and activities thanks to stickers provided with the book. This is set as a common start for all interviews.

After this activity explain that from now on parents will go to another room with observer 1 and children will stay in the living room (or the other way around) with observer 2, if that's OK for the parents and children.

Interview (1 hr.)

- Ask siblings to define their own ground rules, for example:
 - o Only one person talks at a time.
 - o We first listen to what others have to say and then we can give our opinion.
 - o We don't need to agree on everything. If you think in a different way you can always say it.
- Now we are going to talk about your experiences with the objects you have shown me during the tour (so, the iPad, the smartphone etc. etc.)/ the objects you have seen during the memory game we played...

Devices employed and activities

During the interview it is important to find out about the types of devices and new technologies that children use, when they use them and why. Talking about these devices and observing children interact with them is also a great opportunity to find out about the child's perceptions of new as well as more traditional technologies such as the TV. Activities and questions such as the ones listed below can be performed/asked during the interview. You don't need to ask ALL these questions or perform ALL these activities, you can even ask different ones. What is important is to try to get a good overview of the technologies children use, their contexts of use and the child's perceptions of these technologies, but also not to make the child feel uncomfortable with any activities or questions we may ask. In other words, collect enough information so as to be able to provide answers to all our research questions in a child-friendly way.

The request to use family devices is a matter of trust and therefore it is a question to ask when a trustable relationship is established between the researchers and the family members. It has been agreed by all participant to request the possibility to use the device on the spot.

Warming-up/setting up the context (20 min.)

In order to have a better understanding of the role new technologies play in children's lives it is important to understand what children's lives are like, what they do, what they like/don't like, their hobbies, etc. Collecting this type of information is also important to contextualize our findings. This will also give us the opportunity to understand the child's world better while the child may actually feel more at ease as they would feel that they themselves (not just their use of new technologies) is important to us. So, maybe we should start both the children's and parents' interviews by asking **a few** of these questions, just as a warm-up:

- Can you tell me what you did today/yesterday? (E.g. going to school, playing with toys, reading books, watching TV, playing football, etc.)?
- Do you have any favourite toys, books, magazines? Can you show them to me?
- Do you have any hobbies? Which ones?
- Do you practice any sports? Which one?
- Do you have a best friend? What is his/her name? What do you like doing together, etc.?
- Is there anything you like (doing) a lot? Why?
- Is there anything that you don't like (doing)? Why?

- And what about your family? How many brothers/sisters do you have? What are their names? How old are they? Do they go to school? Do you do things together, e.g. play together, watch TV, etc.? What kinds of games do you play together? And with your parents? What kinds of things do you do together?

After having had this conversation we should try to make a smooth transition towards the topic of new technologies and start with (some of) about traditional media such as watching TV, watching films, etc. as the questions below.

- Do you sometimes watch films together with your family? Or do you ever go to the cinema?
- Which movie was the last one you saw? Was it on TV, Cinema, Youtube?
- What is your favourite movie? Why?
- Do you ever watch movies or videos on YouTube/the laptop?/i-pad?/your dad/mum's telephone, etc.?

Possible activities (optional depending on the interviews conditions and settings)

- **Activity 1:** CARD GAME (displaying cards of tablets/ laptops/ PCs/ smartphones (as well as traditional toys) Could you put all of the pictures in a line, with the picture at this end (point to left) of the thing you like using best, then the next best and so on to the other end of the line, where you can put what you like using least (point to right). So, let's start with what you like using best – which is it? (then prompt for each one after that)
 - o As the child identifies a digital device, but only if you think that the child will be able (and willing) to tell you, ask questions about frequency of use, where they use it, who they use it with, what times of day they use it and so on. **1b/ 3a**
- **Activity 2:** draw me a picture of your best app/ game/ site. [When it is drawn] – Tell me about the drawing. **1a/1b/ 2a**
- **Activity 3:** Digital Tour done with the Children as facilitators: children could perform a digital tour with the observer but only if parents allow it. Alternatively, the tour could be carried out by the whole family at the end of the divided session between parents and children, but parents should be asked to let their children take the initiative and “guide the tour” and *NOT to interfere unless asked by their children*.

Possible questions related to the use of new technologies

- I would like to know if you sometimes use mobile phones, computers, tablets, and so on. I have pictures here of some of these things – which ones do you use? [Show child pictures of common devices]. **1a**
- What do you use X, Y for (if necessary prompt: to watch cartoons, to play games, etc.)? **1.a**
- Tell me about some of the things you like to do best on TV/ computer/ tablet/ music player/ radio/ games console. **1c**
- Observe/listen to what a child is able to do on different devices. If that does not come naturally, prompt the child to show you what he/she can do on X device (through memory cards or, if possible, show you directly in a device such as the family i-pad, laptop, etc. what they can do) **1a/ 1c**
- Do you ever visit websites? What are your favourite ones? Why? **1b**
- Can you show me your favourite game on your mother's phone/family iPad? **1b**
- Out of all of the things you have shown me (e.g. smartphone/ tablet/ laptop, etc.), which (would you miss the most if it was taken away from you? Alternatively, you can use one of the activities described below:**1b/ 3a**
- With the help of the CARD GAME displaying cards of tablets/ laptops/ PCs/ smartphones (as well as traditional toys) you can ask (some of) the following questions:

- o Which [app/ game/ site] do you like best? Do you want to show it to me? **1b**
- o How do you use/ play it? **1a**
- o Tell me why you like it **1b**
- o When do you play/ use it? Do you use it a lot? **1a**
- o How did you learn to use the (smart) phone? To do this? Who taught you how to do this? **1d**
- o Do you use it/ play it with anyone else? Who? **1a**.
 - What do you do with him/ her when you play/ use it? **1a**
- o Do you have any toys/ books/ stickers etc. of this [app/ game/site?]**1e**
- o Which [app/ game/ site] would you tell your friends to play? Why? **1b**
- o What other apps/ games/ sites do you use? Tell me what you do on these. **1a**
- Are there any good or bad things about using the internet (or X device)? **2a**
- What do you think about [name device]? If you had to choose a word to describe it, what word would you choose? **2a/ 2b**
- Using the pictures as a prompt, ask the child, ‘Are any of these things not safe to use sometimes? Why?’ **2c**

Skills

Skills refer to what a child is able to do in a general sense as observed or told by the child, e.g. turn i-pad on/off, search for information, find pictures, videos on specific devices, scroll through different screens, select specific games, Apps, download things, identify certain icons (e.g. Google, YouTube, Facebook, etc.), etc. The emphasis for this theme should be our observations of the child’s online activities, and avoid questioning them simply about what they say they can do.

Possible questions

- Which of these (show cards with devices) is easiest/hardest to use? Why? **1c**
- Which of these (show cards) can you use on your own? **1c**
- Which of these (show cards) can you use with someone else’s help, e.g. your brother/sister, mum, dad, your teacher? **1c**
- Why do you need help to use X, Y (and not to use Z)? **1c**
- How did you learn to do this? Who showed/taught you how to do this? **1d**.
- Do you sometimes play at the same time with the [Device] and [Traditional Game]? **1e**
- Do you watch videos or play games of your favorite [traditional toy](e.g. Do you look for lego video’s or do you play lego’s game on the Wii?) **1e**
- Do you get inspired by any video, picture, website to play with [Traditional toy] **1e**

Parental Mediation

- Do your parent show you things online, guide you to discover new things online?
- Are there particular things your parents encourage you to do or to explore online? Would you like them to do more of something? (e.g. showing more cool stuff, play with you more, ...)
- Do you sometimes sit with them while they go online? Or just stay nearby to keep an eye on what they do online? If so, do you like it, why?
- Are there activities that you and your parents do together online? Who ask for it? Do you? Does your parents do? Is it for school purposes? Or just like that like playing football or jigsaw together.

- If your parents show you something, why do you think they do this? Do you think that's that helpful? Are there other things you would like your parents to do with you, or talk to you about, when you go online?

Family rules

Family rules refer to the agreements surrounding the use of digital devices at home (and outside home), implicit and explicit rules governing the use of these devices, etc. Refer to when these rules apply, but also when can these be broken.

Possible questions

- Can you use these (show cards with devices present at home) as much as you want? If not, why not? **4e**
- Can you use [x] device(s) everywhere (at home, at school, at restaurants, etc.)? **4e**
- Can you use [x] on your own or should mum or dad be present when you want to use it? **4e**
- Does mum or dad tell you how long, when or where you can use [X] device or play [Y] game? If so, why? **4b/4e**
- Can you play or use [device] at any time and for the time you wish? **4/4e:**
- If there are rules who created the rules? **4/4e**
- Did you discuss, negotiated them? 'Do you follow them?' What happens if you do not follow the rules?' **4.b / 4d/4e**
- Are the rules the same for [device X] and [device Y], for different family members (e.g. can your little brother/sister play the same games as you do? Or can you visit the same websites that your older brother/sister visit?)? **4c.**

Unusual/unexpected/surprising

If there is anything important, interesting, relevant, surprising, unusual said or observed and not included in the categories above, please include them here.

Closing

- We are now approaching the end of our visit. Is there anything else anyone would like to tell me that we have not talked about?

After asking this question, parents, children and researchers will get together. They will be asked if there is anything else anyone would like to add or if they have any questions. The researchers will thank participants and will give them some incentives for their participation.

Observation protocol parents

Please remember that the protocol goes beyond a recording of events and provides an overall context for the data. Therefore, think of the following during each family visit:

- **Describe the setting**, i.e., where the observation took place and what the physical setting was like;
- **Identify and describe family members**, i.e. family constitution, age of children & parents, ethnic background, schools/daycare children attend, parent`s work, etc.);
- **Document the interactions** between observers and observed putting special attention on these 5 categories:
 6. Digital-related activities
 7. Devices used
 8. Children`s skills
 9. Family rules
 10. Any other surprising, unusual or unexpected aspect
- **Be alert to** unanticipated events that might require refocusing one or more questions/areas of interest.

Family name (Pseudonym): _____

Observer 1 Initials |_|_|_|_|

Observer 2 Initials |_|_|_|_|

Family constitution: *(circle all that applies):*

Father

Mother

Other adult (specify) _____

7-year old child

Younger sibling(s) (age) _____

Older sibling(s) (age) _____

other: _____

Audio file: |_|_|_|_|_|_|_|_|

Date: |_|_|_|_|_|_|_|_|

All together:

- Introduce yourselves
- I am _____ from _____ (Observer 1)
- I am _____ from _____ (Observer 2)
- Explain general purpose of the study in an extremely child-friendly way
 - To learn if children and their families use devices such as mobile phones, smart phone, iPad, game consoles, and what they think of them...
 - To learn about what if children and their families like/don't like about the internet, smartphones, i-pads, etc.
- Mention who is involved in the process (JRC, other country participants)
- Explain why the participants' cooperation is important
- Ask family members to introduce themselves using first names
- Capture (not ask in detail at this point, yet) demographic details – using first name for discussion, More detailed data will be asked at the beginning of the parents' interview
- Explain aims of the discussion and expected duration (2.5 hours max.)
- Remind participants that it is important for us to hear everyone's ideas and opinions. There are no right or wrong answers to questions – just ideas, experiences and opinions, which are all valuable.
- It is important for us to hear all sides of an issue – the positive/nice and the negative.
- Confidentiality is assured. "What is shared in the home stays in the home."; "if you don't wish to have a specific piece of information appear in the report let us know", etc.
- Ask if they have any questions
- Check position and functioning of recording device
- Check for everyone's consent to participate and be recorded and have informed consents signed by parents

Ice-breaker (all) (15 to 30 min.)

After this short introduction, the children and parents will stay together to perform a short ice-breaking activity. Page 10 of the *Activity Book - Play and learn: Being online*. and its stickers has been chosen as a way for the family to determine the activities done as a family all together in a typical day requesting to match time and activities thanks to stickers provided with the book. This is set as a common start for all interviews.

After this activity explain that from now on parents will go to another room with observer 1 and children will stay in the living room (or the other way around) with observer 2, if that's OK for the parents and children.

Interview (1 hr.)

- Explain what will happen with the collected information and that the participants' data will be treated anonymously and confidentially.
- Start the interview with a sentence like: "Now we are going to talk about your child/children's experiences with new technologies and devices such as laptops, smartphones, iPad, etc.
- End with collecting participants' demographic details either within a semi-conducted interview or by asking the parents to fill-in a short survey or shall we ask relevant questions directly.

Devices employed, activities and skills

During the interview it is important to find out about the types of devices and new technologies that children use, when they use them and why. What is important is to try to get a good overview of the technologies children use and their contexts of use from the parents' perspective. We can then compare this information to the one obtained from children so as to better understand the role new technologies play in both the children's lives but also in the family life.

Warming-up/setting up the context (20 min.)

In order to have a better understanding of the role new technologies play in children's lives it is important to understand what children's lives are like, what they do, what they like/don't like, their hobbies, etc. Collecting this type of information from the parents' point of view is also important to contextualize our findings. This will also give us the opportunity to understand the child's world better while the child may actually feel more at ease as they would feel that they themselves (not just their use of new technologies) is important to us. So, maybe we should start the parents' interviews by asking them questions like:

- Can you tell me about your family? How many children do you have? How old are they? Etc.
- Can you tell me what your child [7-year old child + younger sibling] does during a typical week including the weekend (e.g. going to school, playing, doing homework reading books, watching TV, playing football, etc.)? **1a/ 3a**

After having had this conversation we should try to make a smooth transition towards the topic of new technologies and start with some questions about traditional media such as watching TV, watching films, etc. as the questions below.

- Do you sometimes watch films together with your children? Or do you ever go to the cinema with the children?
- And do you ever watch movies or videos on YouTube/the laptop? /i-pad? /your smartphone, etc.? **3d**

Possible questions:

The researcher will first ask parents to freely talk about the technological devices they have at home in general and, in particular, identify the ones their children use/like most – (the Card Game can be used as well with parents for collecting this information). We could then ask more specific questions about those devices that seem to be the most important ones. Here some general questions tackling the smartphone as starting point followed by some of the device-related questions, chose between the device-list the most appropriate ones:

- Does anyone in the family possess a mobile phone or a smartphone? What about the children? **1a**
- Since when does child X possess a phone? What does s/he use it for? **1a/ 1c**

- If child does not possess a phone, ask: Does your child ever try to use someone else's mobile phone? If so, what does he/she do with it? **1c**
- How did your child learn to use the (smart) phone? **1d**
- Apart from the smartphone, what other technological devices do you have at home?
- Of these, which ones does your child use/know how to use? **1a**
- How did your child learn to use [X] device? Did anybody teach him/her? **1d**
- Which of these devices can your child master independently? And which ones can he/she use with someone else's help (e.g. because they are difficult to use)? **1c**
- Which device(s) does he/she use more frequently? Why? **1a**
- According to you what is/are your child favourite device(s)? Why? What does he do with it/them? **1b/ 2a**
- Does your child play any online games? Which one(s)? **1a**
- In which device does he/she usually play these game(s)? **1a**
- Does your child use the internet? What for? **1a/ 1c**
- In which device does he/she usually use the internet? **1a**
- What are his/her favourite websites? Why do you think he/she likes them? **1b/ 2b**
- Does your child take pictures, record videos or sounds with devices? Do they or you share them or upload them on the internet? Do they create or curate other content? **1a/ 1c**
- Can your child use any devices or the internet any time s/he wants? If not, why not? This can be a good question to lead us towards the topic of family rules, parental concerns, etc. **4, 4c**
- **Do you use any digital technology to encourage, stimulate, and/or educate your child? 3f/3g**

Depending on the child's favourite devices you can choose some of the questions below, but it may be better to focus more on what a child does (most likely across devices) than on the specific devices/gadgets they child uses. If we focus on every device, it may be difficult to keep a natural conversation flow because many questions will be repeated all over again and most likely, parents will jump from device to device while telling us what their child is able to do (ex. playing online games online, on the laptop, on the Wii, etc.).

Possible questions about Tablets

- How many working tablets do you have in the home? **1a**
- At what age did he/ she start using it? Who taught him/ her to use? **1a**
- What does he/ she like to do on it? **1a/ 1c**
- For how long would you say he/ she uses the tablet on a typical week-day/ on a weekend day? **1a**
- Does he/ she use the tablet with anyone? If so, how? **1a/ 1d**
- Who uploaded them? **3g**
- Which games/ apps are his/ her favourite? **1b/ 2a/ 2b**
- Who taught him/ her to use the tablet and from what age? **1d**
- Did you child teach you anything in the use of the tablet? Where do you think this knowledge comes from? **1c/ 2d**
- What kinds of things do you think he/she learns from using tablets, if anything? **1c/ 2d(i)**

Possible questions about Games consoles

- Does your child use a games console at home? **1a**
- At what age did he/ she start using it? **1a**
- Which games does he/she like to play best? **1b**
- For how long would you say he/ she uses the games console on a typical week-day/ on a weekend day? **1a**
- Who chooses which games he/she can play? **4/ 4b/ 4c**
- Are your children following the rules? What happens if they do not follow them? **4e**
- Does he/ she play on the games console with anyone? **3d**
- Do you ever play games with your child? Which ones? **3d**
- What kinds of things do you think he/she learns from playing videogames, if anything? **1c**

Possible questions about Computer/ laptop

- How many working computers/ laptops do you have in the home?
- Does your child have his/ her own computer/ laptop?
- For how long does your child use the computer/ laptop on a typical week-day/ on a weekend-day? **1a**
- What does he/ she do on it and who with? [Prompt: searching information, images, watching videos, playing online games, skype, SNS, ...] **1a/ 1c**
- Do you ever use the computer/ laptop with him/ her? If so, what for? **3d**
- Who taught him/ her to use the computer/ laptop and from what age? **1d**
- What kinds of things do you think he/she learns from using computers/ laptops, if anything? **1c/ 2d(i)**

Possible questions about music (radio, MP3/ Music player – MP4 / video player)

- For how long does your child listen to music on a typical week-day/ on a weekend-day?
- What does he or she like to listen to? **1a**
- Does your child have an MP3/ music player of his own? How often does your child listen to it on a typical week-day/ on a weekend-day? **1a**
- What does he or she like to listen to/ watch to? **1b**
- Does he/ she ever ask you to buy specific songs or upload a specific video and if so, can you give me an example? **1a**

Possible questions about Television

- Does your child have a TV in his/ her bedroom?
- For how long does he/ she watch TV on a typical week-day/ on a typical weekend day? **1a**
- Which TV programmes does your child like watching? **1b**
- What are his/her favourite films? **1b**
- How independent is he/ she in using the TV and DVD player? **1c**
- For how long does he/ she watch films on a typical week-day/ on a typical weekend day? **1a**
- What programmes do you watch together? **3d**
- Do you use/play with [Device] with your brothers/sisters/ parents? When? For how long? Who is the best at it? Why? **3d**
- Does he/ she watch TV on any of these devices: a pc/ laptop/ netbook; games console player; mobile phone; tablet computer; portable media player? When? **1a**

- What kinds of things does [child's name] do when watching TV? [Prompt if necessary – sings/dances/plays, etc.] What are the most prevalent activities? **1a**
- Does any of [child's name]'s play relate to TV or film? If so, what do they play? [Probe how, e.g. dressing up, asking other family members to also be characters, etc].

Off-line and On-line practices

- Does your child have any favourite toys, books, magazines? Which ones? **1e**
- Does your child have any hobbies? Which ones? **1a/ 1b/ 1e/ 2a (if interests relate to technologies)**
- What does your child like doing with his/her friends, etc.? **1a/ 1b/ 1e/ 2a (if interests relate to technologies)**
- Is there anything your child likes (doing) a lot? **1a/ 1b/ 1e/ 2a (if interests relate to technologies)**
- Is there anything that your child doesn't like (doing)? **1a/b/ 1e/ 2a (if interests relate to technologies)**
- Do your children play or do other things together? **1a/3c/ 1e/ 3d (if interests relate to technologies)**
- Are there any things that your children do together with dad (but not with mum) (e.g. playing football, playing videogames, going to school, etc.) and vice versa? **1e/ 3c/ 3d (if interests relate to technologies)**
- What kinds of things do you do all do together (the whole family), e.g. watch TV, etc.? **1e/ 3c/ 3d**
- Compared to other toys, books, etc. your child possess, how much do you think your child technological devices (e.g. like device [x]) **1e**
- Compared to other toys, books, your child possess, how often does your child use device [x]? **1e**
- How do you choose the games/ apps to download to the tablet/Smartphone? [Prompt: by default on the tablet, app liked with children toys or films, free or not, trust? children choice...] **1e**

Parental Mediation

- Do you talk to XX to try to guide how they go online or what they might do online?
- Are there particular things you encourage XX to do or explore online? Would you like them to do more of something online?
- Do you sometimes sit with your child/ren while they go online? Or just stay nearby to keep an eye on what they do online? If so, why?
- Are there activities that you and your child do together online? Why (do you perform these activities together (and not others)?

After each question – ask why.

Follow up questions: What do you think could be the benefits/harm? Do you do this because you want to or your child wants you to or because you've discussed this with your child? How effective do you think you are in doing this (e.g. is it hard to find the time, or do domestic tasks or other children make your efforts difficult)?

Family rules

- Are there any rules concerning the use of digital devices/internet/etc. at home? **4**
- Are they the same for all? **4c**
- Who makes these rules? Do your children have a say in the making of the rules? **4b**
- Are you making some decisions about what programs/games/apps/ your children can use/see? If yes how? **4 (or question added as to ‘what’ are the rules)/ 4a**
- Do all family members accept these rules? If not, how do you deal with children's resisting the rules? **4d**
- Have these rules changed with time? If yes, why? **4a/ 4b**
- Are digital devices part of the ‘reward-punishment’ system of the family? If yes, how and with whom? **4.1 / 4c**
- Do you have parental controls installed on laptops/ computers? **4.1 / 4c**
- Do you use the safety mode features offered on websites or by internet providers, for instance, on YouTube? **4.1 /4a**

Parents` perceptions of new technologies and parental concerns

- Do you think any technologies are particularly “positive” or “negative” for your children? Which ones? Why? **2d(i)**
- Are you worried in any ways about your children`s experiences with new (online) technologies (e.g. children spending too much time, fear of their child being contacted by strangers, etc.)? Why? **2d (ii)**
- How important do you think are (online) technologies for your children? **2d(i) / 2d (ii)/ 3a**
- How important are new (online) technologies for you? And for family life? **3b/3c**
- Do you think that your children`s use of (online) technologies interfere in any way (positive and/or negative) with family life? (E.g. family interaction is decreasing). **2d (ii)/ 3e/ 3f**
- Do you feel that family parenthood is helped or influenced or affected in any ways by the use of new (online) technologies at home? How? **3g**
- Do you feel that your child benefit from using any of these technologies? Which ones? Why? **2d(i) / 2d (ii)/**
- Do you have any worries or concerns about your child using these technologies? Or about the use of new technologies at home? If you do, what do you do about it? **2d(i) / 2d (ii)/**
- Has anyone in your family experienced a positive/exciting/enlightening situation online? What happened? What did you/your child do about it? **2d(i) / 2d (ii)**
- Has anyone in your family experienced a difficult/unpleasant situation online? What happened? What did you/your child do about it? **2d(i) / 2d (ii)**
- Using the pictures as a prompt (if necessary) , ask the parent, ‘Are any of these things not safe to use sometimes? Why?’**2c**

Unusual/unexpected/surprising

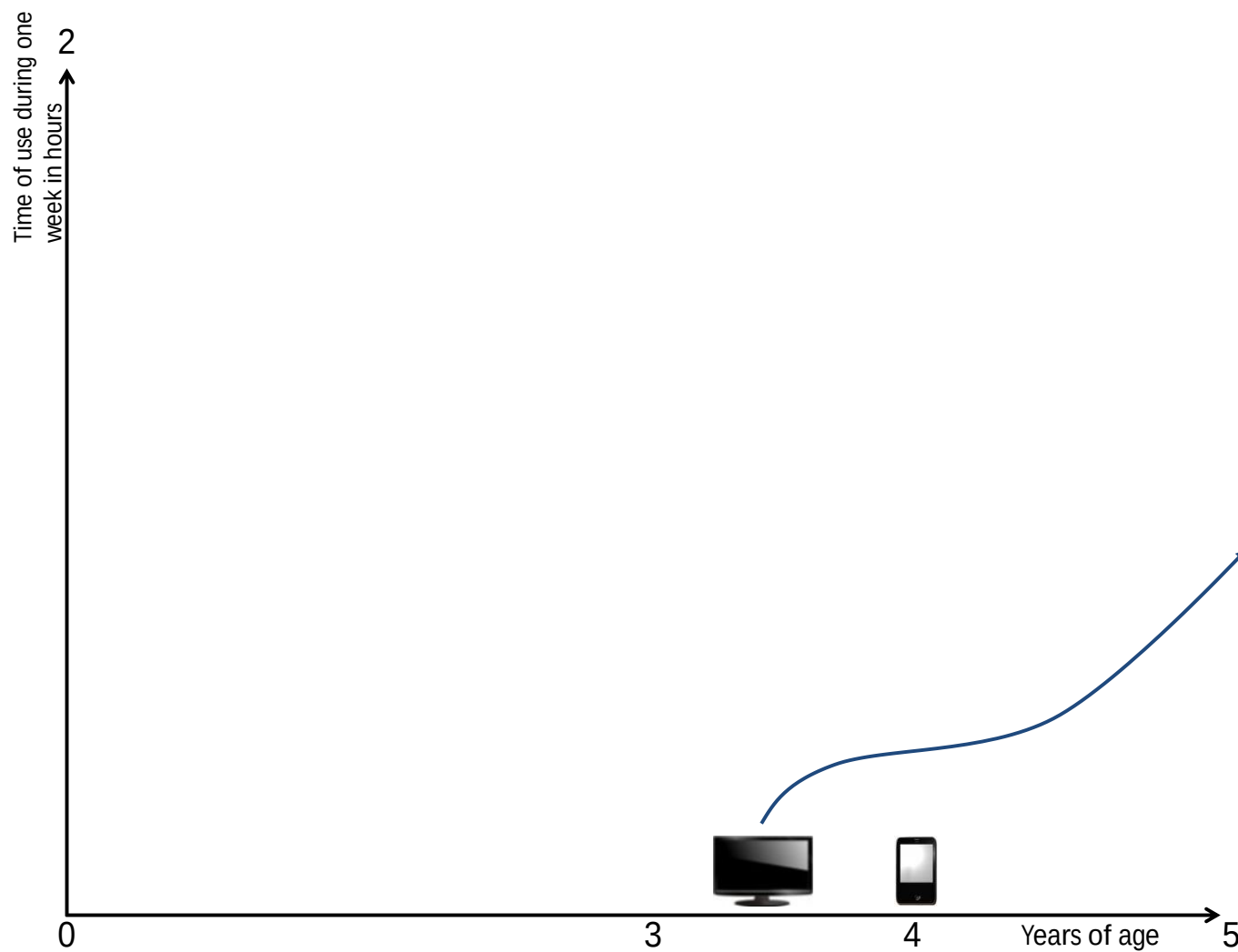
If there is anything important, interesting, relevant, surprising, unusual said or observed and not included in the categories above, please include them here

Closing

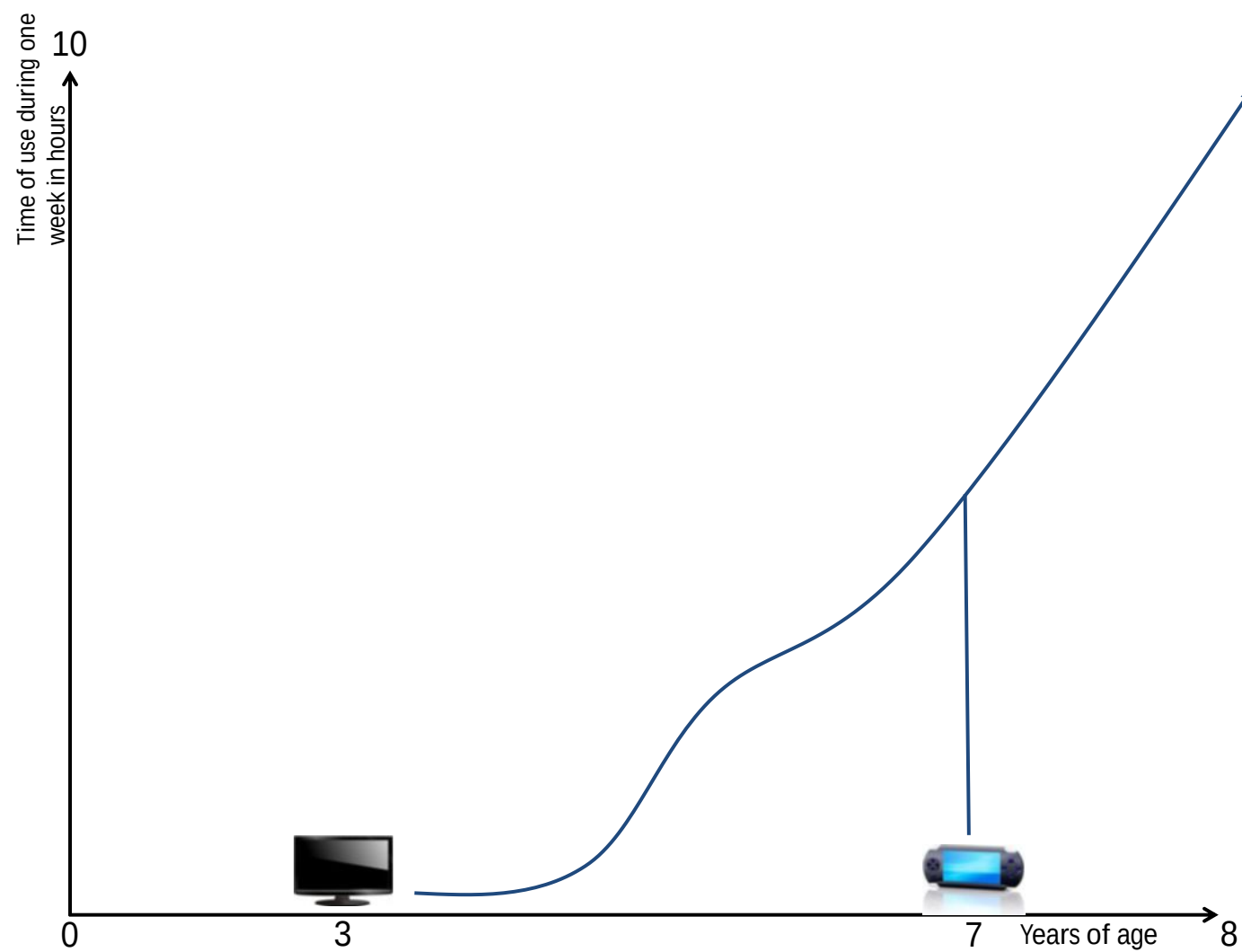
We are now approaching the end of our visit. Is there anything else anyone would like to add about that we have not talked about?

- ✓ Summarise; Thank participants; Provide extra information (Insafe Activity Book and JRC’s materials) and contacts to participants

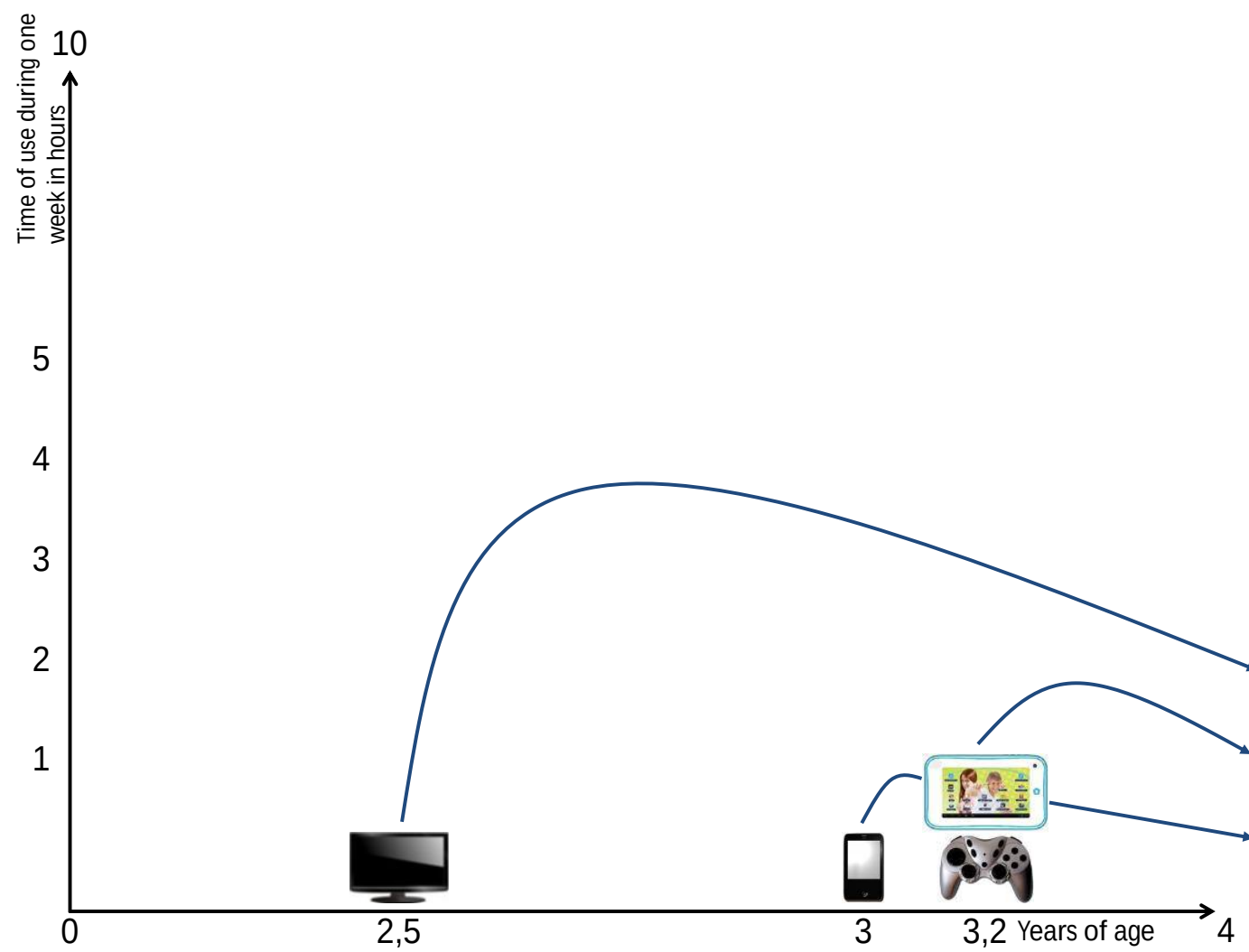
B) Sheets of ICT use – G01



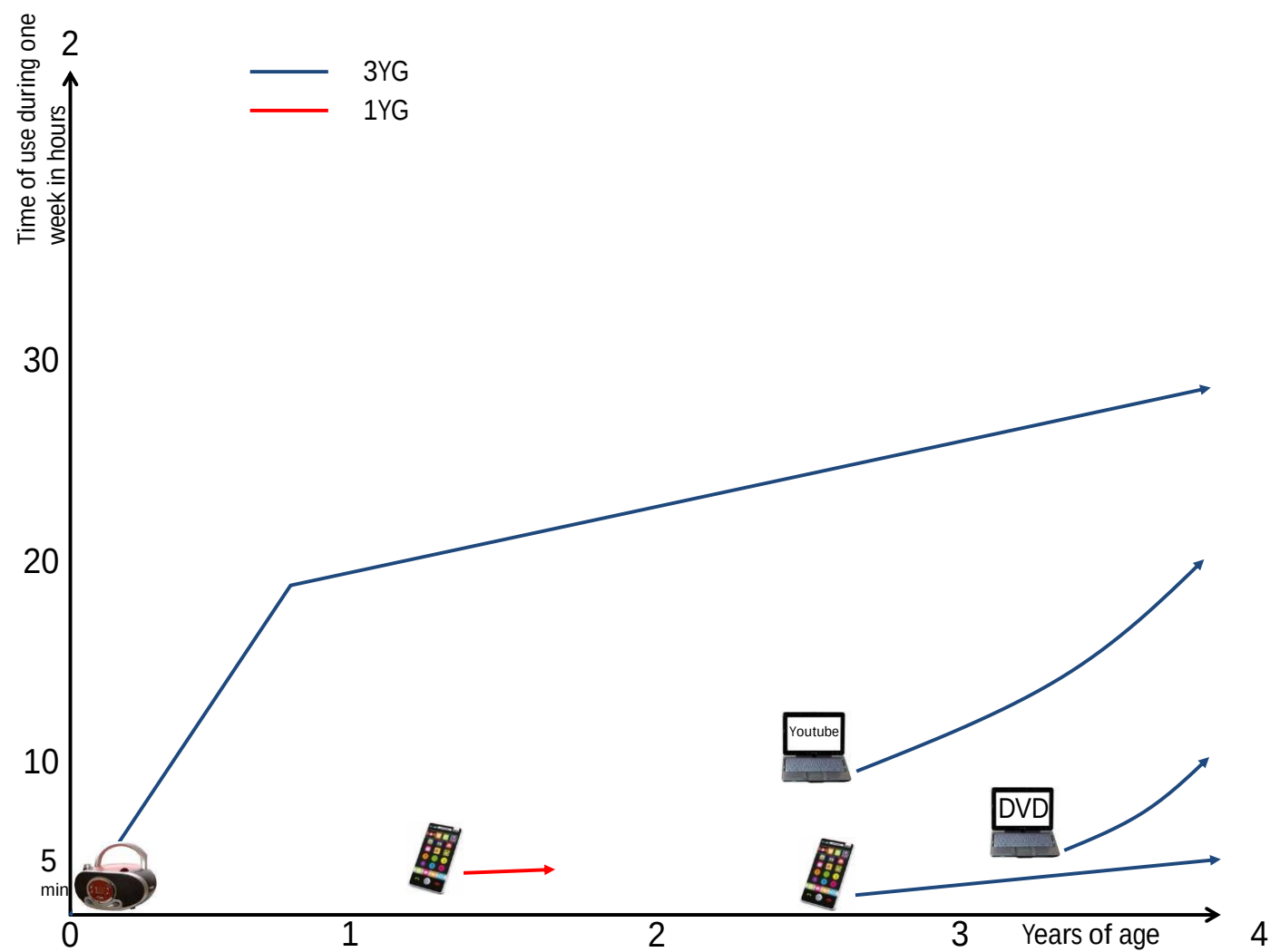
B) Sheets of ICT use – G02



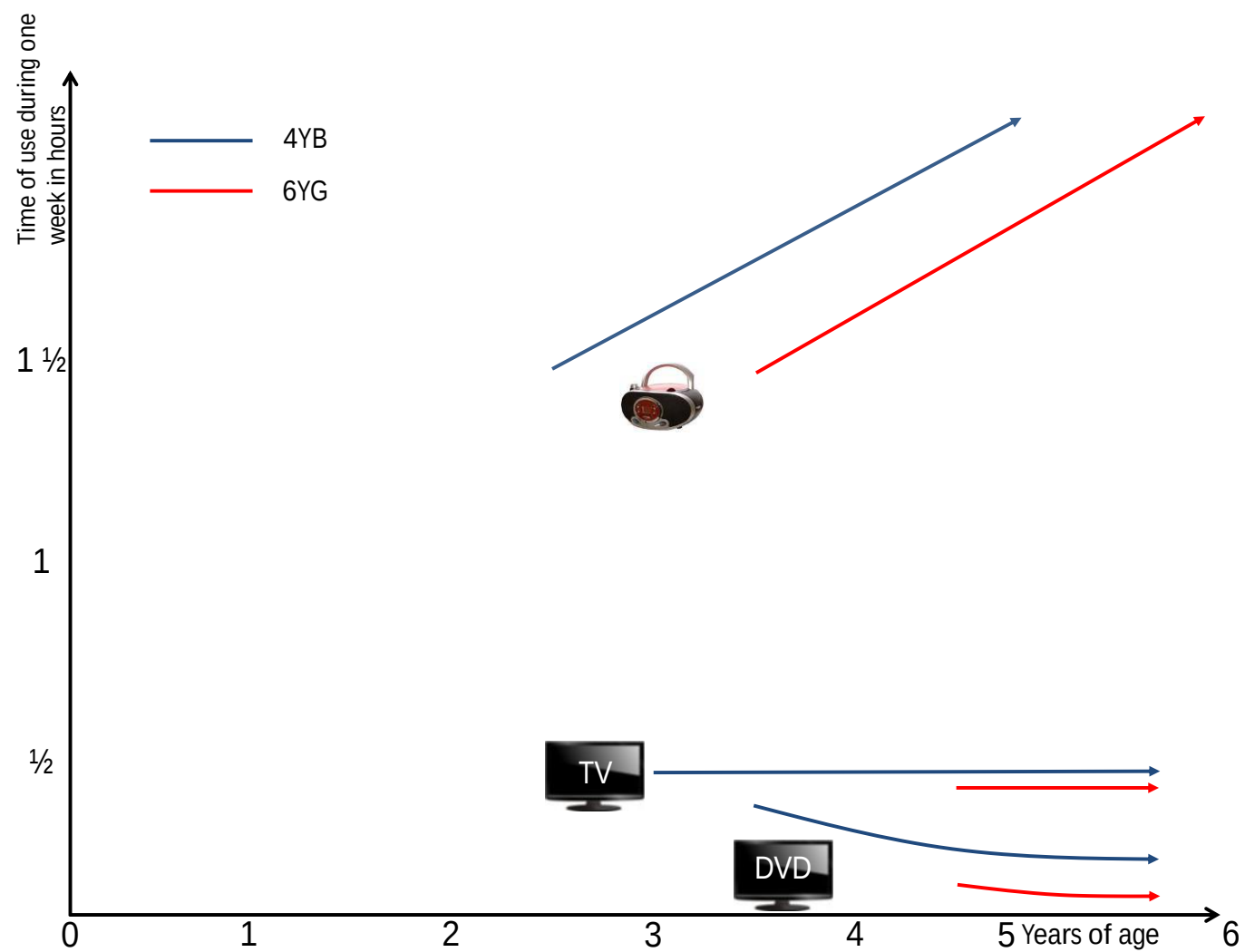
B) Sheets of ICT use – G03



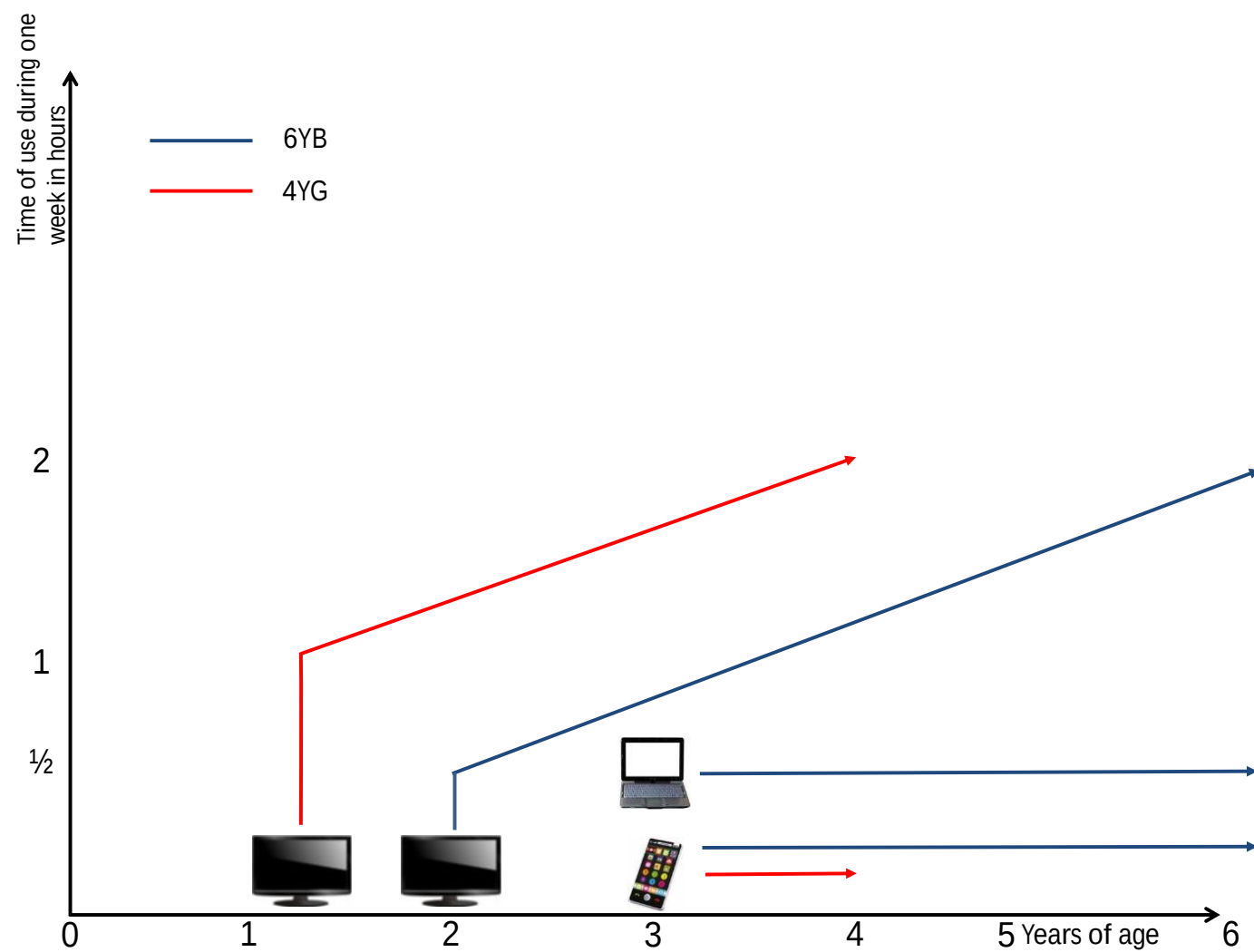
B) Sheets of ICT use – G04



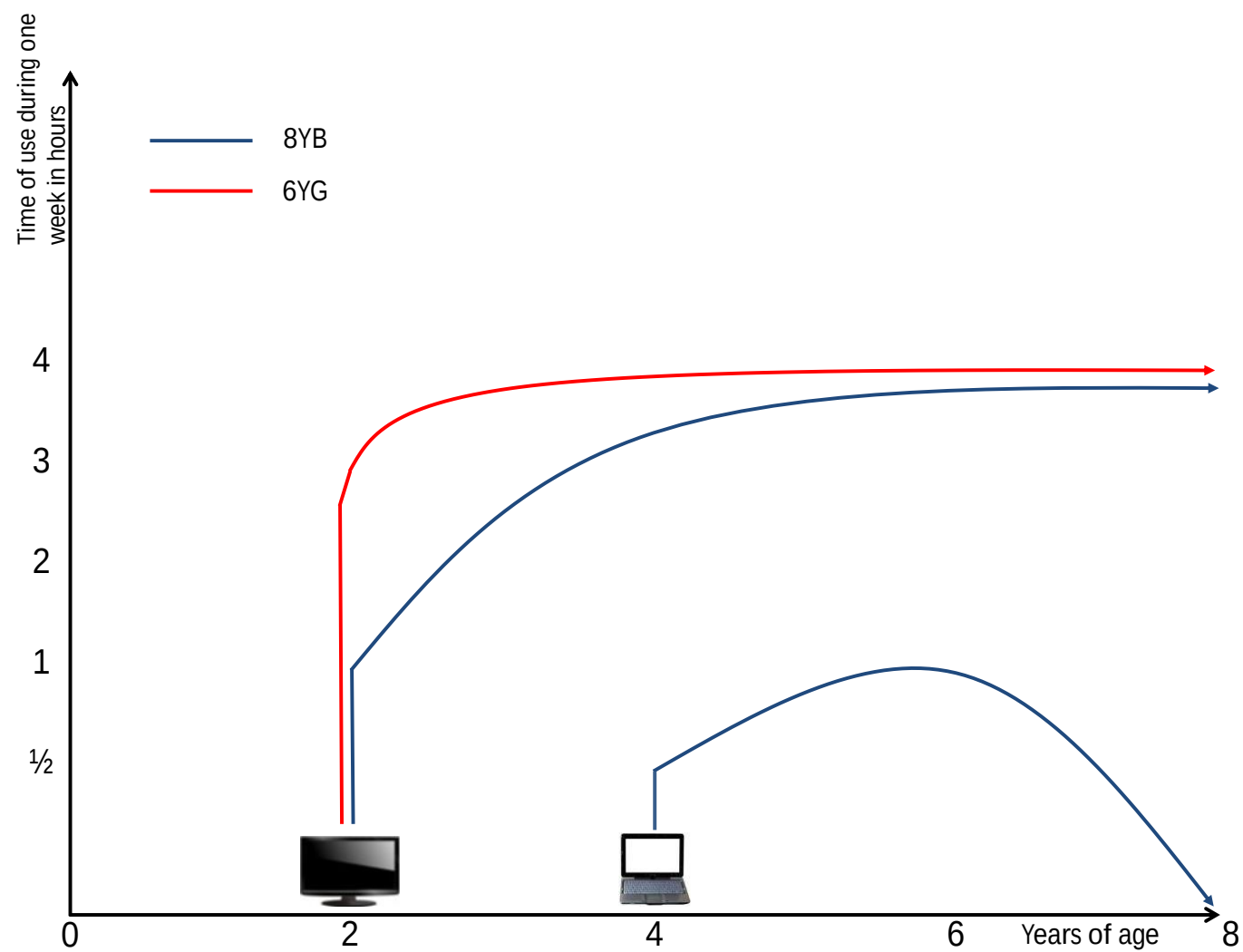
B) Sheets of ICT use – G05



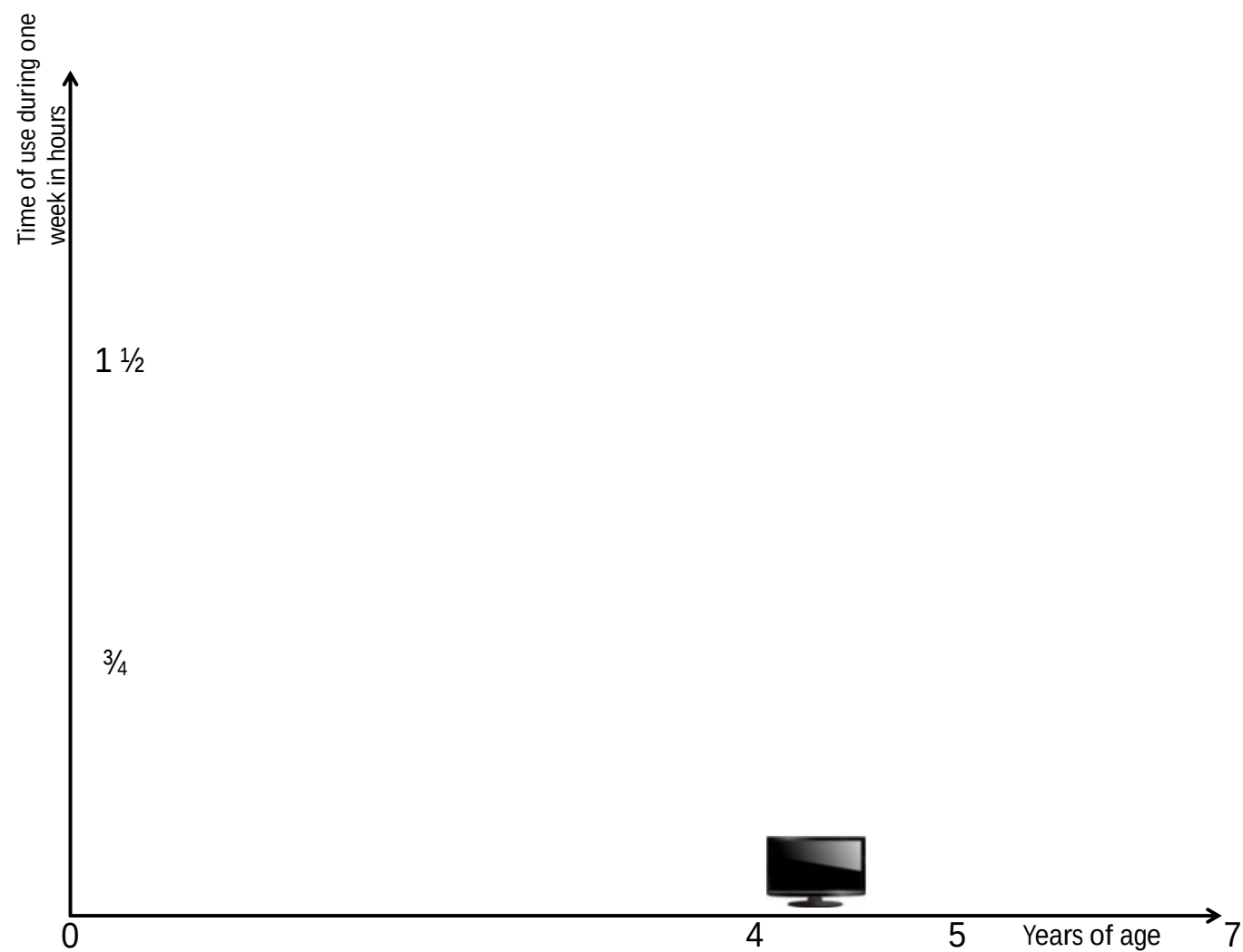
B) Sheets of ICT use – G06



B) Sheets of ICT use – G07

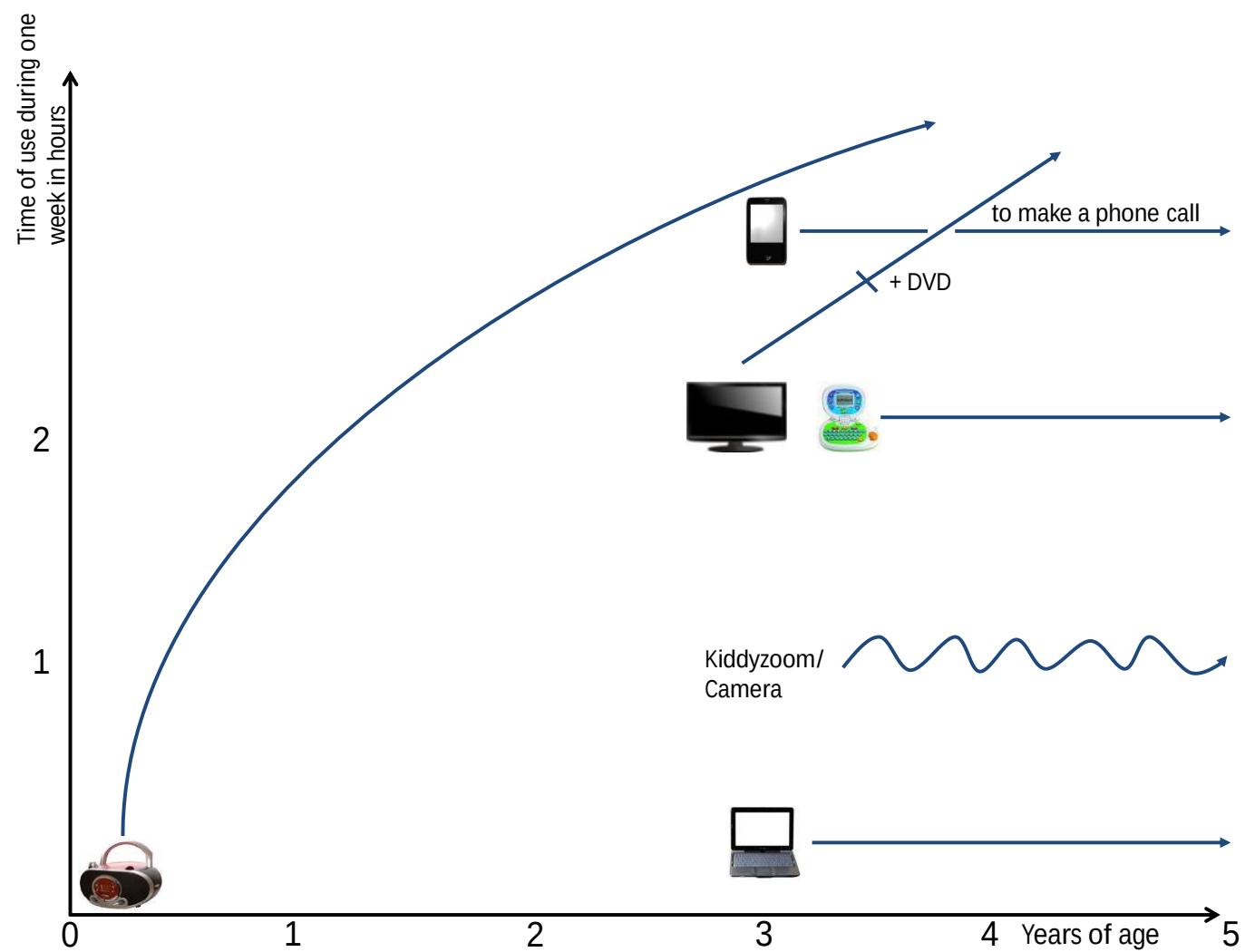


B) Sheets of ICT use – G08

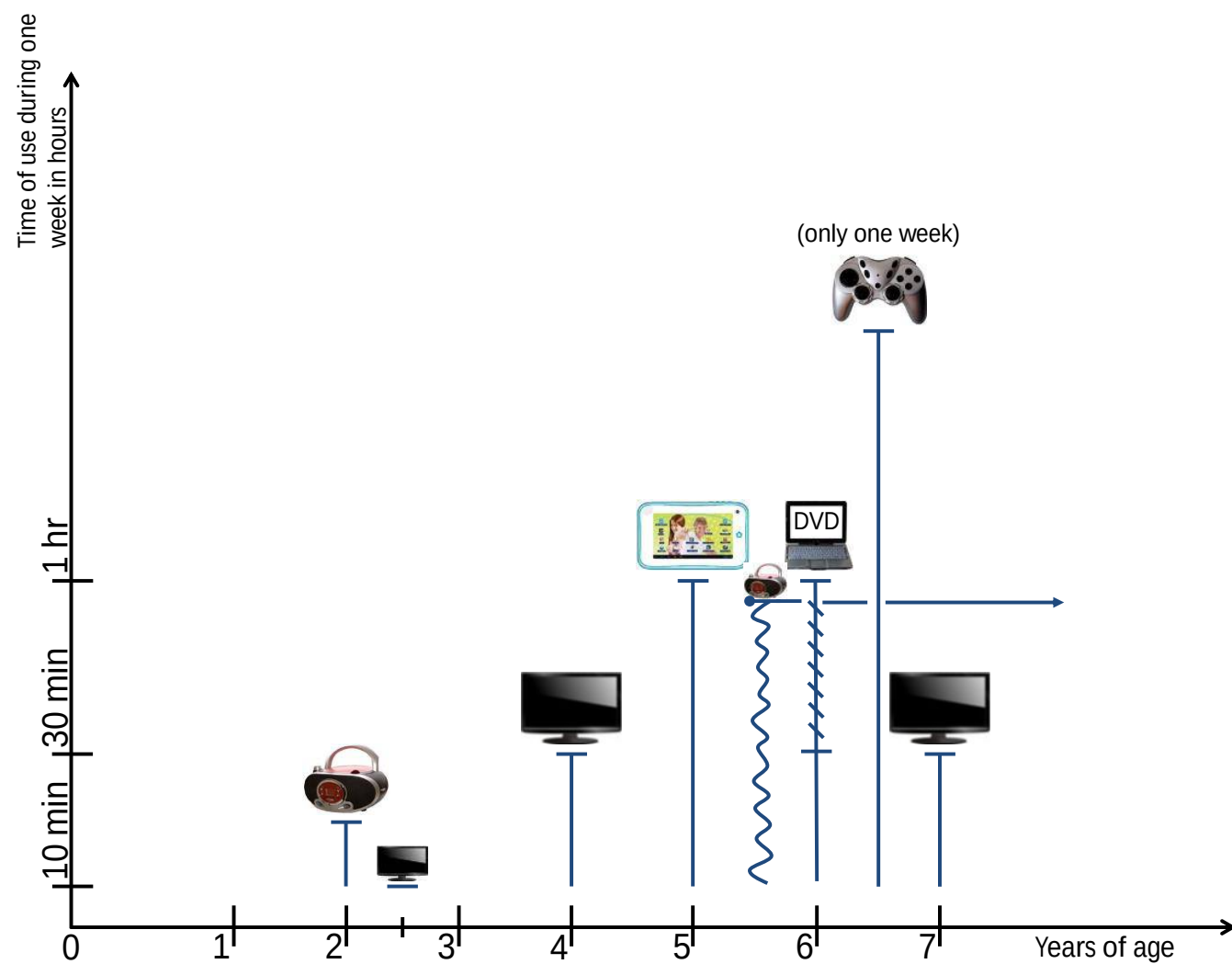


The rich and emotional narration of the mother made the decision by the interviewer not to force here to the Sheet, but the Sheet did trigger the detailed narration

B) Sheets of ICT use – G09



B) Sheets of ICT use – G10



C) Activity booklet sheets per family and child – G01-YB01

				
				
				
				
				
				
	Wähle eine Uhrzeit Male, was du zu dieser Zeit gemacht hast.			

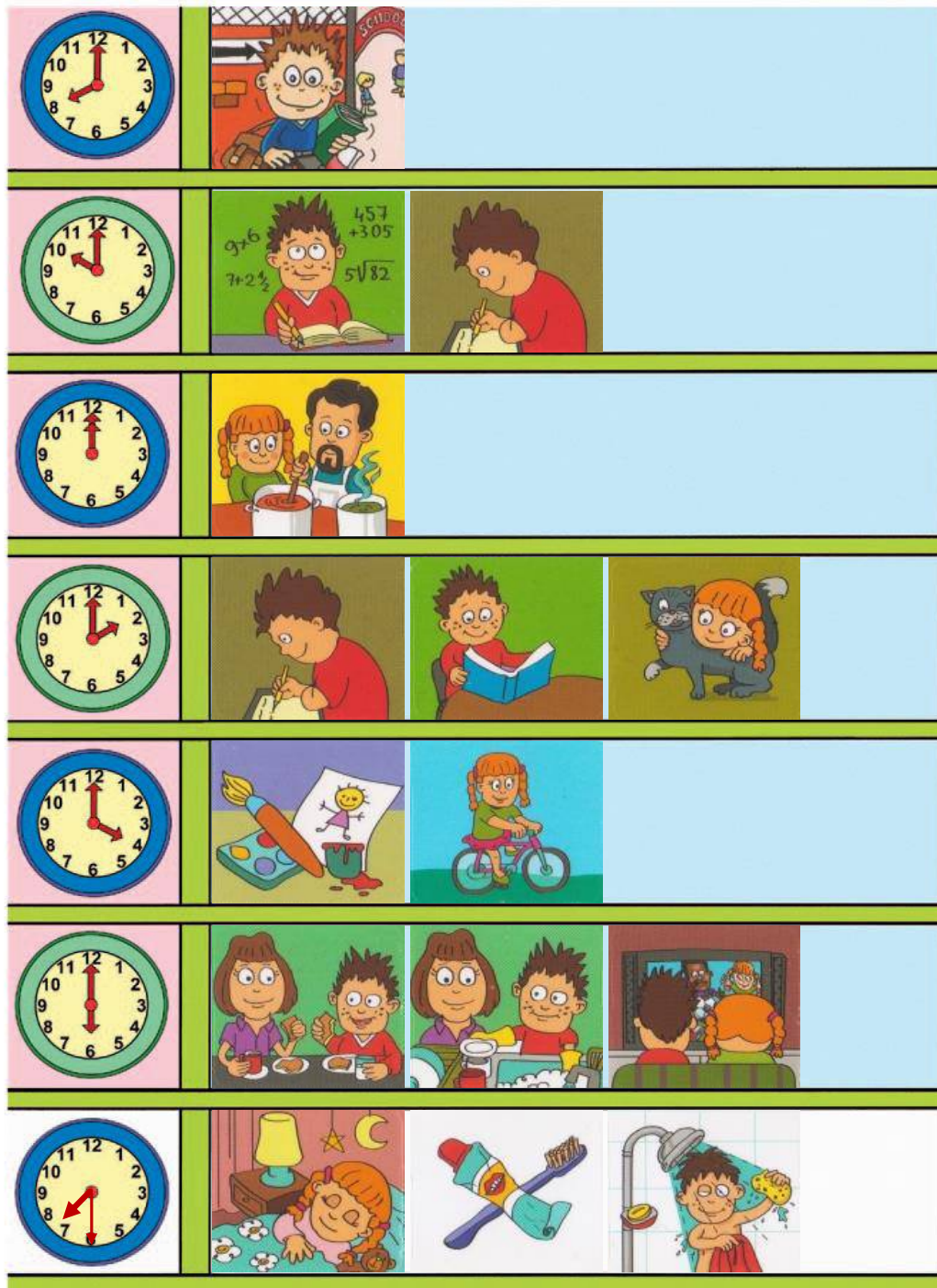
C) Activity booklet sheets per family and child – G01-YB02

	  
	
	  
	
	 
	 
	Wähle eine Uhrzeit Male, was du zu dieser Zeit gemacht hast.

C) Activity booklet sheets per family and child – G02-YB



C) Activity booklet sheets per family and child – G02-YG



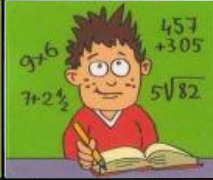
C) Activity booklet sheets per family and child – G03-YB



C) Activity booklet sheets per family and child – G04-YG

		
		
		
		
		
		
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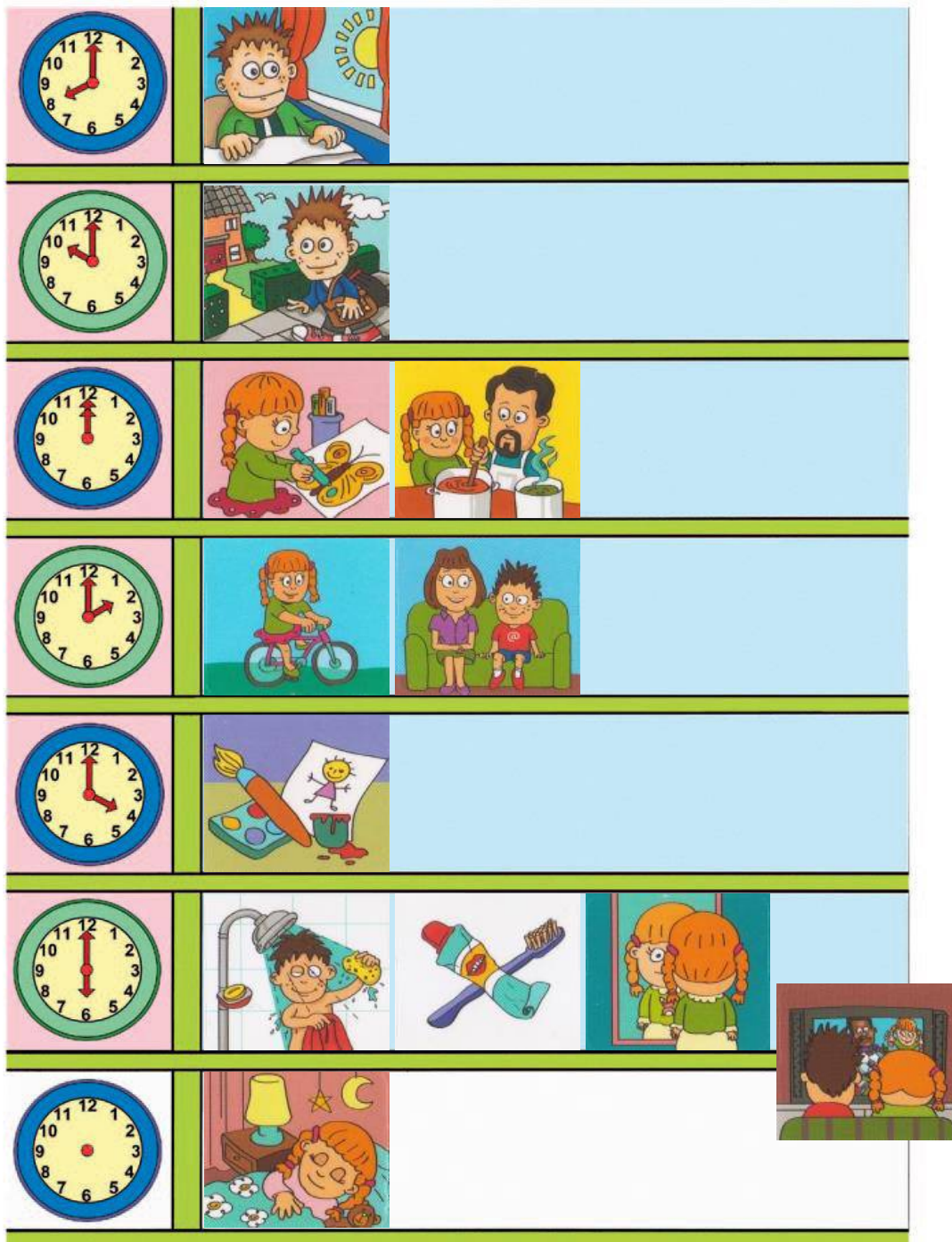
C) Activity booklet sheets per family and child – G05-YG

				
				
				
				
				
				
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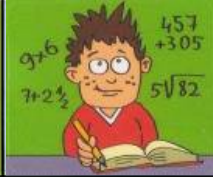
C) Activity booklet sheets per family and child – G05-YB



C) Activity booklet sheets per family and child – G06-YG



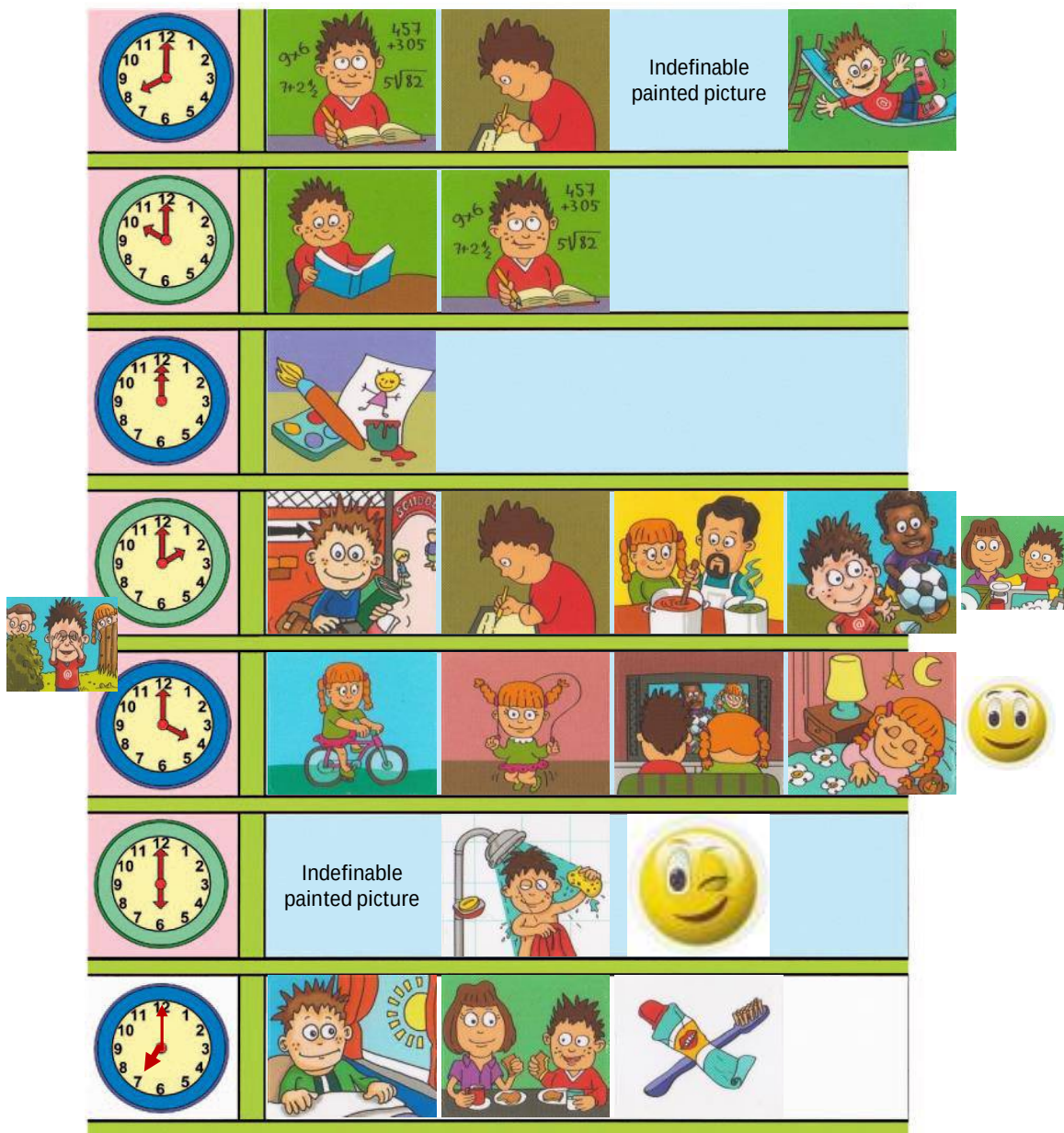
C) Activity booklet sheets per family and child – G06-YB

C) Activity booklet sheets per family and child – G07-YB



C) Activity booklet sheets per family and child – G07-YG

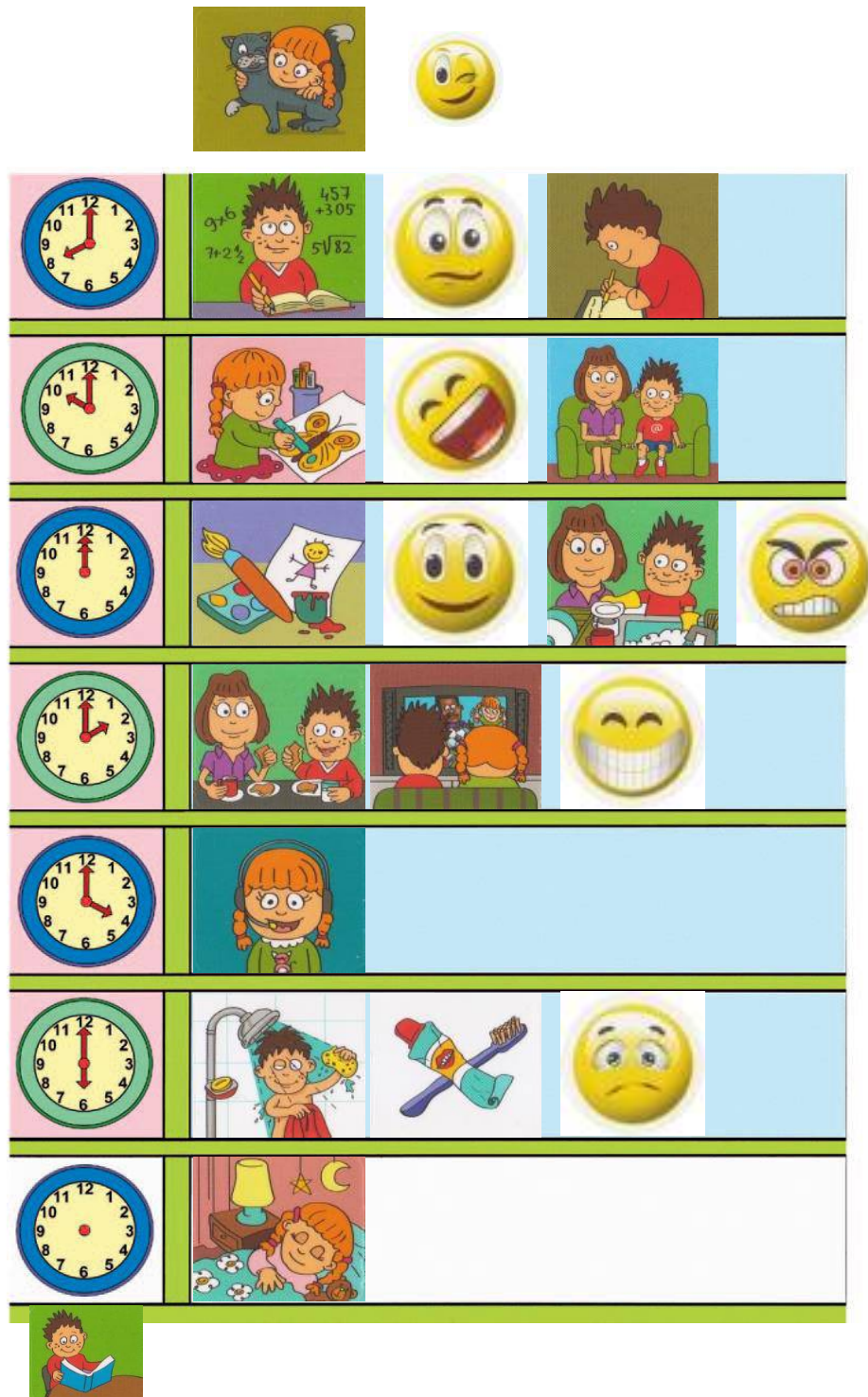


C) Activity booklet sheets per family and child – G08-OG&YG



C) Activity booklet sheets per family and child – G09-YG

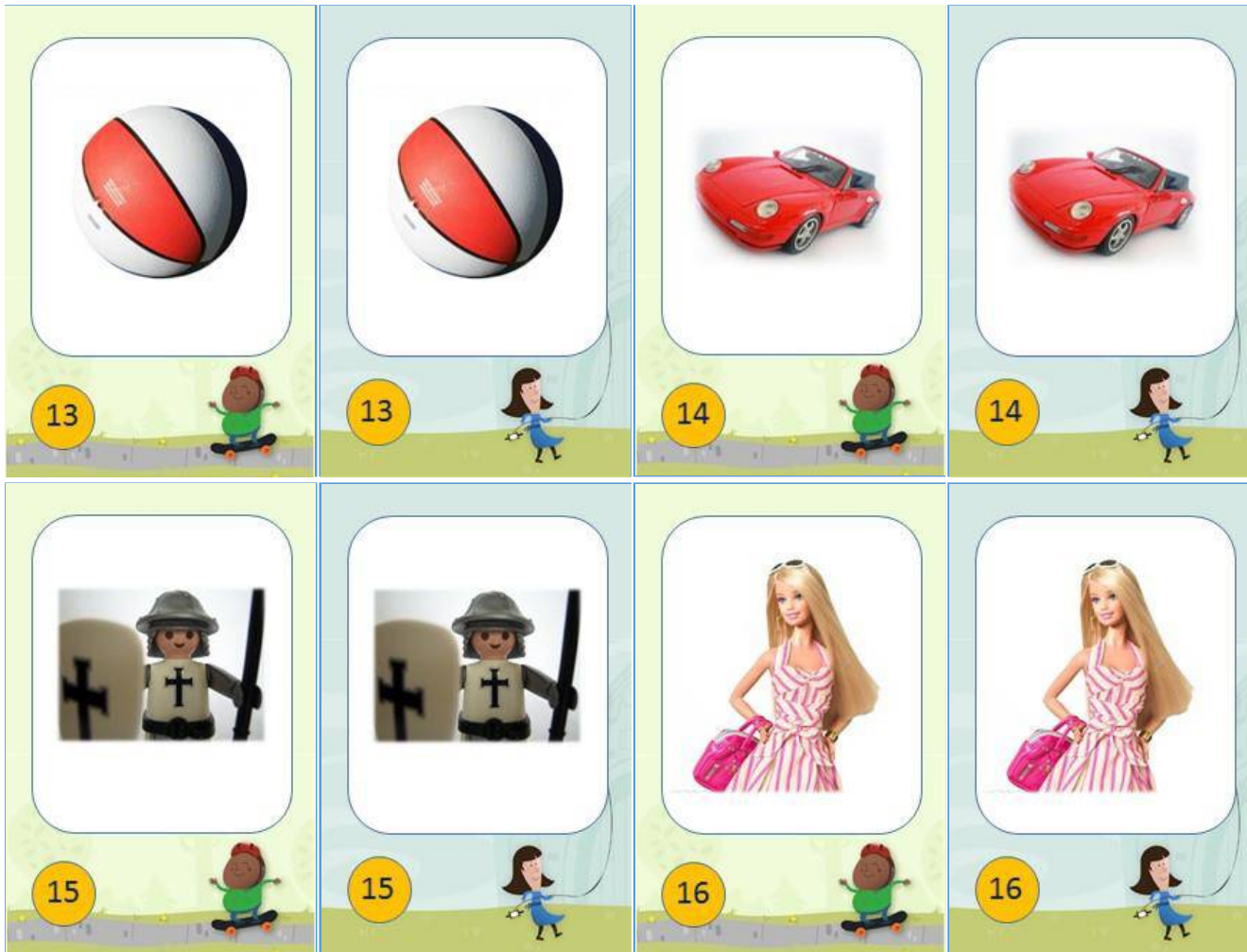
C) Activity booklet sheets per family and child – G10-OB



D) Card Game







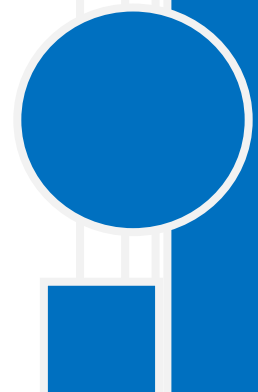


YOUNG CHILDREN (0-8) AND DIGITAL TECHNOLOGY

*A qualitative exploratory study - National report -
ITALY*

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Executive summary

Key findings

- Children grow up in media-rich homes. However, a high level of presence of digital devices in the home does not necessarily mean ICTs are made available to the children, nor does it necessarily lead to high use. The computer and, occasionally, the father's smartphone, are reserved for work and more serious uses.
- Children's access to and interactions with digital devices are strongly mediated by their parents. However, the extended family represents also an important source of socialisation of children to digital media. It is especially remarkable that online technologies are a way to develop an intra-generational bond between grandparents and grandchildren.
- Children's online activities are articulated around a set of interests and practices, including their passionate engagement with TV content as well as other toys. Playing games, watching videos and, occasionally, communication on WhatsApp or via email were the most common online activities practised by children.
- Most children have basic operational skills, but some have acquired also more advanced online competencies. Safety skills are also common, especially closing pop-ups by clicking on the 'X'.
- Younger children with older siblings are facilitated in acquiring digital skills for two reasons: they usually socialise with digital technologies when they are younger, and they are actively supported by their older siblings.
- Positive perceptions of ICTs among children include the idea of online technologies as entertainment devices, as educational devices, as spaces of autonomy from younger siblings.
- While children this age have a limited or no perception of online risks, two main negative views of online technologies emerged, one more related to the child's direct experience and one more adherent to parental mediation. The first includes problematic experiences with pop ups and in-app purchases. The second mirrors the main concerns expressed by adults and relates to the belief over use of these devices is associated with negative health issues, such as damaging sight or becoming dull.
- Parental perceptions of the potential opportunities and risks of technologies inform children's own attitudes and perceptions, and directly shape the availability of technological items and online activities that children had to explore.
- Positively, new technologies (especially tablets and apps) are perceived by parents and grandparents as educational tools, that help stimulate children's cognitive development. Tablets are viewed as a way to pursue the child's interests in a safe environment (e.g. watching videos on YouTube instead of watching "stupid" or inappropriate cartoons on TV).
- Risk perceptions, directly expressed by parents or informing their mediation strategies, include: health issues; overuse; inappropriate content, commercial risks. However, parents tended to postpone negative online experiences to the future, when their children will be pre-adolescents or teenagers.
- New online technologies tend to have a minor role in children's and parent's lives. Parents, in particular, emphasize the importance and the centrality of a wide range of "non-mediated", "non-technological" indoor and outdoor activities.

In general things that brought families together were not technology-driven: they went for walks, rides, watched TV, etc.

- On the other side children seem to look at the new technologies with great interest and fascination. The perceived relevance of ICTs to the child is quite independent from their own use and the amount of parental regulation.
- Inside the family and the household's economy, new (digital) technology represents both a challenge and a resource. On one side children's digital media use is perceived as something problematic that needs to be carefully regulated and controlled: digital media and new technology contribute to make family management more complicated (use restrictions by parents; quarrels between siblings). On the other side these tools are seen as available resources to encourage social interactions inside the household.
- Parents seem to be more focused on regulating screen-time and balancing digital media use with other everyday activities. By contrast, grandfathers were **particularly engaged in "active mediation"**.
- The majority of parents perceive rules as effective tools to educate children and teach them how to self-regulate. Main rules adopted by parents include: setting limits to screen time; limiting children autonomy; regulating permitted content and activities. Technologies are also used as disciplinary tools, to reward or punish the child for their school achievement or behaviour.
- Typically there are two kinds of responses to the rules set by parents. In the majority of cases children have completely interiorized parental rules. In other circumstances, instead, children are not fully aware parents are limiting their use of technologies.

Methodological recommendations

As research on younger children's use of digital media is still at an early stage in many European countries, a large scale comparative study would be very helpful for the understanding of how children engage with new (online) technologies and its social and cultural implications.

We would recommend minor changes to the research design. Second visits to families would prove particularly helpful, for two purposes: first, they would help researchers gain a deeper understanding of family dynamics and, especially, of inconsistencies between children's and parents' accounts; second, they would provide the opportunity to experiment with other research tools that ensure a greater participation of the children as co-producers of the data. For example, children (or their parents) could be given a camera and asked to record their use of technologies in between home visits (e.g., for a week) so as to have a visual stimuli created by a child.

We would recommend to reduce and focus the list of research questions (a long list being not very practical to look at during the interview). We would rather favour observation of children while interacting with the devices they have access to. A more ethnographic approach might also help overcome potentially problematic situations, such as researching children with cognitive disabilities, who might consequently find the interview schedule particularly demanding.

An observation of family members interacting together with devices would also be preferable, for it could provide better insights in issues such as the negotiation of rules, as well as providing further stimuli to be discussed during the second visit.

Proposal of implementations

While there is still need for general studies on younger children's and their parents' engagement with different digital media, future research in this area could adopt the same methodological approach in order to address more specific research questions. Based on the findings collected in Italy, three main research questions can be identified that should be addressed more in depth:

1. (digital) literacy: the pilot study showed that digital skills are unevenly distributed among children under 8. The age of first use, amount of use, parental attitudes and mediation as well as the presence of significant others (older siblings, grandparents) are all influential factors that may facilitate or hinder the child's acquisition of digital skills. The role of early primary school children in mediating their toddler siblings' socialisation with new (online) technologies especially deserves further attention.
2. risks: despite parent tend to postpone online risks to the future, younger children are already vulnerable to certain online risks, such as commercial risks and inappropriate content. More research is needed to inform awareness campaigns for parents and policy initiatives.
3. parental mediation: the findings suggest that in this particular age group restrictions may not be the most effective parental mediation strategy to protect children: indeed, two of the children who experienced a commercial risk received a significant amount of regulation from their parents. So in order to draw recommendations on the most effective measure to keep younger children safe online, the relationship between parental mediation and the child's own online experiences needs to be further investigated.

Exploring new technologies in a protected environment: Italian report of the Young Children (0-8) and Digital Technology Pilot Study

This pilot study is conducted in the framework of the JRC's Project ECIT, Empowering Citizens' Rights in emerging ICT (Project n. 572). ECIT deals with "Identification of new threats to children by ICT besides social networks. Development of recommendations to empower children's rights by preventing and mitigating these emerging issues through education, school and community co-vigilance, as well as reconciliation of digital and personal interactions".

Research focusing on the opportunities and risks associated with children's use of the Internet has, so far, mainly targeted 9-16 years old. The EU Kids Online project has conducted comparative and robust quantitative and qualitative research in this area since 2006. More recently, the Net Children Go Mobile project (Mascheroni & Ólafsson, 2014) examined the beneficial outcomes and the challenges of mobile internet access and use. Yet, research shows that children are going online at an increasingly younger age, with tablets and smartphones highly contributing to an anticipated socialisation to online media. Younger children are also particularly vulnerable to online problematic experiences, since their "lack of technical, critical and social skills may pose [a greater] risk" (Livingstone et al., 2011, p.3). In spite of the substantial increase in usage by very young children, research on the 0-8 age group has been sparse. Therefore, research targeting this age group and which explores the benefits and risks of their online engagement is imperative.

In collaboration with a selected group of academic partners in different European countries (Belgium, the Czech Republic, Finland, Germany, Russia and the UK), the present study is a pilot qualitative study aimed at filling this research gap by exploring young children and their families' experiences with new technologies. In particular, we will look at their (online) technological engagement as well as the potential benefits and risks associated to their (online) interactions with new technologies. Its results will serve as a basis for recommendations on what should be looked at when launching larger EU studies on the benefits and challenges associated to young children's use of new (online) technologies.

Through four areas of specific investigation, the plan of this pilot research is to generate data to address the overall question, in what ways, if any, are children and/or their families empowered by the use of new (online) technologies? In other words, what benefits or risks can be identified from the research, regarding young children's use of digital technologies at home?

1. How do children under the age of 8 engage with new (online) technologies?
2. How are new (online) technologies perceived by the different family members?
3. What role do these new (online) technologies (smartphones, tablets, computers, video games, apps, etc.) play in the children's and parents' lives (separately and in relation to family life in general)?
4. How do parents manage their younger children's use of (online) technologies (at home and/or elsewhere)? Are their strategies more constructive or restrictive?

The present report is articulated in three main parts:

1. The first part includes a brief description of each family participating in the study.
2. The second part discusses the main findings of the pilot study by addressing the four main research questions.
3. The methodological section discusses the implementation of the protocol of observation and the interview schedule and suggests additional research tools to and research questions to be addressed by future research.

Family Portrait Gallery

Family 1

Milan area, Italy

Family members

- Dad, 42, high digital user
- Mum, 38, high digital user
- Girl, 7, second year of primary school, low digital user
- Girl, 3, kindergarten, low digital user, but more skilled

Narrative

The family lives in a residential area in a town in the outskirts of Milan, in a ground flat floor with a small garden. The two girls share one room, where pink is the dominant colour, despite Ilog remarking she has now grown up and she is not much into fairy tales and princesses as her younger sister. Girls' room is also full of books, toys and board games. The father is a free-lance journalist and mother is a biologist. The family has a strong cultural capital, that

parents are keen to transmit to their daughters. Consequently, their media use is carefully regulated so as to balance online and offline activities and provide girls with a variety of stimuli (e.g. encouraging Ilog passion for photography, or socialising her to the world of science and scientific labs, where she goes with her mum on Sunday *"to feed the cells"*).

Most of the children's interview was conducted with Ilog, though Ilyg was very excited by our presence and participated in the interview by showing her toys, her (mostly pink) dresses, and playing on the iPad too. Indeed, according to parents, she is more skilled than her older sister, as she learned to use the tablet when she was only two years and a half. However, she lacks the emotional maturity to make sense of what she sees on the iPad, as her mother explains.

Ilog is a very talkative and curious girl: she has plenty of interests, that she pursues on- and offline with the encouragement of both parents and grandparents. The grandfather living in Milan is responsible for socialising her to photography and for buying her an iPad. Before having the tablet, she used to play occasionally on her mother's smartphone. The girl is very attached to her grandfather, and tells researchers she is used to text him on WhatsApp to know when he will visit them. She loves when he comes, for sometimes he brings her to the shopping mall to a place full of iPads (the Apple Store). While the grandfather is complicit, parents have a more restrictive approach. Ilog has however interiorised parental habitus and self-regulates her use of the iPad to the point that she now knows the passcode because she never overused it and has gained her parents' trust.

Older girl: "My grandfather taught me how to use the iPad, he knows it all, he downloaded everything"

Indeed, she is more interested in offline activities: she learned to read at 4, claims proudly, and says she would miss her books more than everything else. She also favours outdoor activities with all the family.

Family 2

Milan area, Italy

Family members

- Dad, 41, high digital user
- Mum, 38, high digital user
- Girl, 6, second year of primary school, medium digital user
- Girl, 5, kindergarten, medium digital user

Narrative

The family lives in a suburban area of a town in the outskirts of Milan, in a small flat in an apartment building. The two girls share one room, characterised by high presence of popular culture characters such as My Little Pony and Hello Kitty. The father is an employee in the IT sector, while the mother is a part-time employee. Both parents have completed secondary school.

The family owns two TV sets, two computers (a laptop used by the father and a desktop shared with children), three smartphones (an old smartphone with no battery has been given to girls as a portable game console), two portable game console, a PlayStation that has been re-domesticated as a DVD player.

Older girl: “you need to click on the fox and then you can choose a game”

Both parents have a positive perception of technologies and deem digital skills as very important for social inclusion. The both like playing games on different platforms. As I2og puts it *“my mum has three farms, one on her phone, one on my dad's and one on our phone!”*. Accordingly, gaming is perceived by parents as an important step in children's socialisation to the online world and the acquisition of digital literacy. Although parents also set rules to limit their daughter's screen time, the girls are less restricted compared to other peers who participated in this study. New technologies are more central in their lives, but still driven by engagement with popular cultural and TV icons (Disney princesses, My Little Pony, Sponge Bob, etc.)

Consequently, they tend to do more online: they are familiar with the Disney Junior website and the My Little Pony website, where they go play games and print images. During the interview, both girls interacted a lot with digital devices: their smartphone, the two portable game consoles, the researcher's smartphone and the desktop computer in the living room. I2og is more skilled and also more confident with the computer. Her persistent difficulty in reading can be at times problematic (e.g. preventing her to deal with pop ups) but is also reassuring for parents, who let her experiment autonomously online as she is confined to “safe worlds” such as commercial websites for children.

Family 3

Milan, Italy

Family members

- Dad, 39, low digital user
- Mum, 38, high digital user
- Girl, 7, second year of primary school, low digital user
- Girl, 4, kindergarten, low digital user

Narrative

The family lives in a suburban area of Milan, in an apartment building facing a park. The two girls share one room, full of books and toys. The father is a lawyer, while the mother is a part-time employee. Both parents have completed tertiary education. The family owns one TV set, a laptop computers (hidden in a closet in the living room), two smartphones and an iPad.

Older girl: “I would like to access the iPad when I want, without asking for mum's permission”

The mother has a positive perception of ICTs, and describe herself as very fond of technology, that she uses to manage the complexity of everyday life. The father, instead, favours traditional media, such as TV, at home. Despite being a technological person, the mother is very concerned with restricting her daughters' screen time. She promotes alternative, offline activities and tries to engage children in outdoor activities as much as she can. Also, she banned TV after dinner as she noticed the girl were nervous and had sleep difficulties afterwards. She encourages positive uses of technologies: the computer is given to I3og to help her become familiar with typewriting, while the iPad is used for accessing selected and legitimised TV content. For example, the mother shared her passion for volleyball and socialised the daughters to the cartoons on volleyball she used to watch when she was a child. The family is also characterised for a disciplinary use of technology: when children are punished for misbehaviour, no screen time on any device is allowed: *“When we are punished every electronic device is banned, if not what punishment would it be?”*

The girls are aware of this strong restrictive mediation, to the extent that I3yg says that they need to ask mum permission for everything, including going to the bathroom. I3og expresses a fascination with technology, as when she tells about visiting a toy exhibition where she could play on a Nintendo and liked it very much. Since she had access to a tablet, she has been using the computer less, though she emphasises that she had invented a story and shared it with her school friends via email. Indeed she feels more comfortable with the computer *“as you just need to click, instead on the tablet it is more complicated as it shows me notices that I don't know what I am asked to do.”*

Family 4

Milan, Italy

Family members

- Dad, 44, medium digital user
- Mum, 41, high digital user
- Boy, 7, second year of primary school, low digital user
- Boy, 5, kindergarten, low digital user
- Girl, 2, nursery, low digital users

Narrative

The family lives in a suburban area of Milan, in an apartment building. The children share one room, full of books and toys. The father is a bank executive, while the mother is a bank clerk. They have both completed tertiary education. The family has Southern Italian origins, and use to visit Southern Italy each summer. However some relatives, especially the cousins' family, live in Milan too.

The father is present just for part of the interview, as he comes back home later and leaves earlier to play football with friends.

The mother, instead, works part-time and picks the children from school. Despite having a positive perception of ICTs, the mother highly regulates the children's engagement with digital media.

The TV is the only exception, with children being allowed to view it also in the morning while the parents get dressed up. She understands children have a fascination with touch screen technologies and digital media in general, and has eventually agreed to let them buy a Wii with their piggy bank savings, on condition that it is not the latest model equipped with portable game pad. The Wii is legitimised as an interactive tool for the whole family, and one which stimulates children. For the same reason, children have some educational toys (a Sapientino) and a play computer (for the younger sister).

Despite having no access to digital media and games at home, both boys are familiar with games and technologies, being socialised to game consoles, tablets and smartphones by their older cousin and, occasionally, by friends. The cousin has also promised to give I4ob his old smartphones as soon as he receives a new one. Indeed, all their fascination with digital technologies is driven by their passionate engagement with videogames. The boys are eager to have the Wii at home, and I4ob is looking forward to his cousin's phone so as to have a portable device for gaming.

As a consequence of the mother's highly restrictive approach, the children have limited digital skills and no perceptions of potential risks. For example, I4ob says he has only played once with his mother's iPhone because she doesn't like him to play videogames for fear he

Mother: "I am looking for the old Wii, because I don't want a tablet... because the child can't be allowed to bring it around. It must be a restricted thing, that I can manage and decide when access is allowed and how to use it."

might become “dull.” Indeed, the mother restricted children's access to her smartphone when I4ob accidentally subscribed to a pay service by clicking on a pop up.

Family 5

Milan, Italy

Family members

- Dad, 41, medium digital user
- Mum, 41, medium digital user
- Grandfather, high digital user and techno-fan
- Luisa, grandmother
- Girl, 7 year old, second year of primary school, low digital user
- Girl, 4, kindergarten, low digital user, but more skilled

Narrative

The family lives in a suburban residential area in Milan. They are originally from Rome, so the grandparents, now retired, use to spend one week per month with them. The girls have an active life: they stay at school until 6 for various after-school activities, then they go to the park with mum or play games. The consumption of all media is highly regulated and limited. They are allowed to watch TV a bit before and after dinner, and on Friday and Saturday nights they can watch a movie (Pocahontas and Snow White being their favourites).

I5m disapproves parents who let their children watch TV in the morning while they get dressed up, because *“it makes them sleepy and dumb”*.

The grandfather is responsible for socialising girls to digital technologies, especially an iPad, that girls use for gaming, tales apps, and short videos (iBernard, Cartoonito). Among the gaming apps, that grandfather selects and downloads apps for them, especially educational and pre-school apps in English, as both parents and grandparents favour interactive apps. *“They especially like interacting with tales apps, indeed there are many tales where you are asked to perform certain tasks in order to make the prince or the princess come out”* says I5gp. Girls are attracted by tales in general: before going to bed I5og reads books on her own while I5m reads tales to I5yg. On Saturday mornings they like to invent and perform tales with the help of the grandmother. Offline games and activities are still at the top of their favourite hobbies.

The use of the computer and the internet is very limited: it is used only with mother, who selects videos and songs that they then dance and sing together, usually on Saturday mornings.

They also have a Play Station, but it is used only as a DVD player. Indeed I5og tells me: *“It is a sort of remote control... a remote control to watch movies, as my dad recorded plenty of movies.”* I5m confirms this version: *“It was a wedding gift, we have some games but we actually never play. You know those youngsters' things, that do no longer find a place into family life...”*

Grandfather: *I showed them the iPad 3 years ago, but parents blocked me as it was not appropriate, so they didn't use it for some months*

The girls have almost no perception of online risks. They say the only thing they need to care about is handling the iPad carefully to prevent it from falling. Indeed I5gp says this is what he told her since the first time they used it. I5og says she also feels more comfortable with the grandfather's iPad than with her mother's iPhone 4, since *“it is bigger here, while the phone is smaller and it is easier to make mistakes (...) then the game is messed up and you can no longer play it”*. She says she occasionally play some games on her mother's smartphone, while I5m tells us she also know how to send WhatsApp messages, Actually she started using it almost an year ago, to keep in touch with a friend. I5m is also particularly excited because last summer, when they went to the seaside with grandparents, the grandfather's phone served as *“a bridge, through WhatsApp. I told her to sign the text with her nickname so that I knew it was her. And so she texted me when they had built a kite and sent me a picture of it.”* I5og does not seem to value the use of ICTs for communication as much as adults do.

I5yg seems more confident with the iPad, even though she can't read yet. Indeed, I5m confirms there are many differences between the two girls with I5yg being *“more into it, she likes it so much, and, more importantly she is successful, she has an instinct for it.”*

Family 6

Milan area, Italy

Family members

- Dad, 39, medium digital user
- Mum, 41, medium digital user
- Boy, 7, second year of primary school, low digital user
- Girl, 5, kindergarten, low digital users

Narrative

The family lives in a residential area in a town in the outskirts of Milan, in an apartment building. When we visited the family, they had just brought home a kitten, that the children are very fond of. The father has a university degree and works as a physiotherapist and social worker, and as a tennis teacher in the evening. The mother has completed secondary education and is also a social worker.

Mother: “He had difficulties in stopping the game, and when he eventually stopped playing he was more nervous.”

The father has a very restrictive approach to children's engagement with new technologies, while the mother is concerned that over-restriction might compromise the boy's digital inclusion in the future, and also his inclusion in peer groups in the present. However, both are worried of issues of overuse, and decided to limit the boy's use of smartphones to play games when it become detrimental to face to face interactions and the boy's own creativity.

However, the children have access to new technologies outside the home, mainly at grandparents'. Grandparents adopt a different approach to children's engagement with technologies. The father's parents regulate grandchildren's media use by carefully selecting online activities and privileging educational uses: children are allowed to watch Peppa Pig videos on YouTube as a way to learn English, or play some games on the Disney Junior website. At the opposite, the mother's parents are more permissive: they let the children watch TV as much as they want, and let the boy play Fifa on his uncle's computer.

Despite the numerous restrictions, the boy is quite skilled at pursuing his own interests online: for example he is very familiar with searching music videos on YouTube, and knows how to create photo albums on the computer. His sister, instead, is less interested in technologies.

Family 7

Milan area, Italy

Family members

- Dad, 42, high digital user
- Mum, 48, high digital user
- Boy, 7, second year of primary school, medium digital user
- Twins (boy and girl), 2, low digital users

Narrative

The family lives in a residential area in a town in the outskirts of Milan, in a flat on the ground floor in an apartment building. Both parents have completed tertiary education and have managerial positions. During the day, the younger twins stay at home with a nanny, and later with grandparents when also I7ob come back from school. The grandparents are also present at the time of the interview, though they initially stay in the boy's room.

Older boy: “I enjoy very much using the computer, it makes me feel older.”

The family owns a TV, a laptop computer, two tablets (one is the father's and the other is I7ob's), three smartphones (I7ob has just been given a smartphone for his birthday, though he still borrows his mum's phone to play games from time to time), and a Play Station.

I7ob is very mature for his age, has a fluent Italian, and is very protective with his younger siblings, who have already started to use the iPad (they are particularly fond of a game with kittens, and he assists them). Not surprisingly, the boy values more the devices that he does not have to share with his twin siblings: the computer, as he feels older and autonomous; and the smartphone, because it is small, portable and personal. He is also quite skilled in managing different devices and apps; however, when something goes wrong (e.g., a pop-up that he is not able to close) he tends to adopt a fatalistic approach, such as turning the device off and waiting a while before restarting it.

The parents use technologies much for work, so they try to reduce the use of technologies at home. The father is especially sensitive to potential overuse of games, being a former videogame player himself. They have noted that the Star Wars game for Play Station was quite stressful for the child and caused him sleep disorder, so they prevented him from playing in the evening. Both parents appreciate educational opportunities for technologies, especially pre-school apps. Technologies have also become a central part of parenting, as they report keeping in touch with parents of class mates to coordinate extra-curricular activities and sport.

Family 8

Milan, Italy

Family members

- Dad, 53, low digital user
- Mum, 35, medium digital user
- Boy, 12, second year of lower secondary school, high digital user
- Girl, 7, second year of primary school, medium digital user

Narrative

The family lives in a suburban area in Milan, in an apartment building. Both parents have completed secondary education. The father is a taxi driver and is not present during the interview. The mother is a housewife of Brazilian origin, and visits her family each summer for two months with her children.

On the day of the interview, a class mate of the boy is also presents but leaves the house before the end of the interview. When we arrive, the two boys are playing on the Play Station.

The family owns 4 TV sets (one in each room), two computers, an iPad mini, three smartphones, a Play Station (in the living room) and a Wii (in the children's own room). The children's room is rich of media (a TV and the Wii), books and games.

The mother uses technologies herself, but doesn't feel very confident. As an evidence of her poor digital literacy, she tells researchers that her daughter managed to find out her iPhone's passcode. Moreover, she is very preoccupied with contact risks. Due to her lack of digital skills, her approach to children's engagement with new technologies is mainly restrictive and oriented to limiting their screen time.

Therefore, active mediation of technology use and internet safety is completely demanded to the older sibling, who is in charge of selecting appropriate content (videos and apps) for his sister, to prevent her from exposure to negative experiences.

While the iPad mini was given to I8ob as a Christmas and birthday present from his grandparents, is it now mainly monopolised by I8yg, who is very fond of Minecraft. Indeed, she also watches tutorials and other Minecraft videos on YouTube. During the interview, she starts watching one of these videos and is completely absorbed by it. However, she repeatedly claims that technologies are not her main interest, as she prefers Barbie. For example, when school mates visit her, they prefer playing with dolls. She is also very fond of animals and nature, and brings us a book on animals saying it is her favourite.

Older boy: ““I8yg is only allowed on YouTube on her own, indeed I made it simpler for her by creating a profile on YouTube [...] it is more convenient, there's already a playlist of videos with no need to search and type in for new videos.”

Family 9

Milan, Italy

Family members

- Dad, 50, medium digital user
- Mum, 48, medium digital user
- Boy, 10, fifth year of primary school, medium digital user
- Girl, 7, second year of primary school, medium digital user
- Boy, 7, second year of primary school, medium digital user

Narrative

The family lives in an apartment building in a semi-central area of the city. Both parents have completed tertiary education. The father is an engineer, while the mother is an architect. Each child has her own room, full with books and toys. The older boy also has a Subbuteo in his room. The family owns two TV sets (one in the living room and the other in the parent's room), two smartphones, one tablet, and three Nintendo DS (one for each child).

The mother adopts a restrictive approach to their children's use of the technology and describes herself as a “bulldog”. The father, by contrast, favours active mediation over restrictions. However, both agree that using technologies or watching TV after dinner has negative health consequences, as children become over-excited, lose concentration and have difficulties in sleeping. Therefore, the father encourages them to read at least 15 minutes before going to sleep.

The tablet is dominated by I9ob, who uses it mainly to play games and watch music videos on YouTube. He is looking forward to receiving a smartphone when he will go to secondary school the next year. He is particularly interested in the opportunity to keep in touch with his friends and coordinate face to face meetings. The twins occasionally play on the parents' smartphones, though I9yg had had a negative experiences with pop ups. Since this accident, the parents set the phone on the flying mode to prevent the children going online and doing in-app purchases.

The children's leisure time is strongly gendered: the two boys watch the TV in the living room or play the Wii together; the girl, instead, watches TV in her parents' bedroom and occasionally plays at We Dance on the Wii. Sometimes, the gender division is more apparent, though: the twins explain that sometimes they are watching the same TV programme on two different TV sets. When this happens, and the mother realises it, they all gather in the living room and watch it together.

Girl: “the smartphone, if you click on a commercial, you might end up wasting money. It happened to me once on dad's phone, when dad didn't set it to the offline mode. I was playing a make-up game and I went on an advertisement so I spent money.”

Family 10

Milan area, Italy

Family members

- Dad, 46, medium digital user
- Mum, 41, medium digital user
- Girl, 7 year old, second year of primary school, low digital user

Narrative

The family lives in a medium-sized town (19.000 ca. inhabitants) in the province of Milano where they moved the previous year for I5f's new job. I10g goes to school two afternoons a week and has dance classes twice a week. For the rest of the time she spends time with her stay-at-home mom. Media consumption is highly regulated and online media use is limited. I10g watches TV for a short time after lunch with her mother and usually half an hour before dinner. Her mother restricts which kind of content she can watch selecting also among cartoons or TV shows for kids. Even if sometimes she finds it difficult, such is the case with Violetta ("I feel like I am the wicked witch mother... Because I am not happy that she watches Violetta, I try to set boundaries on what she can watch because I want her to be a child, not speak about boyfriends or kissing, she is just 7 years old"). However, I10g and her mother usually watch together (hence under the parent alert supervision) some TV shows they both enjoy (a soap opera and a cooking show).

Mother: "she is not a child who looks for dangers... she is circumspect, so I don't worry. If she sees an image, she would never look around out of curiosity... because it goes beyond what she is looking for. I am strict and I think I have instilled this circumspection in her"

In the home there is an iPad and a computer but no gaming devices. While the girl never uses the computer (and rarely does her mother), she occasionally gets the chance to use the iPad (for maximum 15 minutes a day according to her mother). The tablet, though, is part of the 'reward-punishment' system of the family and I10g was not allowed to use it in the days prior of our visit. Probably because of that, the girl doesn't perceive the iPad as one of her "personal" technologies or favourite toys - even if later in the end of the interview she admits she likes it above everything else. She loves Barbie and owns many dolls (several are cartoons characters), she also own "girlie" technological toys such a Barbie tablet and a Hello Kitty computer. She also own a cell phone but (due to her mother's choice) without battery. She also like to listen to fairy tales on her stereo, because, she says "I don't like silence, so I put on these tales, it is like if a person, if my dad is reading me stories". Lastly, I10g is very devoted to her iPod Shuffle, a little violet device she received as a gift (in combination with big headphones of the same colour) from her young aunt (27 years old). She wanted this toy very much, to the point she "pretended" to have it: "I wanted it so badly and for such a long

rime, I always play with cap... you know those, earmuff? I pretend they were my headphones, so my aunt...". I10g often uses technologies as something to play at "being adult" (ie. the mobile phone without battery, using her Barbie tablet with a pen).

Notwithstanding her mother's strict regulations, I10g has a certain amount of autonomy with digital devices and also possess some digital skills. For example, she knows the password to buy apps on the Apple Store of the iPad and her mother's iPhone secret code (which she uses very rarely to play when out of the house). She only buys free apps and does that under supervision, however it seems her mother trust her a lot and that she has interiorised the rules about what's wrong and what's not. Her young aunt has a role in mediating digital media use, in fact she is in charge of uploading music on her iPod Shuffle and she showed some of her favourite games on the iPad (make up apps). I10g favourite apps is "Talking tom" a little cat she has to take care of. Overall, she seems to possess several digital skills, such as being able to take screenshots on the iPad, organize apps in folders, create events in the calendar app, close pop ups without hesitation, discerning pay-content from free-content within an app and looking for videos on YouTube.

Findings

How do children under the age of 8 engage with new (online) technologies?

Technological equipment of households

The interviews conducted in Italy are consistent with prior research on pre-school and primary school children indicating that children are immersed in media-rich homes since they are very young (Marsh et al., 2005; Marsh et al., 2014; Plowman, 2014). Also national statistics on the adoption and use of ICTs show that Italian households with at least one child are early adopters of new devices and services (Istat, 2013). Indeed, the children we interviewed were surrounded by a range of ICTs, including:

- Television: most families had at least one TV set, with one family (I8) having four, each in every room of the house (living room, kitchen, parent's and children's bedrooms); and three families having two, one in the living room and one in the parents' bedroom (I2, I6, I9).
- Smartphones are as much as pervasive as television, in line with national statistics on the technological equipment of Italian households (Istat, 2013): in all the participating families there was at least one smartphone. More commonly, in most households both parents had a smartphone, and children have usually access to parents' phones for gaming. In two families (I7 and I8), older children (aged 7 and 12 respectively) also owned a smartphone.
- Computers are also largely available in the households recruited for the pilot study: all families had at least one computer, usually a laptop, but some families had more than one. For example, in family 2, 3 and 8 a desktop computer was also available, which was mainly used by children, while the laptop was of exclusive use of parents. In the two families where children had greater access to the family computer, either it was perceived as an educational tool (to teach the girl how to write) complementary to other devices, or it was the primary means of access to the online world for two sisters who didn't have a tablet.
- Game consoles were also quite popular and usually positioned in the living room, as “family media”, encouraging co-use and shared activities among siblings, or fathers and children during leisure time. Different game consoles have, however, different meanings and implications for family life: PlayStation usually entered the home as an adult technology that was later passed over to children when they grew up (mainly for individual use), or re-domesticated as a DVD player; Wii, by contrast, is usually perceived as a family device, so acquired as an entertainment tool for the whole family. Families with girls only were more likely not to have a game console or to use it as a DVD player: I5og, for example, says that the game pad “*is a remote control that we use when we want to watch movies. We need it, for dad has recorded plenty of movies*”. And her mother later explains: “*it was a wedding gift but we use it as a DVD player only. We have a few games, but we never play. You know those wedding presents, youngsters' things, that do no longer find a place into family's everyday life.*” Exceptionally, one family (I14) with two boys, aged 7 and 5 (and a younger girl aged 2) didn't have any fixed or portable gaming device at the time of the interview, but were about to buy one with the children's own savings.

- iPads or tablets were present in seven households, under various conditions: in four families (I1, I7, I8, I9) the tablet was owned by the oldest child, who usually shared it with younger siblings. In one case the tablet was the grandfather's - who spends one week per month with the family and encourages his grandchildren's use of the device (I5). In one family (I8), the iPad was given by grandparents to the older boy (now 12) as a rite of passage to lower secondary school, but it is now mainly used by his younger sister aged 7. In the remaining households, children have access to their parents' tablets. Compared to other devices, tablets are more mobile, more likely to be used anywhere in the home and to be shared among siblings. Just in one family (I9), the tablet has been domesticated as a private device of I9ob (aged 10), and has been accordingly located in his own bedroom; as a consequence, his younger twins have limited if no access to it. The following conversation among the two seven year old twins, while their older brother has left the room¹ is indicative of the privatisation of the device in that specific household, and of how the older sibling dominated the use of the device, preventing his younger brother and sister from using the tablet and gaining digital skills:

I9yg picks the iPad from her older brother's night table, and turns it upside down "I am not sure how to turn it on... oh, yes, here it is".

I9yb, concerned, "you know that we are not allowed to use it, if I9ob knows it!"

- Portable game consoles are less common: only in 4 out of 10 families, children owned and/or used a Nintendo DS. For example, in family 9 each child has her own portable game console.
- Occasionally, children have access to play laptops, play tablets or other technological toys, namely educational games such as Sapientino. These were primarily used by younger siblings, or when access to other mobile devices such as tablets and smartphones is highly restricted in time (I10). For example, in household 7, while the younger twins (2 years old) have also access to their older brother's tablet, they also have a Winnie the Pooh play laptop on their own. Similarly, in Family 1, I1yg has also a play tablet, while also using her sister's iPad. By contrast, among primary school children, the most common reaction to technological toys displayed on card games was *"it is childish"*, as I5og explains when explaining why she doesn't like what she labels *"an iPad for toddlers"*.

Children were also surrounded by a variety of print media (books and comics) and other toys.

However, a high level of presence of digital devices in the home does not necessarily mean ICTs were made available to the children, nor does it necessarily lead to high use. The computer is often perceived as a serious technology reserved for work use by parents or older siblings: children are not allowed to use it, or allowed to use it only when supervised, for fear they might damage it. For example, Family 4 has two computers, both restricted to children. The following excerpt, from the interview with family 8, shows how the desktop computer is reserved for parents and the older sibling only, the latter using it both for schoolwork and games:

I8ob: "The computer is in the living room. Then there's my mum's, but that's for work."

¹ The 10 year old brother had organised to meet his friends for a pizza that evening, so left home when the interview was not yet finished.

Interviewer: "do you ever use the computer?"

I8yg: "no, but I like it, because I see him playing, and it looks very interesting!"

I8ob: "she is too young for the PC, she might end up installing a virus"

I8yg: "Moreover, I don't even know how to use it!"

As anticipated, access to the parents' smartphone is also restricted when it is mainly perceived by the parent as a work tool. For example, in Family 6, the father banned the use of his phone by the children. Therefore, in order to let them play games, parents provided the boy with two old mobile phones, not equipped with a SIM card (these phones have been, however, hidden in secret when parents perceived the boy was overusing technologies and digital games):

I6f: "my phone has always been banned"

I6ob "I don't even know how to use your phone!"

I6f: "I preferred to ban it as I use it quite a lot for work. So when he uses it, we use it together"

[...]

I6m: "he used to play for no longer than ten minutes per day. Anyway, he now has the mum's old phone, and also his dad's"

I6ob: "Yes, but I can't find them anymore!"

I6m: "I put them away"

Children's access to and interactions with digital devices were strongly mediated by their parents (Plowman, 2014: 8). However, the extended family represented also an important source of socialisation of children to digital media. It is especially remarkable that online technologies are a way to develop an intra-generational bond between grandparents and grandchildren: either grandparents directly provide children with new and old technologies (the iPad, their first camera) (I1 and I8), either they create complicity (grandparents resisting parental rules and providing access to technologies that are usually restricted at home). A grandfather (I5gf) - recognised by both children and their mother as the technology expert of the family - reported using iPad with grandchildren during his monthly visit to the family: he paid great attention in choosing apps and in teaching children how to use the device and different apps. In many cases, children reported being socialised to new devices also by older cousins (mainly responsible for showing videogames) and young uncles. For example, in family 4, despite children having a limited access to digital technologies, the boys aged 5 and 7 are socialised to mobile devices and videogames by their ten year old cousin, whose parents *"are two technological persons"* says I4ob. So his cousin promised to lend him his old smartphone as soon as he gets a new one, and let them play the Wii, the Nintendo and games on the tablet when they meet. I4ob explains enthusiastically: *"he has so many games for the Wii that I can't remember them all!"* and continues appreciating the mobility of Nintendo DS *"it is a gaming device. My cousin has it. He brings it in summer when we go back to Campania, for he can't bring the TV set with all CDs!"* Similarly, I6ob explains: *"my friend lends me his tablet to play, and I also use it at my cousin's place, it is his dad's."* As anticipated, young aunts and uncles are also influent sources of socialisation to digital media: I10g, for example, was given an iPod by her aunt, which has now become her favourite digital device,

as she has unrestricted access to it. Similarly, in family 6 children have limited access to the computer, due to its obsolescence, but are used to play games on their uncle's computer when they visit grandparents after school:

I6ob: [during the ice-breaking activity] "I want to add also the sticker of the computer and that of the phone"

I6f: "not the computer as you play less on a computer, you play at your uncle's"

I6m: "because we have a laptop but not a desktop, and it is guarded in a drawer, so it takes a while to take it out and boot it..."

I6f: "we mainly use it for work"

Favourite technologies and activities

When children rate devices and activities, the aspirational dimension is strong: most children are likely to include at the top of the list of favourite devices what they would like to have, rather than simply choosing from what is available to them. Smartphones and game console top the list of the devices children would like to have, with some remarkable gender differences: boys, except those already over 7, tend to prefer game consoles: for example, Both boys in Family 4 are excited about the Wii they will soon buy after breaking their piggy bank. Smartphones are favoured by girls because *"It has everything: games, music and videos"* (I8yg).

In general, children who have access to an iPad or a tablet include it among their favourite technological devices and praise the variety of games and apps available. Children also value possession and privacy: for example I7ob was just given a smartphone for his seventh birthday. His use of the device was limited: he played games mainly on the tablet or the computer just had one game on his phone, and was not provided with a mobile internet plan, so accessed the domestic wifi network occasionally for YouTube videos. His communicative practices were also limited to phone calls to parents as soon as he went off the school bus, to inform them he reached home (where grandparents are waiting for him), since, as he explains, *"I still need to download some stuff for texting"*. Despite little use, however, he value the smartphone as his favourite device *"I like it most, as it is small and portable, it is mine"*.

Children's online activities are articulated around a set of interests and practices, including other media consumption practices as well as other toys. Among digital activities, games and gaming apps (whether on a game console, an iPad, or smartphone) and videos (both music videos and cartoons) are the most common activities cited by children and top the list of favourite uses of digital devices - but not the list of favourite leisure time activities overall, since most children still favour outdoor activities, reading, and playing with dolls or Lego.

Children mention a wide range of games and gaming apps, varying from popular gaming apps such as Dragon Trailer or Pou to more gendered applications, with girls favouring dress up games, princesses tales, and other drag and drop games in a fairy tale setting, while boys prefer Clash of Clans, other action games, car races etc. Boys also mention shooter games, despite being not allowed to play them at home. By contrast, some girls favour gaming apps on tablets and smartphones, and despise game console. For example, I1og first motivates her aversion to videogames with a reference to parental mediation (*"Mum doesn't want us to play videogames because it's a stupid thing"*), but later suggests that her dislike is embedded in gender differences: she has only seen her cousin, *"a videogame maniac"*, playing car races and

thinks these games are for boys only. Some children also engage with more educational games, selected by both parents and grandparents: children are provided with games in English to help them learn the language, as in Family 5; girls also like fairy tales apps (I1, I2, and I5), either because they are already very fond of reading and role-playing games based on fairy tales, either because they are not yet able to read stories on their own. In family 1 - where the mother is a biologist - girls also showed researchers educational apps explaining the universe or educational games on human physiology and the human body). Playing games on a tablet is usually an individual activity: except in the case of a seven-year-old boy playing with his younger twins (I7ob: *“they drive me mad with those kittens!”*), more frequently one child plays and the other waits for her turn. The bystander, though, participates into gaming by suggesting tricks or encouraging the player.

Children who like photography are also enthusiastic users of photo-editing apps, such as those deforming faces. For example, I1og explains shows the researcher proudly the photos she has taken to her family members. I6ob, who is also into photography, has not yet access to a tablet at home but has used it at his cousin's and tells researchers *“on that tablet we can even take pictures and make them over, there's an app that lets you take funny pictures, weird photos”*.

When they watch videos on YouTube from a tablet or a smartphone, children report looking for music videos or TV content. In the first case, most of the interviewed children had already developed their own music tastes that they pursued on a variety of platforms, including smartphones, tablets, computers, TV, radio, iPods and also the Wii. In most households, music videos provide the soundtrack to collective dancing practices, what is usually called the “baby dance”. For example, I5m explains *“the internet... we use it mainly for YouTube, for the baby-dance, they copy the dance steps”*. In family 9, instead, the two twins play together at We Dance on the Wii, but while the girls is comfortable, the boy is more reluctant, which makes him “very funny” according to his mother. YouTube is also commonly used for accessing catch-up TV content that is not available on air, or that they are not allowed to watch on TV. The latter case is especially common in households where television viewing is highly regulated, so children are only allowed to watch selected content on the iPad or DVDs on the TV set. For example, in family 10 Violetta is not considered appropriate for a seven-year-old girl, so she is only allowed to watch a few videos from the show on YouTube.

Not only is the socialisation to digital media shaped by inter-generational relationships: digital practices are also “co-constructed across generations” (Marsh et al., 2014). The passion for photography is transmitted by grandfathers (I1 e I7) or fathers (I5). Similarly, technologies provide parents with the opportunity to socialise children to their own favourite TV content when they were young: for example, in family 3 the mother uses the iPad to share with daughters her youthful engagement with volleyball and associated cultural products such as the Japanese anime Mila and Shiro. And I1og explains that, beyond DVDs, they also like to *“watch on the iPad the cartoons that my mum used to watch when she was my age, such as Lady Oscar.”*

Children occasionally engage in communicative practices. For example, I1og has learned how to send texts to her grandfather on WhatsApp, borrowing her mother's iPhone. Similarly, I7ob says that he likes very much the computer because *“it makes me feel older”* and when asked what activity does he engage on the computer that makes him feel older he replies *“I write emails to my friends”* using his mother email account. By contrast, other children do not value online communication, or minimise their engagement in communicative practices. For example, in family 5 the mother is more enthusiastic about her daughter having learned how to text on WhatsApp and explains researchers that she started sending messages to her school

friends the winter before, and then kept in touch with her when they were on holiday with grandparents: *“when they were away with grandparents last summer, you know, that week or ten days at the seaside with grandparents, we created this direct link by means of WhatsApp. I recommended her to sign her texts, so that I knew when it was her. And we happened to communicate three or four times this way last summer. I really enjoyed it. For example she wrote me about the kite they made and she sent me a picture”*. The daughter, instead, minimises her communication practices.

Children in this pilot study also had “a passionate engagement” (Marsh et al., 2014) with characters of popular culture and TV programmes: they pursued their popular culture interests on a variety of platforms, including TV, video clips, websites, apps as well as books and toys or artefacts. Television and TV content for kids remains a strong driver of both online and offline practices: for example, one girl (I10g) tells about her encounter with Violetta on TV first, and then learning how to use YouTube to watch Violetta's videos (, and listening to Violetta's CDs. My Little Pony is also a common cross-media content among girls: they watch the cartoon on TV or YouTube, have toys, gadgets and posters in their room, go on the website to play games, and download and print drawings. Lego is also a source of cross-media platform: children play Lego offline and online and watch tutorials on YouTube. In other cases, online gaming influences other online practices, such as Minecraft, with a young girl (I8yg), for example, playing the game but also watching Minecraft tutorials or animations on YouTube.

However, children's engagement in cross-media practices does not necessarily mean they favour multi-screen experiences: indeed, these are not only discouraged by parents, but also not usually taken up by children. Playing games on the tablet or on a game console is especially an immersive and exclusive activity: the researchers observed (especially the younger) children playing on the tablet, who were completely absorbed by the game itself. For example, during the interview I8yg started playing Minecraft on the iPad and she barely listened to our questions. Her older sibling made fun of her for this extreme focalization into gaming.

To conclude, despite children's engagement in a variety of online and digital practices, for many children online activities and technologies do not represent their favourite activity in their leisure time. This is especially true of highly regulated children, who have seemingly interiorised their parents' view of technologies as potentially distracting and harmful. These children, then, have grown up socialised to a variety of alternative indoor and outdoor activities, therefore favouring offline activities, such as sports, bike rides with all the family, inventing and performing their own stories, playing with dolls, Barbie or Lego, watching movies together and reading books at bedtime etc. For example, when asked about what they prefer to do with their parents, I10g and I1yg reply: *“spending time together! We ride the bicycle or watch movies together”*.

Children in this pilot study also experienced many temporal constraints that limited their engagement with digital media, beyond parental mediation: their after school time is structured around many activities and programmes, so that the time left for technologies is limited to around an hour before dinner. Some parents took advantage of the good weather conditions by further extending the time children spend outside, so in certain cases children returned home only at 7pm and were allowed to watch TV or play games on various devices for even shorter periods.

Skills

The children who took part in this pilot study are mainly low or medium users of digital devices, as their screen time is below or around two hours per day. Nonetheless, most children possess basic operational skills: most are able to locate the folder with gaming Apps on the tablet or smartphone, to start the game and play, and select the game level even when they are not yet confident in reading. Similarly, most children are familiar with the iOS interface on the researcher's iPhone, as they occasionally use their parents phone or they have familiarised with it on an iPad.

Children also have most advanced skills including:

- type in the passcode and start the tablet/smartphone - for example, I8yg could find out her mother's passcode by observing her typing it, and she is now able to use her iPhone autonomously;
- use photo-editing apps (favoured especially by children who include photography among their hobbies);
- organise folders of apps;
- access the Apple store and identify the free apps that the child is allowed to download: for example I7ob explains: *"I choose the gaming apps on my own from the AppStore, but I am only allowed to choose for free apps [...] it is written when it is free"*
- take screenshots;
- search for videos on YouTube autonomously by *"typing in where you see the lens, then there are the small boxes [the videos]"* as I6ob says;
- search for games online (e.g. in gaming websites), as I7ob, who discovered Clash of Clans, one of his favourite games, on his own while looking for games on the internet.
- navigate children's websites such as Disney Junior, play games and print images to print. For example I2og had still reading difficulties. However, she was able to turn on the computer, select her account, type in her password, select the operating system (Windows rather than Ubuntu) and click on "the Fox" to open the browser. She then asked her father for help to open Disney Junior, but was then autonomous in navigating the website and locating the images made for printing. She then asked again her father to assist her in printing as she could not read 'print' on the menu bar;
- use WhatsApp to communicate with parents (while they are on holiday with grandparents) or, occasionally, with friends through mothers' phones.

Children have also learned some basic safety skills, associated with the potentially negative experiences they are more likely to encounter: most have learnt that they should press 'x' on pop ups to avoid in-app purchases. For example, I2og and I2yg show the researcher what they do on the old smartphone that they have access to: I2yg picks the app "Play Tales" and a pop up comes out, so her older sister tells her: *"you have to press x s this is advertisement."* Not all the interviewees, however, are always able to exit pop-ups and are often redirected to the App Store or Facebook, especially when the 'x' is disguised or when they are required to answer a 'yes' or 'no' question. Moreover, even the most skilled children, such as I7ob, report feeling sometimes powerless and unable to cope with pop-ups, so they end up turning off the smartphone or the tablet, and turning it on after a while. Indeed, 3 children have directly experienced commercial risks, such as subscribing to online services after accidentally clicking on a pop-up while playing games on parent's phones.

Usually, children find tablets easier than smartphones because of the screen size and the ease to click directly icons on the screen.

Children who are allowed to use technologies for longer (especially in families 2 and 7) are generally more skilled. However, average time spent using a particular device doesn't seem to be the only and primary element in reinforcing operational skills. Other factors such as the child's cognitive development (reading/writing competences, for example, is a crucial element in the management of software interfaces and in browsing activities) or support from other family members who drive the acquisition of digital skills and literacy are crucial elements too.

A range of people at home - parents, older siblings and other relatives such as grandparents and cousins - act as sources of support by helping children when things are difficult, monitoring activities, selecting suitable content and interactive apps. According to children, parents usually help them to become familiar with the technologies by engaging in shared online activities: e.g., searching videos, downloading games, selecting and printing drawings, use WhatsApp, learn how to deal with unexpected and problematic experiences such as pop ups and other technical difficulties. In family 1 and 5, grandfathers are recognised as the "technology expert" and consequently are identified as the main source of information. For example I10g explains that her grandfather taught her how to use the iPad and how to deal with pop ups, because *"he knows it all, he downloaded everything"*. Similarly, in family 5, the grandfather is in charge of selecting appropriate apps, and privileges more interactive apps rather than simply 'drag and drop' activities. Older siblings play also an important role in mediating their younger's brothers and sisters' approach to the online world and digital media: they teach them basic operational skills, and tend to complement or replace parental guidance. For example, I80b is the most skilled family member and he is responsible for his sister's online safety. So he created a profile on YouTube in order to prevent her from accidentally encounter inappropriate content: *"I8yg is only allowed on YouTube on her own, indeed I made it simpler for her by creating a profile on YouTube [...] it is more convenient, there's already a playlist of videos with no need to search and type in for new videos."* And he continues *"I8yg doesn't face any risk since all the games on the iPad, I downloaded for her. She can't download anything, I set a password on the App Store"*. Peers or cousins (occasionally also young uncles and aunts) also help children socialise with online technologies and opportunities, especially by introducing them to games. Finally, children report they learn through a process of trial and error and by looking at what their parents, siblings, other relatives and friends do. For example I5gf speaks of his grandchildren's experiences and explain: *"once I have shown them the procedure, they are autonomous... they learn by themselves how to browse pages and locate the app they were looking for, this was quick."*

Younger children with older siblings are facilitated in acquiring digital skills for two reasons: they usually socialise with digital technologies when they are younger, and they are actively supported by their older siblings. Parents and grandparents think individual dispositions to ITCs does also influence the acquisition of skills and helps explain differences between siblings. For example, in family 5 the younger girl is considered to be more digitally literate both because she started using technologies at a younger age both because she is more interested in it: I5gp *"I5og started using the iPad with some pre-school apps, counting items, hearing names, all in English, making easy puzzles, and slowly I5yg started too. Then the older got tired, as it was too easy, but the younger socialised it earlier and better, quicker than I5og, she started making puzzles quicker and easier"* and the mother adds *"the youngest is very technological, I don't like her to use it much because I have my own ideas, but she has a relationship... she is very intuitive, she likes it very much, while I5og is not very interested."*

All these different people therefore scaffolded children's learning with technologies in the acquisition of operational and safety skills, the prevention of online risks and the development of dispositions to learn (Marsh et al., 2014; Plowman, McPake and Stephen, 2008).

How are new (online) technologies perceived by the different family members?

Children's perception of (online) technologies

Most often, new technologies are not the focus of autonomous and reflexive perceptions *per se*, but only perceived in relation to concrete uses and compared to other practices/toys: it is easier for children to rate devices based on the activities they perform on a particular platform and in comparison with other leisure time activities.

Consequently, some children perceive technologies as complimentary tools, rather than central to their daily life: an additional opportunity to play and have fun, but not their favourite leisure time activity. When directly asked whether they would miss the device if they were no longer allowed to use it, their answer is positive. However, when they spontaneously mention their favourite leisure time activities, they barely mention online activities. For example, I10g said she would miss books more, as *"I love reading."*

By contrast, other children - especially those who use ICTs less - value technologies more as a magic object that help them access the variety of games and opportunities that older siblings, older cousins or, exceptionally, peers, have already had access to. Therefore, they express a fascination for ICTs and frame them in an aspirational dimension.

Positive perceptions of ICTs among children include the idea of online technologies as entertainment devices (a way to "relax" as I70b, a seven-year-old boy says, completely adhering to his father's language and view of technologies), as educational devices (praised for educational apps and tools), as spaces of autonomy from younger siblings.

Contrary to parents, children value the portability of devices: as anticipated, I70b indicates the smartphone as his preferred device for being small, portable and private. Similarly, among the gaming technologies that their older cousin owns, I40b and I4yg favourite the Nintendo over other systems such as the Wii because it can be easily carried away from home (e.g., on holiday). This family provides also an example of how parents resist and regulate unsupervised access to technologies: indeed, the boys had broken their piggy bank in order to buy a gaming console. The acquisition of the device was carefully mediated by the mother, who was looking for an older version of the Wii in order to avoid buying the Wii U tablet, that would have allowed children to play in their own bedroom.

Children this age - and the low- or medium- users we interviewed more specifically- have a limited or no perception of online risks. Nonetheless, two main negative views of online technologies emerged, one more related to the child's direct experience and one more adherent to parental mediation. The first includes problematic experiences with pop ups and in-app purchases, whereby children have accidentally subscribed to services or downloaded apps and got in trouble with their parents. For example, I9yg tells about her negative experience with her father's smartphone: *"the smartphone, if you click on a commercial, you might end up wasting money. It happened to me once on dad's phone, when dad didn't set it to the offline mode. I was playing a make-up game and I went on an*

advertisement so I spent money." Her experience led to both twins develop awareness and safety skills, as her brother, I9yb, immediately adds: *"the Nintendo might be dangerous too, since it happens I click on things by accident."* Direct experience of commercial risks, however, is not automatically associated with greater awareness of online risks, as anticipated. For example, I2og also experienced a commercial risk - she subscribed to a service, as her parents told the researchers - but she does not believe any problematic experience may happen on the smartphones or other devices.

The second negative perception of technologies that some children emphasise mirrors the main concerns express by adults (parents and grandparents alike) and relates to the belief over use of these devices is associated with negative health issues, such as damaging sight or becoming dull. For example, I5ob says speaking about his passion for videogames, and his mother's restrictions: *"Then I played on my mum's smartphone, but just once because she hates videogames. She doesn't want us to become idiots! That's why also my cousin is allowed to play on the Wii for no more than one hour"*. Similarly, I7ob's word reflect his grandparents concerns for screen time as in the following conversation:

I7ob: "you have to be careful not to use these things too much, otherwise you lose sight"

Interviewer: "how do you know?"

Grandmother: "we keep on telling him!"

More generally, however, children do not associate technologies with specific risks. They are mostly worried about being careful not to let the device fall and break. This perception is also mediated by parents, as one grandfather (I5gf) explains: *"First I taught them how to use the iPad without making it fall, so they were sitting on the sofa, then I taught them how to handle it, showing thta if you rotate the device, the image also rotates, etc."*

Also, children sometimes children sometimes express feeling uncomfortable with certain devices: more specifically, they feel uncomfortable with smartphones, compared to tablets or computer, as the screen is smaller so they feel they have less control on icons and pop ups.

Parental perceptions of (online) technologies

Parental perceptions of the potential opportunities and risks of technologies inform children's own attitudes and perceptions, and directly shape the availability of technological items and online activities that children had to explore. At the same time, parents' own views of children's use of online technologies are shaped by their own experiences and uses of ICTs. Consequently, parents who are, or have been, themselves fond of videogames tend to encourage their children's use of the computer, the smartphone and game consoles also as a way to develop digital skills. For example, two sisters (I2), whose parents use ICTs to play, experiment with many devices and apps (a smartphone, portable game consoles and the family's desktop computers). The older sister's skills are among the most advanced that we observed, along with I7ob's - whose father was also a passionate of videogames when he was younger. However, sometimes parents who feel they overuse the computer for work, tend to limit the use of technologies at home, especially in the evening and after dinner.

Positively, new technologies (especially tablets and apps) are perceived by parents and

grandparents as educational tools that help stimulate children's cognitive development. For example, the selection of apps for children in family 5 is aimed at avoiding repetitive drag and drop activities in favour of more interactive games; pre-school apps designed to develop toddler's abilities are favoured. Children are also encouraged to pick a different app every time they use the grandfather's iPad. More generally, tablets are viewed as a way to pursue the child's interests in a safe environment (e.g. watching videos on YouTube instead of watching "stupid" or inappropriate cartoons on TV). The opportunity to develop digital skills and experiment with the online world in a safe way (the Disney website for example) is also part of parents' positive narratives around tablets. Parents also value apps that complement other offline practices, such as novel-reading apps. Some parents, therefore, felt that operational competences were "essential for the digital age" (Marsh et al., 2014, p. 5).

Parents who expressed more positive views of their children's engagement with new technologies also seemed to adhere to the "digital natives" discourse. For example, as soon as the researchers entered the home, I2m commented: *"these touch [screen] devices are really made for children, I notice that, not my generation, but my parents' generation, they are so awkward with these tools!"*

Among the negative aspects, parents tend to perceive the use of ICTs as potentially detrimental to face to face relationships and shared activities within the family: opposed to Lego or fantasy games, that stimulate creativity and co-use, gaming on ICTs is perceived as highly individualised and isolating. As a consequence parents fear unsupervised use of portable devices. As already mentioned, in Family 4, children said they have broken the piggy bank, and they were about to buy a Wii with their own savings. However, the mother told us she was looking for a second-hand or an old Wii model because the new version comes with a portable game pad.

Other risk perceptions, directly expressed by parents or informing their mediation strategies, include:

- Health issues: parents perceive online games, and online activities in general, as hyper-stimulating children, affecting sleep (children are too nervous to sleep, or dream of the videogame) and behaviour (children overreacting when their game is interrupted by parents). For example, parents in interview 7 tell they had limited their child's engagement with the Star Wars game for Play Station as the game was *"too stressful for him"* and compromising sleep, as he had started dreaming about the game. While I6m realized her son's behaviour was becoming more aggressive when parents interrupted his gaming: *"He had difficulties in stopping the game, and when he eventually stopped playing he was more nervous."*
- Overuse is also raised by most parents, who especially blame technologies for favouring the child's isolation (withdrawal from face to face interactions with siblings, parents, and peers) and loss of creativity (the child being unable to find creative activities if he is not given a smartphone to play with). These are the main dangerous side effects of the use of technologies beyond health issues. For example, in family 6, the parents decided to regulate their boy's use of the smartphone and the game console to play since they observed he just wanted to play on the smartphone and was unable to find more creative ways to employ his leisure time. I6f told the researchers: *"we realized he was going above the line... he didn't do anything else..."* And I6m: *"he used to read and make drawings before... and then, if he didn't play with the smartphone he couldn't find anything else to do, even if he has always been very creative, and this is a pity. There was also less communication with us, and when we said 'stop it' he got angry"*.

- Inappropriate content: parents generally felt safe as their children were not yet completely autonomous in online searches, even because some were not yet confident in reading and writing. Even when they are alone online, parents feel children are left in safe environments such as the Disney website. One mother (I3m) reported a negative experience with inappropriate content, with her daughter finding parodies for Frozen that were not appropriate for younger children (though not pornographic). The girl, however, was not aware of this potentially problematic experience as she did not mention it with researchers.
- Commercial risks: some parents told researchers about their children's negative experiences with pop-ups and in-app purchases. However, they tend to have a fatalistic approach towards commercial risks: while they adopt a set of coping measures once the child has had a negative experience (such as preventing the child from accessing the device for some time, or providing offline only access), they recognise it is easy to get confused by pop-ups and make mistakes. While they occasionally deem telecom operators and service providers as responsible for these incidents, they tend to frame these risks as inevitable.

In general, parents perceived their children as being relatively safe and not yet vulnerable to online risks, since their children have not yet engaged in relational uses of new technologies and have not expressed any interest in social networking sites and messaging apps. Like parents in other countries, therefore, Italian parents postpone online risks to the future, when their children will be pre-teens or teens. While this postponement of potentially harmful consequences of online media use is consistent across the countries included in this pilot study, its motivation also lies in cross-cultural variation, with Italian parents being very concerned with the so-called “**stranger danger**” and risky contact on social network sites. The following excerpt from the interview with family 8 is emblematic of the concern for inappropriate contact with strangers:

I8ob: “I have a profile on Facebook, but I never use it, just for school assignments that I have asked on Facebook... so we have Facebook but our profile is blocked [private] those who are not in your contact list cannot see your”

Interviewer asks I8yg: “are you also on Facebook?”

and I8ob replies: “of course not! good thing I have it, as Facebook is very dangerous and you need to be aware of what you are doing. My mother told me many people have been kidnapped”

What role do these new (online) technologies play in the children's and parents' lives?

New online technologies tend to have a minor role in children's and parent's lives.

Parents, in particular, emphasize the importance and the centrality of a wide range of “**non-mediated**”, “**non-technological**” activities involving children, both indoor (playing between siblings and with parents, engaging in creative works and activities, reading books or comics, listening to music, inventing games imagining fantasy worlds) and outdoor (spending free time going around with family, playing outside with other children, playing sports and engaging in artistic or cultural activities).

On the other side children seem to look at new technologies with great interest and fascination: these are object of desire and to achieve; “magical tools” to discover and to

experiment new way to play and entertain themselves. However, beyond this fascination and “magnetic” power, **new technologies tend to play a secondary role in children’s lives**: new technologies have not replaced traditional game and entertainment activities; they are often used in limited situations, for a few minutes; while being subject to a high engagement and investment, their use fills a residual part of children’s everyday life.

Television and television content still play a central role in children’s media usage. First of all television remains the most used media platform inside the household: all the children watch television contents on daily basis (mostly children’s television programs, but also generalist contents as football matches, cooking tutorial formats, talent shows and Italian fiction). In addition to this, television contents are probably the most important drivers for children’s online researches and explorations: children use YouTube to watch TV programs (Peppa Pig, My Little Pony, Attacker You! and to listen TV programs songs and soundtrack (Violetta) episodes on the iPad; they browse the web looking for information and contents taken from television (Disney Junior web site). Summarizing: online activities are quite limited and they are strongly driven by television consumptions.

Inside the family and the household’s economy, new (digital) technology represents both a challenge and a resource. On one side children’s digital media use is perceived as something problematic that needs to be carefully regulated and controlled: digital media and new technology contribute to make family management more complicated (use restrictions by parents; quarrels between siblings). On the other side these tools are seen as available resources to encourage social interactions inside the household.

Anyway, the impact of new technology in the children’s life seems to be mainly related to the dimension of gaming and of audio-visual contents consumption. They are mostly seen by children as game platforms (tablet and smartphone too) or as tools to extend the possibilities for music and television contents consumption (to provide catch-up and non linear access to content).

Relational and communicative uses of new technology are generally still far to be explored by children. Online activities are (almost) exclusively content oriented (watching music video or TV programs and download games) and not social oriented, mostly relegated inside YouTube walled garden and the app stores.

How important are new (online) technologies for the children themselves?

As we have said before, children are generally allowed to use new technologies a few minutes a day, in specific and well regulated moments of the day. So ICTs use is restricted not only from the quantitative point of view (average minutes spent using PC, tablet, smartphone or game consoles) but is also delimited to specific temporary slot of the day (and, in particular, of the afternoon): after school or homework, and in the evening, before dinner. Media use is forbidden in the early morning, at school, during the afternoon and – in most cases – after dinner.

The perceived relevance of ICTs to the child is quite independent from their own use and the amount of parental regulation: there are cases where the children have limited access to ICTs (mainly outside the home, mediated by cousins or young uncles, for example) but still deem ICTs are very important for their life. In other households, where children are educated to enjoy a variety of offline activities, such as reading and extra-domestic

activities (museums, walks, sports, etc.), online technologies are not perceived as so important and not valued.

Children's everyday life tends to be quite saturated during the weekdays and no so much time remains to spend using digital technologies. The most part of the day is committed to do homework and to do extra-scholastic activities (spending time outdoor, playing with traditional "non-online" games, interacting with other members of the family). New technologies compete with television in certain parts of the day: afterschool (when children are allowed to watch some TV or to play videogames to relax themselves) and in the late afternoon, after homework and other extra-scholastic activities.

In respect to gender differences, boys seem to display a deeper engagement in new technology use; they are far more attracted by game consoles (portable or not) and by the use of tablets, smartphones e pcs as gaming platform. Children said they have broken the piggy bank, and they were about to buy a Wii with their own savings; tablet and portable consoles have often been described as their favourite entertainment tools. On the other side girls seem to keep a deeper engagement in television contents, starting to switch from preschool and animation programs (Peppa Pig, The Winx, Pippi Longstocking, My Little Pony) to live action and tweens targeted contents (Violetta). In regard to this, as we have already said, new technologies are mostly used as a tool to catch up with television content and to extend television viewing experience.

How important are new (online) technologies for the parents themselves?

We found different approaches regarding digital technologies and parents' use. Most parents use digital technologies everyday, at work and at home; smartphones are available in all the households and represent in most cases the main digital device. Smartphones support all the main "digital activities" of the parents: gaming, browsing the web, watching audio-visual contents, interacting with other people via WhatsApp and Facebook.

The computer is also universally available (all families have at least one computer, usually a laptop) but is perceived more as working and production-oriented technology. Family invested in portable device as smartphones and tablets: computer available in the households are often dated; parents and children use them only in some limited occasions.

Most parents use technologies as work and communication tools, and, consequently, tend to limit their own and their children's use of online technologies to a set of approved activities (educational apps, selected content on YouTube etc.). Anyhow they encourage especially offline and non technologically-mediated activities which stimulate interactions between family members: reading books together, playing board games, enjoying outdoor activities, watching series and film on the TV. They try to promote more creative and stimulating ways of spending free time inside and outside the household: on the one hand time is perceived as a scarce resource and so a time-spending approach to new technology is judged negatively; on the other side they tend to consider not enough stimulating most of the technology mediated activities (children are too young to spend much time playing with technologies; according to parents traditional activities are more efficient in stimulating creativity, imagination and cognitive and time management abilities).

Parents who perceive and use ICTs also as entertainment tools are more open to letting their children use technologies. More specifically, parents who are or have been themselves gamers, perceive gaming non as a useless loss of time: **"smart" games** (stimulating and intelligent

ones) are perceived as a resource useful to develop children's cognitive abilities and an opportunity for the child to reinforce digital skills, essential for the future.

Some parents acknowledge a deep engagement in new technologies use: they love gaming and using social network sites on the smartphone and watching videos, shopping and booking tickets using the iPad; at the same time most of them they consider such activities not suitable for children (technology mediated activities, in general, are something that should be limited and restricted).

A minority of parents proudly declare a low familiarity with digital technology: digital media are essential at the office, but in the leisure time they look for more traditional ways of entertainment, and so they wish and promote for their children (e.g. playing with traditional Subbuteo board game instead using a game console).

How important are new (online) technologies for family life?

As we said, new online technologies tend to have a minor role in children's and parent's lives. Parents, in particular, emphasise the importance and the centrality of a wide range of indoor and outdoor **“non-mediated” “non-technological” activities** involving children.

Regarding media consumption, television and television contents still play a central role in children's media usage: TV is the most used media platform and, at the same time, television contents represents the most important drivers for children's online researches and explorations. In addition, parents often try to promote traditional and non-technological strategy of entertainment: board games, fantasy e creative games, cards. All these things contribute to restrict the impact and the role of new digital technology inside the households.

Nevertheless, most of the parents claim they spend time using digital media with children. New technologies provide the opportunity for parents and children, and sometimes grandparents and children, to share interests and cultural products. Many parents reported showing their children their favourite cartoons; a mother transmitted her daughter love for volleyball and now, together, they search for Attacker You! episodes on the iPad.

At the same time children reported sharing the same love for photography as their parents: they use their parents' smartphone to take picture and to watch family shoots.

As television remains the main tool for shared consumption of media content (as we said, not only children targeted programs but also more general ones, as tutorial and talent cookery shows and football matches), some parents and children use YouTube to enjoy television clips (mainly Italian comedy shows).

As anticipated, technologies play also a role in supporting intra-generational bonds, such as between grandparents and grandchildren.

Are there any technologies employed by the whole family or when the family members are together?

In general things that brought families together were not technology-driven: they went for walks, rides, watched TV.

Television remains the main tool for shared consumption of media content, but some parents and children use YouTube to enjoy television clips.

In the weekdays after dinner television consumption is generally limited and restricted; at the end of the week (Friday and Saturday night) children are allowed to stay up later, watching television with parents. These are reported to be the main temporary slots for a shared television consumption; favourite programs include movies, Italian TV series (Montalbano), talent shows suitable for family viewing (e.g. Master Chef) and football matches.

With regard to game consoles, the Wii is perceived more as a family device: it's suitable in stimulating children's activity (it's not perceived as a "passive" medium) and interaction between family members; it is used by fathers and children together and is not gender oriented as PlayStation seems to be). PlayStation is also perceived as an isolating technology: while Wii interests all the family members, PlayStation promotes mainly an individual engagement (and it's addressed to a male target).

Children and parents also use together the iPad and the computer, despite parents tend also to encourage their children autonomous experimenting with these devices: most of online activities are circumscribed inside YouTube platform, which is perceived as a safe environment.

Out of home smartphones are used by children and other member of the family to make and watch photos: most of the children are able to autonomously use the integrated camera on the smartphones and to brows photo libraries.

Does young children's use of (online) technologies interfere in any way with family life? How? Why?

Digital media use is often perceived as something problematic that needs to be carefully regulated and controlled: digital media and new technology contribute to make family management more complicated (use restrictions by parents; quarrels between siblings). Parents tend to perceive the use of ICTs as potentially eroding face to face relationship within the family: while using videogames children appear to parents to be excessively focused, overwhelmed and almost hypnotized, growing apart from the other member of the family.

Most parents tend also to perceive online games and online activities in general as hyper-stimulating children, affecting sleep (children are too nervous to sleep, or dream of the videogame) and behaviour (children overreacting when parents ask them to stop gaming).

Both these issues ("isolation" and "hyper-stimulating") are clearly reported by a significant part of parents and they both affected mediation strategies and usage rules. Facing these problems and being aware about these risks, parent opted for a restriction and for a more limited use of new digital technologies.

Parents generally condemn the use of ICTs as babysitters; however, some mothers admit using the TV as a babysitter while they are cooking or doing other domestic chores, but this didn't seem to have negatively affected family interaction. In this particular perspective, television and digital media are perceived as useful tool in family life management, but only in some specific and delimited moments of the day. Parents are well conscious that their presence, attention and contribution are essential in driving children's media consumption.

Parents themselves tend to avoid using technologies at home for activities that cannot be shared by their children (work). Indeed, one child lamented her dad hides in the office with his computer alone (to work) during weekends.

In general we saw that things that brought families together are not technology-driven. As we said new technologies represent a marginal part in families' everyday life and they don't seem to deeply affect family interaction. Most of the social activity inside the family still concerns non digital and non online activities as going out for walks and bicycle rides, playing and watch television together.

Is parenthood affected in any ways by the use of new (online) technologies? How? Why?

One consequence of ICTs in terms of parenting is increased relationship with other parents to coordinate shared activities (birthdays, class trips, football matches etc.): one mother tells she was surprised because when they set the WhatsApp group of the class to keep in touch amongst mothers, only 4 out of 25 mothers did not use WhatsApp. Other parents tell they bring the iPad on holiday also in order to be able to read emails and keep up with the news from different activities and network in which their son is involved.

As we saw sometimes TV and digital technologies helps parents in managing children and family life (using the TV as a babysitter while mother is cooking or doing other domestic chores). In general children's digital media use is perceived as potentially problematic, thus needing to be carefully regulated and controlled, demanding specific strategies and decisions and generating doubts and frustrations (Are we too restrictive? Or too permissive? Will our children pay for our restrictive approach? Are we trying to slow down a natural and unstoppable process?).

However, parents are also well aware that the major challenges are still yet to come, when their children will start using digital and online technology as communicative and social tools, browsing autonomously the web, using social network sites and asking for a personal mobile phone.

How do parents manage their younger children's use of (online) technologies?

Do parents share activities/values, encourage, and educate children with the help of (online) technologies? How?

The mediation of children's use of (online) technologies is a complicated and multifaceted issue: parents struggle to find a good balance between limiting their children's use of digital devices, allowing them to explore and have fun with technologies and encouraging a constructive use. According to which of these attitudes prevail (not necessary just one) different strategies of mediation are adopted. The literature on parental mediation of children's television viewing includes some useful concepts to deal with this issue, such as those of "active mediation", "restrictive mediation" and "co-use" (Valkenburg et al., 1999). These concepts have already been reviewed to embrace the specificity of internet mediation (e.g. Livingstone & Helsper, 2008; Clark, 2011) and should probably be reviewed again to define mediation of very young children's access to digital technologies. Besides regulating their children access and use of digital technologies adopting various forms of restrictive mediation (see the rest of this section), parents also share activities and educate children through these devices engaging in different practices of co-use and active mediation.

Some parents share their own interests with their children with the aid of online technologies. For example, one mother (I1m), who is a biologist, uses scientific apps to

explain her daughter what her job is about (beyond occasionally bringing her to the labs on Sundays “to feed the cells”). Especially tablets and smartphones offer innovative ways to spend time together and have fun as a family. Most of the time parents and children consume together entertainment content and share particular interests using YouTube or games such as a mother (family 3) who introduces her daughter to her youthful involvement in volleyball (searching for Mila and Shiro videos or volleyball matches on YouTube), a father (family 7) who shares his interests for PlayStation games (carefully selecting parts of the game that are appropriate to play with his seven-years-old boy) and a family (1) that gathers in front of the iPad to watch one of their favourite shows on demand (with the SkyGo App). A few families (for example 15) have also already tried using WhatsApp with their younger children, usually mothers helps them to send messages (accessing to their personal account) or are happy to receive photos and texts while their children are on vacations with grandfathers.

Even if parents should also be in charge of selecting good apps and games for their children, they seem to be more focused on regulating screen-time and balancing digital media use with other everyday activities. Most of the time, members of the extended family (or older siblings) have a more significant role in guiding children among the educational and technological opportunities of these devices. Grandfathers, aunts, cousins, and older siblings are usually important sources of information for children. Grandfathers, especially, may **be particularly engaged in “active mediation”**: they look for educational apps, thoughtfully selecting the best ones for their granddaughters, they buy high-quality apps, they explain how to use those apps, they show what an iPad can do and how it should be used, sometimes they even take their granddaughters at the Apple Store.

Cousins instead introduce **children into the ‘fantastic world’ of video-games**, console and tablets. They are usually mentioned by children living in highly regulated and restricted households as the ones owning the devices they wish they had. Thanks to cousins, children have the chance to try the most recent games and use the last technological gadgets. The information they share is, without any doubts, less educational compared to grandparents’, but still it is a source of information that helps them stay up-to-date with their peers.

Aunt and uncles, especially if young, could be a sort of intermediate figure between the previous two: they give technological presents to children and introduce them to new games and apps.

Finally, at times, older siblings have a prominent role in conducting active mediation. They can also replace parents adopting a more constructive approach. For example, in one household (family 8) the older boy aged 12 created an account on YouTube and a playlist of videos in order to prevent his sister from accessing inappropriate content, while parents only adopted time restrictions.

What rules are set?

The majority of parents perceive rules as effective tools to educate children and teach them how to self-regulate. Most of the parents portray themselves as **“very strict”** for their style of mediation. Some mothers emphasise their inflexible approach in the regulation of digital media use and television viewing labelling themselves in sarcastic ways: *“I am a bulldog”* (I9m), *“here we don’t use digital technologies a lot, because mum is half German”* (I5m), *“I feel like I am the wicked witch mother”* (I10m).

Occasionally, the use of restrictions is questioned as potentially compromising children's acquisition of digital skills and their inclusion in peers networks: for example, one mother (I6m) questioned her approach as she didn't want her child to be the less expert with videogames amongst his peers. Some fathers seem to be less involved in mediating their children's media use and occasionally their presence allow some rules infractions.

Of course it is difficult to attest to what extent these discourses correspond to a very strict mediation in everyday life. However, it is notable that in only family we have found little emphasis on the importance of restrictive mediation (family 7). Here mediation was mainly based on monitoring and co-use (between father and son and between son and little siblings). However, also in this family, the mother is the one in charge of being "*the bad one*". When she sees her child spending too much time playing on the iPad or at the PlayStation, sometimes with his dad, she uses to "*scream loudly at him (or them)*" so that he stop.

There are different rules concerning several matters such as: screen-time, autonomy of use and permitted activities. Moreover, additional restrictive rules occur when the devices are used as a reward or a punishment.

1. Setting limits to screen-time

The most common rule is the temporal limit for ICTs use and television viewing. Typically children are not allowed to use digital devices, especially tablets and game console, for more than a certain amount of time. In families where rules are stricter the temporal limit can be very short, while others don't set a specific amount of time and parents decide each time when intervene to stop the child from using the device (I5gf: "*(the iPad) No more than a certain time... That is, no more than 20 or 30 minutes of continuous play by both children together*"; I10m: "*she can use the iPad no more than 15 minutes a day*").

Moreover in many families digital devices (and television) are banned in certain times of the day such as mornings and evenings. The most problematic moment is the evening after dinner because digital technologies (and in some cases television) can be over-stimulating, children may become irritated and have difficulties to sleep (I9f: "*For the Wii there are the same rules as for the other devices: no use after dinner (...) we are trying to abolish technology after dinner because we have seen the effect... They were excited and lose concentration (...) now after dinner we relax*").

2. Limiting children's autonomy

Besides a few exceptions (family 7 and 8), children must ask their parents' permission before using digital devices. Overall, children don't have a lot of autonomy and cannot freely use media and technologies located in their house. As I3yg, a 4-year-old girl, puts it: "*we have to ask permission for everything, wee-wee included!*". To prevent the child accessing tablets or smartphones without consent, some parents protect them with a passcode, which sometimes it is later disclosed to the child once she has interiorised the (time) rules and has obtained parents' trust (Family 1). More often parents adopt particular strategies to limit their children's autonomy in accessing digital media and television such as locating the tablet on high shelves (I1f: "*when they want to use the iPad and other technologies they have to ask us, also because they are located in places they cannot reach [laughing]*") or hiding the remote control to prevent children from changing TV channel. Some strategies, indeed quite complicated and muddled, discourage an autonomous use of the device. For example, in one family (2), two children (5 and 6 years old) own an old smartphone with pre-installed games

and connected to the domestic wifi network, but, in order to use it, they must request their mother's battery because it has an old one, which doesn't function anymore. Usually for this reason, the two children find more convenient to use their father smartphone once he is back from work.

Undoubtedly, the most drastic way to limit children's autonomy is not buying them a personal digital device (besides toy technologies) and do not introduce tablets or consoles in the house. In these circumstances, however, children have still access to a mobile device that is their parents' smartphone. Even in the most restrictive families, at least one of the two parents, had lent his/hers own personal smartphone to the child to play with games and photos. Even if in this way parents feel more in control, this strategy doesn't seem the best solution because it introduces a new set of problems (see family 4 and 9). Usually parents stop lending their own smartphone once the child has access to a personal device.

Children who don't have to ask their parents' permission to use a device are from "media rich" families where there is more than one tablet (family 7 and 8). Besides allowing an autonomous access to the device (but still set temporal limits), parents of these families have a greater consideration of their children's agency. In family 7, for example, parents understand the need of their son to relax and have a time of his own when playing with his iPad (free from the pressing requests of his little siblings): *"(the iPad) is a little time where he can relax, it is a moment for his own, for his stuff, and then perhaps he comes to tell them to you"*. Similarly, Im8 appreciates her older son (12 years old) learning while experimenting with digital technologies and, even if with some reluctance, values her daughter's (7 years old) great interest for Minecraft, that is considered a more constructive game compared to the majority of other apps.

3. Permitted activities

Restrictions are applied on specific activities that may not be done without adult supervision or are entirely forbidden. Children usually are not allowed to download apps autonomously, but this rule is applied in different ways: from children who don't even know how to locate the App Store (or Google Play) because their parents are in charge of choosing and installing the apps, to children who browse the Store with an adult and can distinguish free apps from paid apps. In the majority of cases children have to download apps together with parents or grandparents, even if exceptions exist (child in family 7 who is allowed to download free apps and child in family 8 who can ask her older brother to do so).

Access to YouTube is another activity that is allowed, but with restrictions. A common rule, again, is that an adult must be next to the child or at least in the same room: being able to glance at what the child is doing or listening is important for all parents (I8m: *"she goes on Google and then open YouTube... always under control because I am scared about those things"*). Parents typically allow their children to access YouTube and trust the website for not showing particularly inappropriate content. Their intervention is often necessary though. Examples of "negative contents" the kids bumped into and required parents interventions include: violent videos about weapons (who may pop up if a boy looks for videos about wars), gore parodies of My Little Pony cartoons and sexy parodies of the movie Frozen. Some parents even adopt particular strategies to control what the child is viewing on YouTube (I7f: *"I type the keywords in YouTube's search engine and I look at the first twenty results, if they are OK, I let him watch them"*, *"I have to know what she wants to look for in YouTube, she is always motorized"*). One father, instead, says he is not worried about restricting YouTube because his children accessed through his personal account (on his smartphone) and YouTube keeps

proposing them content similar to what they usually watch (mostly cartoons), I2f: *“I no longer check on them (while they use YouTube), because more or less we know what they are doing... They go on the YouTube app... Luckily the YouTube’s account suggest them what they already like, by now my account is all about the Winx and My Little Pony, also when I access at work [laughing]”*.

More broadly, children are restricted in terms of what they can do with mobile digital devices. Most of the time their access is limited to a folder or a page - on the tablet or on their parents’ smartphones - they have learnt to identify (usually labelled “game folder”). Less frequently, instead, they must avoid their parents’ folder or apps (sometimes named “mum and dad folder”). We haven’t heard of any cases in which children did not respect such restrictions. In a way, even if it is a restrictive measure, this arrangement gives the children a certain degree of autonomy, as the grandfather in family 5 sharing his iPad with his little granddaughters puts it: *“they know there is page in the iPad dedicated to them, so they go there, then they tap on the apps according to what they fancy in that moment”*.

4. Rewards and punishments

Digital devices are also used as a reward or (more often) as a punishment for misbehaviour and school failures. In families with a high degree of restrictive mediation (such as 10) this is a strategy to further limit the child’s screen time and children do not complaint too much. In media rich families (such as 8) it can be perceived as very severe punishment, almost unbearable, as the mother articulates: *“she was not good at school and, for the first time, for two day she couldn’t use the tablet. Contrarily from her brother (who had been without tablet for weeks in the past), she complained a lot, she kept demanding to use it anyway saying ‘please, mom, forgive me! Please!’”*. However, in many families the prohibition of watching TV and using digital media is a common punishment, as I30g explains: *“when we are grounded, we can’t use all the digital devices (and TV), otherwise which kind of punishment is it?”*.

Why and when are these rules created?

Rules set by parents to regulate their children’s digital media use are not fixed and change over time. Except for limits on screen-time, all rules are also open to different interpretations according to the specific setting, time, device and child. Moreover parents often struggle to describe them in details.

Usually most restrictive parents are the ones who provide devices with a clear set of rules from the beginning, even if they may become less restrictive as time goes by.

Rules making (and rules changing) often depends on problematic issues with children and digital devices. Indeed in some cases parents create new rules (or simply new restrictions) as a way to deal with problematic issues such as overuse or loss of interest for other activities. Parents in family 6 (a very restrictive and “traditional media” house) decided to drastically reduce access to digital media to their male seven-years-old child after noticing changes in his behaviour: less creative play, addiction and increased irritability. The child used to had access to his parents old smartphones, mainly for playing games and YouTube, and the Wii, but at the moment of the interview he could only play the Wii during weekends or access his mother smartphone: his old smartphones vanished because his mother took them away.

A less extreme reaction is the one found by parents in family 7, a media rich home. At the age of 5 or 6, their child was very passionate about the PlayStation game Lego Star Wars. When

he started dreaming about the Lego puppets, they forbid him to play with it again (but they did not completely forbid him to play). The mother tells what happened: *“we noticed a game that was too much stressful for him, Lego Star Wars, there was a time in which he also dream about Lego at night, probably it made him anxious, so for that period we suspended that game”*, the father adds: *“yes but probably because it was his first game on the PlayStation and he played too much”*.

Do these rules vary according to the type of technology being used?

All children, especially those who don't have access to a tablet at home, ask their parents to use their smartphones at least occasionally. There are parents who don't agree to give their phones to their children because it may compromise their personal relationships (a mother, I6m, does not want her son to look at her WhatsApp as she is afraid he might write something) or their professional activity (*“I use it a lot for work, so there's a total ban on my smartphone”* says one father, I6f). On the other side, some parents actually do lend their phones to their children, both in the house and outside. However, they hold different attitudes regarding the use of this device: most of them think children can use their smartphones only under extraordinary conditions, such as during a long drive by car or while in line at the supermarket. A minority, instead, give it to them very often to compensate the fact that the child don't have a tablet. This is especially true in family 9, where a boy use his mother's smartphone to play the same games of his older brother who owns a tablet.

Rules regarding smartphone use tend to become stricter as time goes by. Many children used to access their parents' smartphone to play in the past, but have stopped or almost stopped at the moment of the interview. This happened because the device is extremely difficult to manage, much more than a tablet. For example, some children subscribed without knowing to pay content using their parents' smartphone and after that episode were banned from using the device (family 4), while one girl found out about a gift, that should be a surprise for her, looking into her mother WhatsApp messages (family 10). Mostly, though, parents start getting annoyed by the continuous requests of using their personal devices, that's why when a tablet is introduced in a family the use of parents' smartphone by children decreased significantly (I1m: *“one year ago, I used to download apps for my daughters also on my smartphone, to amuse and engage them, afterwards I understood that this would have enormously tied me (...) I understood that every time I hold the phone in my hand they told me ‘give it to me I want to see Ben (a character of an app)’ so I deleted everything and now I do not keep amusing apps on my phone”*).

The computer, or any other device which is relevant for parents' professional activities, is strictly monitored and regulated. Children, however, usually do not hold a particular interest in computers because they are not perceived as game: many parents, in fact, keep their laptops closed and out of sight during the day and the evening and do not use them while children are still awake.

What are children's understandings of and responses to the rules set by parents?

Despite the massive use of restrictive mediation in all families, very rarely children lament about their parents' regulation during the interviews (even if there are exceptions: *“I would like to always have the iPad, without asking permission to mom”*).

Typically there are two kinds of responses to the rules set by parents. In the majority of cases children have completely interiorized parental rules. Their parents' explanations about why something is forbidden (or should be limited) are also theirs: a girl (I10g) says she doesn't watch a cartoon because it is frightening (only to later admit that it is not really scary, but her mother doesn't like it), another girl (I10g) hates videogames because they make you stupid (like her mother always says), a boy (I70b) thinks videogames could be used to relax yourself once in awhile (exactly as his father says during the interview), and so on. The normalization of parental discourse has a positive effect because children after a while follow the rules without the need of adult intervention. That's particularly positive regarding the regulation of screen time. For example in family 5, a highly restrictive family (with few digital devices), the grandfather says about the two children: *"the girls follow the rules regarding how long they can use the iPad (not more than half an hour) also because yes they are attracted to it, but also not really"*. So in most cases, parents are aware children have interiorized their opinions to a point that there is no need to constantly monitoring them (I10m: *"I am rigorous and I think have instilled in her this prudence"*, I1f: *"they have understood that for accessing digital devices they have to ask to parents first"*).

In some circumstances, instead, children are not fully aware parents are limiting their use of technologies. Children are sometimes just passive recipients of their parent's choices without understanding what is going on. For example they see changes in their tablet's configurations, discover that apps (games) they like are no longer on their devices or that a device is not anymore where it used to be, and so on, but they don't know why. Parental efforts to regulate their media use, in this case, are not understood by children they are less likely to be interiorized. As already mentioned, an interesting example of this dynamic emerged during an ice-breaker activity when all the family (6) was gathered together: the mother told the interviewers that she gave her son two old smartphones to play with, but changed her mind about this because of his behaviour. At that point the children added *"I cannot find them anymore"*, as if it was his mistake, but as the interviewers and the son discovered it was his mum hiding the smartphones and not telling him, until that precise moment.

Surprising findings

One of the most surprising finding emerged from the pilot study is the positive role at times played by grandparents, who are actively engaged in socialising children to online technologies, selecting appropriate content for their grandchildren, encouraging the acquisition of skills and digital literacy. Grandparents are also usually more permissive and complicit with the child, thus providing also those children who are highly regulated at home with the opportunity to experiment with new technologies.

A second remarkable finding is the observation of potential age divides in skills and self-confidence: for example, in one households (I5) parents and grandparents agreed that the younger girl (aged 4) was more confident with the iPad than her older sister. She was deemed to have learned more easily and faster how to use it, and her approach was perceived as being more *"natural"*. The impression of the younger sibling being more self-confident and comfortable when using the tablet was also confirmed by the direct observation of the two girls interacting with different apps. Similarly, parents in Family 1 note that their younger

daughter, aged 3, *“knows perfectly how to use it, she is much more skilled, the touch screen technology is perfect, at two years old and an half she could do everything, but she doesn't know how to manage it from an emotional point of view”* as I1f explains.

A consistent finding across households was also the emergence of contradictions, or inconsistent accounts by parents and children: more specifically, parents tend to value as important experiences for the child activities and experiences that the child has not mentioned and viceversa. This is the case with communicative abilities, with parents naming communicative practices (the use of Skype or WhatsApp) among the things the child is able to do and does at least occasionally, while the child does not even mention them. Another example concerns different perceptions of devices: I7f, for example, thinks that his seven-year-old boy does not appreciate the computer and finds it *“obsolete”* for it has not a touch screen. By contrast, the child is excited about having access to the computer and says this makes him feel older. Obviously, since his younger, two-year-old twins have also access to his own iPad, the computer (and the smartphone) are valued as symbolising his own autonomy and older age.

Less surprising, but still remarkable, is the observation that **being “a good parent”** is associated more with restrictions than with active engagement with children's online activities: the parents seemed eager to show they were limiting the screen time of children. Part of this restrictive approach to children's digital media is also the choice to lend children their own devices instead of giving them a device for private use. This choice, however, is counterproductive, as parents' smartphones are not set for being used by younger children: in-app purchases are a common risk of use of parents' smartphone by a child.

Method

Procedure

The present pilot study involved qualitative interviews in the domestic setting with children and their parents following a protocol developed by a team of researchers, including a JRC researcher. Each domestic visit was performed by a team of 2 experienced researchers per family and lasted at least one and a half hour. The interview schedule included a set of playful activities in order to engage the youngest children without pre-determining the content of the interaction, and had the following structure: introduction and briefing; ice-breaking activity with all family members; parents and children interviews; conclusion.

The sample included ten families selected among families with at least one 7 year old child who is starting second year in primary school, and older or younger siblings according with the recruitment plan agreed with the JRC.

The sampling procedure

The sampling strategy adopted by the research team was largely constrained by the ambitious timing of the project. As a consequence, it was impossible to go through schools in such a short span of time: the school had just started when the fieldwork initiated, and we know from prior research projects (EU Kids Online and Net Children Go Mobile) that getting access to a school can take up to several weeks of negotiations with the school principal. For these reason, we adopted a snowball sampling technique, asking colleagues and acquaintances with children in the second year of primary school to provide us contact with other families. The response rate was good: some families volunteered to take part to the study even when we had reached the sample size of 10 families, and only one family had to be replaced because they dropped out after an initial interest.

The families were first contacted via email and/or phone calls and sent an invitation letter including the consent form. Both the aim of the research and the consent form were indeed explained at the beginning of each interview. At the end of the interview, children were given the gifts provided by JRC - very appreciated - and parents received gasoline vouchers for 50 euros as a reward for their participation. The voucher was chosen also as a sampling strategy, to help us recruit also lower-income families.

The sample

We recognise that the sampling would have benefited from a longer time frame: having short time, it was easier to approach higher educated parents, who are generally more sensitive to research on these issues. If we wanted a more diverse and balanced sample, than a longer time frame must be expected and taken into account in the design of the research.

However it is remarkable to note that, despite almost all the parents who participated in the research have accomplished tertiary education, and despite they have been indicated as higher income families (as they positioned themselves above the OECD average household income - 21000 euros per year) this does not exclude they might include economic considerations when

negotiating the adoption of new ICTs. For example, one family (I1) tells they have just decided not to renew their subscription to SKY for cost issues, and other families also reported taking into account economic consideration when negotiating the acquisition of new ICTs.

Moreover, the sample is diverse in terms of the residence area: half of the interviewed families lived in Milan (mostly in suburban residential areas), while half of them lived in towns in the greater Milan belt.

The age of children in our sample varies from 2 to 12: the selected children were all 7 or almost 7: in 7 households children had one or more younger siblings, in two they had older siblings, and one was a single a child. The detailed composition of the sample is described in the following table

Alpha Family	Family code	Low – medium-high family income	Alpha Family Member Code	Sex	Age	Year school/ max level of education	Profession	Ethnicity
Family 1	I1	High	I1f	m	42	Tertiary	Journalist	Italian
Family 1	I1	High	I1m	f	38	Tertiary	Researcher	Italian
Family 1	I1	High	I1og	f	7	2 nd Primary		Italian
Family 1	I1	High	I1yg	f	3	Kindergarten		Italian
Family 2	I2	Low	I1f	m	41	Secondary	Employee	Italian
Family 2	I2	Low	I2m	m	38	Secondary	part-time	Italian
Family 2	I2	Low	I2og	f	6	2 nd Primary		Italian
Family 2	I2	Low	I2yg	f	5	Kindergarten		Italian
Family 3	I3	High	I3m	m	39	Tertiary	Lawyer	Italian
Family 3	I3	High	I3f	f	38	Tertiary	Part-time employee	Italian
Family 3	I3	High	I3og	f	7	2 nd Primary		Italian
Family 3	I3	High	I3yg	f	4	Kindergarten		Italian
Family 4	I4	Medium	I4m	m	44	Tertiary	Banking executive	Italian
Family 4	I4	Medium	I4f	f	41	Tertiary	Bank clerk	Italian
Family 4	I4	Medium	I4ob	m	7	2 nd Primary		Italian
Family 4	I4	Medium	I4yb	m	5	Kindergarten		Italian
Family 4	I4	Medium	I4yg	f	2	Nursery		Italian
Family 5	I5	Medium	I5f	m	41	Secondary	Employee	Italian
Family 5	I5	Medium	I5m	f	41	Secondary	Employee	Italian
Family 5	I5	Medium	I5og	f	7	2 nd Primary		Italian
Family 5	I5	Medium	I5yg	f	4	Kindergarten		Italian
Family 6	I6	Medium	I6f	m	39	Tertiary	Social worker/tennis teacher	Italian
Family 6	I6	Medium	I6m	f	41	Secondary	Social worker	Italian
Family 6	I6	Medium	I6ob	m	7	2 nd Primary		Italian
Family 6	I6	Medium	I6yg	f	5	Kindergarten		Italian
Family 7	I7	High	I7f	m	42	Tertiary	Area manager	Italian
Family 7	I7	High	I7m	f	48	Tertiary	Product manager	Italian
Family 7	I7	High	I7ob	m	7	2 nd Primary		Italian
Family 7	I7	High	I7yb	m	2	baby sitter at home		Italian
Family 7	I7	High	I7yg	f	2	baby sitter at home		

Family 8	I8	Medium	I8f	m	53	Secondary	Taxi Driver	Italian
Family 8	I8	Medium	I8m	f	35	Secondary	Housewife	Brazilian
Family 8	I8	Medium	I8ob	m	12	2 nd Lower Secondary		Italian
Family 8	I8	Medium	I8yg	f	7	2 nd Primary		Italian
Family 9	I9	High	I9f	m	50	Tertiary	Engineer	Italian
Family 9	I9	High	I9m	f	48	Tertiary	Architect	Italian
Family 9	I9	High	I9ob	m	10	5 Primary		Italian
Family 9	I9	High	I9yb	m	7	2 nd Primary		Italian
Family 9	I9	High	I9yg	f	7	2 nd Primary		Italian
Family 10	I10	High	I10f	m	46	Tertiary	HR Director	Italian
Family 10	I10	High	I10m	f	41	Tertiary	Housewife	Italian
Family 10	I10	High	I10g	f	7	2 nd Primary		Italian

The Italian context

Before compulsory primary school children in Italy have the possibility to attend kindergarten, from the age of three to six years old, where they are engaged in some basic pre-school activities and games. When both parents are employed, younger children may go to nursery since they are six months old, or they are looked after by grandparents or baby sitters at home. Nursery is usually more expensive than kindergarten. Moreover, nursery schools are still insufficient to meet the demand. As a consequence, children are accepted on a “first-come, first-served” basis combined with an evaluation of the family's income.

Compulsory school attendance begins with the 1st class of primary school, which should start after the child reaches six years of age. During the first school year, children should learn to read and write in their mother language, but increasingly full literacy is not achieved until the end of second year, as a few children in our sample also demonstrate. Primary education has recently been reformed: so, while it was normal for children to attend school until 4.00-4.30 pm everyday, now parents can chose to let their children at school only for two afternoons per week. In these cases, either children are looked after by grandparents, either the mother has a part-time or autonomous profession that lets her stay at home three afternoons per week. On the other side, the range of after-school programmes organised by school is also expanding: so, children can stay at school until 6 pm and engage in a variety of activities including sport, English classes, or free leisure activities. Overall, then, the time the child spends at school on an average day can vary from 5 to up to 10 hours. Even children who return home for lunch, however, are busy with various afterschool programmes.

As a consequence, their leisure time is highly structured and this influences the (limited) time children this age spend with technologies.

Regarding the use of technologies at school, children of primary school are not allowed to take any personal device (smartphones or tablets at school) as the interviewed children also remark and as statistics show (Mascheroni & Ólafsson, 2014). The technological equipment of school is not homogeneous: while most school now have at least one interactive whiteboard (IWB), few classes in primary school are equipped with their own system. For example, only I7ob mentions the interactive whiteboard during the interview, saying it is used during breaks when the weather conditions are bad so children watch cartoons instead of going to play outdoor. His mother explains that actually the interactive whiteboard was paid by parents

themselves. More commonly, children reported going to the computers lab at least once a week, both for doing schoolwork and for playing games (as an occasional reward).

As already highlighted throughout the report, national statistics show that households with children are more likely to adopt new technologies earlier and to have media rich homes.

Implementation of the protocol of observations

Interviews took place from 18 September to 24 of October, at home, at the time that was most suitable for the family (usually evening, before or after dinner, and the weekend). Each family visit lasted no less than one and a half hour, and two hours on average.

The observation protocol and interview guides were helpful points of orientation to implement the study, although the schedules were long and some questions were redundant. To avoid a long list of questions that may not be easy to handle during the interviews itself, researchers prepared a shorter version that could be carried during interviews and looked at when needed.

The ice-breaking activity (Activity Book - Play and learn: Being online) was very helpful and productive: not only did it create a playful and warm climate between family members, and with the researchers; it also provided a lot of insights on the role of technologies in family life, and specific everyday life practices of media use.

The separation of children and parents for different interviews was never problematic, nor for parents nor for children, who were eager to show their bedrooms and toys and be the focus of the researcher's attention. However, especially younger children tended to come back and forth, asking for parents to give them the devices, or occasionally bringing food in their room for themselves and the researcher alike.

In one case two girls had a small argument during the interview (with the younger girl being mean with her older sibling) but it was easily solved.

The card game was more problematic: most children enjoyed playing Memory, but the construction of a scale of preference was too demanding for some. More interesting was to observe children interacting with technologies. In this regard, especially productive was giving the children the researcher's smartphone: it was accepted as a sign of trust, as well as stimulating the children's curiosity for a new device and new games. So while it was first given to children to let them take pictures of their favourite toys and devices, most children ended up locating the games folder and playing games (Angry Birds, Cut the Rope).

Recording

The interviews were audio-recorded, but both researchers took rich notes during the family visits, including interviewees' own words when particularly significant and effective. At the end of the interview, the two researchers had an exchange aimed at highlighting the most characteristic features of the family as well as inconsistencies in parents' and children's accounts.

Transcription of audio files begun immediately after the first interview but is still ongoing.

Implementation of the protocol of analysis

Due to the ambitious time frame of the project, the findings reported here are based on a thematic analysis of the researchers' notes, which have been integrated with partial transcripts from each interview: more specifically, beyond the quotes already included in the notes, the researchers listened to the audio files and added any particular excerpt that they missed in the notes but was deemed relevant to be included in the findings; or checked for the exact wordings of quotes already written down in the notes.

The thematic analysis was guided by the research questions included in the protocol of observation and the interview schedule. As a consequence, redundancy in the reporting of findings can be observed. RQ3 on the role of technologies for family life and for individual members was found to be the most problematic, for it is largely overlapping with RQ1 on children's engagement with technologies as well as with RQ2 on parents' and children's perceptions. Moreover, as parental mediation is informed by parents' own experiences and attitudes towards ICTs, then RQ4 does also partially overlap with RQ2 and RQ3.

To minimise redundancy, the reporting of the data was partially reconfigured, as follows:

- RQ1: question 1d has been included under question 1b, where we also reported findings on favourite activities as children's ratings of the different technologies that are made available to them is dependent on their evaluation of the online activities they engage in.
- RQ2: questions b and c are largely overlapping.
- RQ3: question 3f has been already addressed by questions 3a-3d; in general we found that the assumption made in the example provided in question 3a (E.g. a particular child is only allowed to use new technologies a few minutes a day, so his/her technology use is quite restricted and his/her technical skills are very limited.) is very restrictive and not consistent with our own findings.
- RQ4: question 4b has been incorporated under other sub-questions, both because a bit redundant and because of some difficulties in addressing the question (it is hard that parents negotiate rules with children so young, though children themselves do not discuss the rules).

Discussion

Why might the results have turned out that way?

The findings presented in the report provide the picture of younger children experimenting with online technologies in a very regulated environment, whereby parents try to find a balance between offline and online activities and want to limit their children's engagement with digital media. While this is certainly a product of a quite homogenous sample - composed mainly of higher educated parents - this may also represent a typical feature of how new technologies are domesticated by Italian households with children. Indeed, the country classification based on the EU Kids Online survey data (Helsper et al., 2014) includes Italy among the group of "protected by restriction" countries, characterised by high parental

mediation (specifically in the form of restrictive mediation), low exploration of online opportunities by children, lower skills and lower exposure to risks.

However we believe that a wider and less homogenous sample could help test the relationship between parenting styles, specific parental mediation strategies and online opportunities for children further.

How could the study be improved?

As anticipated, a more diverse sample size, while requiring a longer time frame, would be beneficial for the research: more interviews would allow for more systematic comparisons by age (e.g., children up to 4, from 4 to 6, from 6 to 8) and socio-economic status.

Also, we would recommend a few minor changes to the research design. Second visits to families would prove particularly helpful, for two purposes: first, they would help researchers gain a deeper understanding of family dynamics and, especially, of inconsistencies between children's and parents' accounts; second, they would provide the opportunity to experiment with other research tools that ensure a greater participation of the children as co-producers of the data. For example, children (or their parents) could be given a camera and asked to record their use of technologies in between home visits (e.g., for a week) so as to have a visual stimuli created by a child.

Also, we would recommend to reduce the list of research questions (a long list being not very practical to look at during the interview) and to favour observation of children while interacting with the devices they have access to. A more ethnographic approach also helps overcome potentially problematic situations, such as researching children with cognitive disabilities, who might consequently find the interview schedule particularly demanding.

An observation of family members interacting together with devices would also be preferable, for it could provide better insights in issues such as the negotiation of rules, as well as providing further stimuli to be discussed during the second visit.

What are the methodological recommendations for future research?

As research on younger children's use of digital media is still at an early stage in many European countries, a large scale comparative study would be very helpful for the understanding of how children engage with new (online) technologies and its social and cultural implications.

Doing cross-cultural qualitative research is always a challenge (Livingstone, 2003): to ensure comparability of the data the protocol of observation and the interview schedule should be co-constructed by all the national teams involved, be as flexible as to be adapted to national specificities and single researchers' interests and disciplinary background, but also include a core set of research questions that every team has to address.

For the reasons mentioned above, we would recommend an emphasis on observation and research tools that stimulate children's engagement with online technologies (use of cameras, completion of certain tasks online, etc.). More attention should be also paid to ways of engaging

two or more children simultaneously: instead of designing an interview schedule where one child is interviewed first and the other second, encouraging siblings to do things together online would help the researcher observe interesting dynamics as well as overcome younger's children discomfort with too reflexive methodologies such as a verbal interview.

What is the future direction for research on this topic?

Research on the incorporation of new technologies into toddlers' and younger children lives is still sparse. Therefore, this pilot study provided valuable knowledge in the field and should be followed by more extensive, large-scale studies to test the validity of the findings so far achieved and the assumptions thus formulated.

While there is still need for large scale, comparative studies on younger children's and their parents' engagement with different digital media, future research in this area could address more specific research questions while adopting the same methodological approach. Based on the findings collected in Italy, three main research questions can be identified that should be addressed more in depth:

4. (digital) literacy: the pilot study showed that digital skills are unevenly distributed among children under 8. The age of first use, amount of use, parental attitudes and mediation as well as the presence of significant others (older siblings, grandparents) are all influential factors that may facilitate or hinder the child's acquisition of digital skills. The role of early primary school children in mediating their toddler siblings' socialisation with new (online) technologies especially deserves further attention. The relationship between traditional and digital literacy also needs to be further explored: in our limited sample, for example, we observed that one child who was less restricted in her media use, used new technologies more and was more skilled, had also reading difficulties. This line of research is a priority, if, as many parents perceive, digital literacy is a pre-condition of children's social inclusion.
5. risks: despite parent tend to postpone online risks to the future, younger children are already vulnerable to certain online risks, such as commercial risks and inappropriate content. More research is needed to inform awareness campaigns for parents (e.g. to promote the use of parental controls and disable the purchase of apps and services) and policy initiatives aimed at protecting the youngsters online, specifically on mobile devices (e.g. regulation or co-regulation of advertisement in apps designed for children).
6. parental mediation: while the pilot study showed that Italian parents tend to favour a restrictive approach to their children's digital media use, some parents had a more positive perception of technologies and valued the educational opportunities of gaming apps and pre-school apps. Prior quantitative research has already shown (Dürager & Livingstone, 2012) that restrictive mediation is effective at reducing children's exposure to online risks but it also limits online opportunities and skills. The findings of the pilot are partially supportive of this conclusion, indicating that children who are more free to experiment with online technologies have developed more advanced digital skills. However, the data collect in the pilot study suggest that in this particular age group restrictions may not be the most effective parental mediation strategy to protect children: indeed, two of the children who experienced a commercial risk received a significant amount of regulation from their parents. So in order to draw

recommendations on the most effective measure to keep younger children safe online, the relationship between parental mediation and the child's own online experiences needs to be further investigated.

Conclusions

The pilot study provided an insight into younger children and their families' everyday life, with a focus on their engagement with new (online) technologies.

Digital media have become a pervasive and taken for granted presence in most of the households we visited. Nonetheless, they don't seem central in younger children's lives, since they use technologies to pursue pre-existing interests, such as their engagement with characters of popular culture and TV programmes, or cross-generational cultural practices (e.g. use of new online technologies is aimed at socialising children's to generational cultural products such as old cartoons, or developing intra-generational bonds between grandparents and grandchildren). Children's interactions with digital media are shaped by parents' perceptions and own experiences with ICTs, and tend to be very regulated.

While most children possess basic operational and safety skills, and some have also developed advanced digital competencies, they lack the maturity to reflexively engage with online risks: also children who have had negative experiences - mainly commercial risks or exposure to inappropriate content - fail to recognise the possible dangers of their online media use.

Therefore, active mediation of technologies and online safety in the family context is vital. However, parents engage in restrictive mediation more than active mediation, as they are mainly concerned with potential overuse and associated health issues. They mediate children's relationship with online technologies by setting rules that limit time and online activities. By contrast, parents tend to postpone other online problematic experiences (such as exposure to inappropriate content and risky contacts) to the future, thus failing to recognise that younger children may already encounter negative experiences.

The protocol of observation and the interview schedule developed in this pilot study have proved effective at providing a rich picture of children's use of online technologies and the different role played by parents, siblings and the extended family. More can be achieved, though: in particular, drawing on the pilot we would recommend a more ethnographic approach, such as more time to observe children interacting with technologies, and the family engaging in co-use of digital devices.

Moreover, while there is still need for large-scale, comparative studies on younger children's and their parents' engagement with different digital media, future research in this area could address more specific research questions using a similar research design. Based on the findings collected in Italy, three main research questions can be identified that should be addressed more in depth:

1. digital literacy and its relationship with traditional literacy (reading and writing)
2. online risks that younger children may encounter and how they cope with them
3. parental mediation and the relationship between specific mediation strategies and the child's own online experiences.

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YOUNG CHILDREN (0-8) AND DIGITAL TECHNOLOGY

*A qualitative exploratory study - National report –
RUSSIAN FEDERATION*

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Executive summary

In this report we present the results from the pilot study “Children 0-8 and digital technologies” conducted by Faculty of Psychology of the Lomonosov Moscow State University and Foundation for Internet Development, which is a part of international project implemented by the Institute for the Protection and Security of the Citizen (IPSC) (European Commission - Joint Research Centre) in seven European countries. Ten families from Moscow participated in this research; each of them had a child or several children, at least one of which is up to 8 years old. We used the interview method for gathering data; it also included the elements of observation and natural experiment. The interviewer interviewed parents firstly, then children. In the research we concentrated on the four main topics:

- How do children under the age of 8 engage with new (online) technologies?
- How are new (online) technologies perceived by the different family members?
- What role do these new (online) technologies play in the children’s and parents’ lives?
- How do parents manage their younger children’s use of (online) technologies?

Preschoolers actively explore digital technologies

The majority of children surveyed is well-acquainted with different digital technologies and possess all necessary skills for using gadgets. Most of them quickly master new devices and applications just observing what adults do. The most favorite gadget is a tablet – multifunctional and portable device which is widely used for entertaining. Many parents buy a tablet especially for their kids. An access to the Internet, PCs and laptops as a rule is restricted.

Kids do not notice the disadvantages of online technologies

The majority of children perceive digital technologies absolutely positively; they experience joy and interest which is sometimes excessive. Just a few children are ready to admit that tablets have disadvantages and still that does not effect on their general perception of gadgets which remains positive. Parents are more realistic in their attitude to digital technologies. They are mostly worried about excessive interest (or addiction, as they say) and negative content (especially cruel and violent scenes) which children can face while being online.

Digital technologies more separate than unite families

Unfortunately, online technologies seem to separate family members rather than joining them. As a rule, parents and children use digital technologies autonomously. The only exception is Skype as it allows parents and children to communicate with each other if any of them is absent at home (e.g. parents are in business trips). Gadgets are widely used as baby-sitters when parents need their child to be busy and stay quiet. Many parents are aware of educational and developing opportunities the Internet offers but only one family out of ten actually uses them.

Parents set rules but do not follow them afterwards

Quite definite rules concerning time of devices’ usage by kids and the Internet access exist in the majority of families. Mostly the rules are set only after facing some problems like the excessive interest to some gadget or activity like gaming. Parents rarely discuss rules with children and are ready to break them, e.g. in case they need to keep their child

busy. In general, parental position concerning devices' usage is quite unstable and inconsistent.

To sum it all up it must be said that nowadays parents are not ready to become a guides into a world of digital technologies for their children. In this regard, special education programs for teaching and developing children should be elaborated. In particular, some information and tips about competent Internet usage can be distributed while interviewing.

One of the most interesting aspects of the field for future research is the problem of digital technologies effect on children's cognitive processes, in particular, on developing memory, attention, thinking, reading, writing, imagination.

Preschoolers go online

Rapid spread of the Internet and digital technologies in Russia began approximately 5 years later than in the majority of the other European countries. Nevertheless, Russian pupils had the same level of the user's activity as their European peers by 2011. In 2013 more than 90% of Russian teenagers were spending in the Web at average 3-4 hours daily, and during the weekends even more (Soldatova et.al., 2013). As recent studies of the Foundation for Internet Development show, preschoolers actively explore the Internet and other digital technologies following elder children.

In 2014 at about 80% of 6-year aged children in Moscow demonstrated pretty high level of skills concerning gadgets' usage (Smartphones and tablets). They were able to turn on the gadget given by the observer, find and load applications familiar to them. 50% of children of this age say that they use tablets for gaming and watching cartoons daily or nearly every day. The same time they can hardly realize that on doing that they gradually become fledged web-users (Soldatova, Shlyapnikov, 2014).

While Russian children and teens are fully involved in the Internet exploring their parents significantly lag in the field. According to Foundation for Internet Development research findings, in 2013 only 50% of parents who have teenage children used the Internet daily. Not only do parents of Russian pupils use the Internet less actively, but also they do it in the other way and besides they are not well informed about risks and opportunities of digital technologies in general and, in particular, what their own children do online (Soldatova et al., 2013). Unfortunately, we do not have any comparable data about parents having preschool-aged children. Besides these parents should be about 10 years younger than teens' parents so the majority of them are themselves the older representatives of the 'digital generation' and active online users.

Preschoolers perceive their parents' behavior as a model in many life spheres including digital technologies' usage. It can be obtained from what children say, e.g. 25% of them think they have learnt to use the Internet autonomously whereas all the others state that they were taught by their parents or elder siblings (Soldatova, Shlyapnikov, 2014). In this regard studying the role and place of digital technologies in life and development of modern children becomes very actual scientific and widely applied goal.

On analyzing and interpreting the data gathered it is essential to take in account the specifics of Russian regions as they significantly differ from each other by the level of the Internet's spread, the proportion of urban or countryside population, socioeconomic situation, development of the infrastructure, residents' occupation etc. This study in Moscow which is the largest and the most developed city in the Russian Federation, the capital having special status. Thus, the representativeness of the data gathered is limited to big industrial metro-regions of Russia.

This pilot study is conducted in the framework of the JRC's Project ECIT, Empowering Citizens' Rights in emerging ICT (Project n. 572). ECIT deals with "Identification of new threats to children by ICT besides social networks. Development of recommendations to empower children's rights by preventing and mitigating these emerging issues through education, school and community co-vigilance, as well as reconciliation of digital and personal interactions".

Research focusing on the benefits and challenges associated with children's use of the Internet has, so far, mainly targeted 9-16 years old (see, for example, the EU Kids Online research carried out since 2006). Yet, research shows that children are going online at an increasingly younger age. However, "young children's lack of technical, critical and social

skills may pose [a greater] risk” (Livingstone et al., 2011, p.3). In spite of the substantial increase in usage by very young children, research seems to be lagging behind. Therefore, research targeting 0-8 years old and which explores the benefits and risks of their online engagement is imperative.

In collaboration with a selected group of academic partners in different European countries, the present study is a pilot qualitative study that aims at exploring young children and their families` experiences with new technologies. In particular, we will look at their (online) technological engagement as well as the potential benefits and risks associated to their (online) interactions with new technologies. Its results will serve as a basis for recommendations on what should be looked at when launching larger EU studies on the benefits and challenges associated to young children`s use of new (online) technologies.

Through four areas of specific investigation, the plan of this pilot research is to generate data to address the overall question, in what ways, if any, are children and/or their families empowered by the use of new (online) technologies? In other words, what benefits or risks can be identified from the research, regarding young children`s use of digital technologies at home?

1. How do children under the age of 8 engage with new (online) technologies?
2. How are new (online) technologies perceived by the different family members?
3. What role do these new (online) technologies (smartphones, tablets, computers, video games, apps, etc.) play in the children`s and parents` lives (separately and in relation to family life in general)?
4. How do parents manage their younger children`s use of (online) technologies (at home and/or elsewhere)? Are their strategies more constructive or restrictive?

Family Portrait Gallery

This section is here to ground the findings and to give a flavour of the diversity of family circumstances involved. It presents the ten interviewed families with anonymised short narratives. Although the stories reported in those portraits are as we collected them, all names are aliases.



Family #1

Moscow, Russia

Family members

- Olga, 26, low digital user
- Michail, 6, nursery school, low digital user

Narrative

The kid mainly uses tablet yet is able to manage with any other device if needed. Sometimes he listens to tales on the usual CD-recorder and radio.

Michail has been learning to use gadgets indirectly, he asked mom to turn on the cartoons and watched her doing that, in addition to that it turned out to be the way he learnt to count and read.

Now the kid uses all digital devices without assistance. He scrolls windows on the i-pad quickly, turns on mp3 online, uses Google voice and ordinary search, messengers. The kid uses his mother's Facebook account and sends messages to her friends. Michail can make a call to his relatives. He also uses photo and video camera; he took a picture of the observer and let her have a look on it. Among his favorite cartoons are Just You Wait, Pepper Pig; games Angry Birds, Tiny Bop, Little Beeple, Human Body.

Michail uses gadgets for 30 minutes daily after all home work is done, in the weekend gadgets are allowed to use for up to an hour. He perceives gadgets absolutely positively, likes exploring different ones.

His mother highlights the educational opportunities available online. She uses internet technologies for education and work. Olga says that she used to be much more active in social networks and played online games but now only checks her Facebook account daily spending not more than 10 minutes in the morning and in the evening. The things Olga is mostly worried about are the effect of TV advertising on her child's psychics, irrelevant and aggressive content. Sometimes Olga and Michail watch movies together.

Rules were set directly by mother after she had noticed the negative effect of using gadgets on Mark's behavior, 'he was like a zombie'. The strictest ones apply to tablet's usage, also digital technologies are actively used in a punish-reward system, Olga says, 'Michail has his legal 30 minutes daily but I can reduce time for cartoons and I don't think I will give extra time if he behaves good'. Michail does not realize the rules, reminds them only after his mom's hints. Olga says she is always aware of what he is doing online and chooses only 'peaceful content'.

"If he logs in the open application and sees names and surnames of my adult friends whom he knows and communicates with, e.g. my best friend, he can freely type a message and send her kisses, smileys and so on from my account. Or he can get up early in the morning when I am still sleepy and call his granny. Several times he had taken pictures of his room and published it at my Facebook page. I logged in the day after and saw a few comments from my friends like 'Oh, Hey, Michail!'"

Family #2

Moscow, Russia

Family members

- Daniel, 31, high digital user
- Maria, 31, high digital user
- Anton, 7, 1-st year of primary school, low digital user
- Alexey, 4, nursery school, low digital user

Narrative

Children mostly use tablet, Anton also uses his phone for playing and making calls to parents, both siblings sometimes play on mother's Smartphone. Laptop is used only when parents allow as it is presented for kids like a very expensive thing.

Children were not taught to use the devices specially yet parents showed them particular functions. Mum says that sons saw her own interest (she was fond of The Dino Zoo game) and then began asking devices for themselves.

Anton and Alexey often watch videos on special kids' channels on TV and YouTube (Lego and Mixel cartoons and video guides as they design similar objects from their construction set afterwards). They also shoot their own videos and cartoons on tablet but are not allowed to download it online although they want it very much; listen to audio tales. Anton can turn on the tablet, search for cartoons using key-words, plays Main Craft, Jack Pad, Space Port Moon Buggy, Lego Instructions, Baby Dino Run, Turbo Fast, Angry Birds. He also freely uses TV and his mobile and teaches his younger brother.

Children spend about 30 minutes with gadgets daily and up to 2 hours during weekends combining online and offline activities. In father's opinion children would prefer to play gadgets rather than doing anything else. Though Anton says that he won't miss the I-pad if it is taken away, his potential interest seems to be much higher (he is fully involved in gadget while keeping it). Both brothers are not aware of online-risks, the only thing that upsets them is that 'sometimes the internet does not responds'.

Parents state that internet is not essential yet both use internet constantly. The father daily watches news, blogs, discussions about politics and social life. The mother is an active user of social services and sometimes attends webinars and watches educational videos. They like that the internet gives an access to large amounts of data quickly yet worried about irrelevant content (violence, child and animal abuses, profanity). Parents regularly watch and discuss cartoons and movies with children (the most recent are Wall-e, Maleficent)

Parents began to control the usage of digital technologies after noticing the children playing gadgets for a long time. At the moment children are allowed to use any devices not more than 1 hour each time, a few times daily. Both laptops are protected with passwords, data transfer on Anton's phone is blocked (manually by his father). All applications (free only) are downloaded by the mother, the dad is against any games. Playing gadgets is a desired reward; children can gain it for physical exercises. Anton and Alexey not always agree with rules set but are able to find other activities except playing gadgets. Father is convinced that nothing can impede him to control his son's usage of online technologies.

"Dad allows us to play gadgets after pushing up. When we push-up 10 times we get 10 minutes for gaming, this is a little effort. But if we do 30 push-ups we get a tablet for an hour!"

Family #3

Moscow, Russia

Family members

- Vladimir, 34, high digital user
- Valeria, 30, high digital user
- Oleg, 4, nursery school, high digital user

Narrative

Oleg uses tablet, laptop, TV and PSP. He is mostly interested in so-called 'forbidden' gadgets (the most expensive and up-to-date, e.g. dad's laptop).

Oleg uses all gadgets autonomously; his mother considers his technical skills as outstanding. He started to show his interest in devices at 1 year, learnt how to use it indirectly watching actions of his mom, 'I am to blame', she comments.

Oleg likes playing Tetris, Minion Rush, autosimulators; watching cartoons (Poli Robocar, Luntik, Fixiki), learning new words from music videos (5 Little Monkeys, Wheels on the bus); watching someone playing. He easily finds a saved game and opens it, closes advertising banners. He can open a browser, use YouTube, search, and take pictures using his mom's Smartphone.

The kid spends with gadgets at about 50% of his time; cartoons can play on the background all day long. He is completely involved into virtual environment, experience positive emotions while playing, whereas with people tends to be emotionless. The same time mum says that in the countryside where gadgets are absent Oleg fully forgets about digital technologies.

Valeria is sure that 'the internet is fully wonderful', online technologies are essential for both parents. She actively uses social networks, Instagram; half of a year ago both parents were fond of playing The Warcraft online. She states that the most disadvantages of online technologies might appear when 'the child steals money for paying for somewhat garbage online'. She is also worried about PSP and Smart Phones. Oleg plays games and uses Skype with parents. Valeria thinks that digital technologies help in parenting as child can be busy with them when needed.

The rules about using gadgets are unclear and set in a chaotic manner. The child is given a device when parents want to keep him silent and quiet. They use passwords but Oleg knows them. Actually the kid gets a device (even the most expensive) whenever he wants, he starts crying, shouting, each restriction causes the immediate hysteric reaction. He gets nervous if a device is not visible, may start searching for it, calms down only when gets it again.

"If Oleg gets hysterical or tired a gadget can be given in order to make him behave well, stay silent and not make scenes, e.g. during the flight. At home I can keep a device, he may shout, I won't feel sorry. But when he torments us totally, we will give it anyway. We act not very good, he plays for a long time and we do not set limits. But I can't prohibit that so am waiting as I think he will get tired of gadgets. So if I allow gaming now he must cool off, sooner or later"

Family #4

Moscow, Russia

Family members

- Ruslan, 42, medium digital user
- Daria, 36, low digital user
- Evgenia, 10, 5-th grade, secondary school, medium digital user
- Yana, 7, 1-st grade, primary school, medium digital user

Narrative

Evgenia and Yana use laptop, also Evgenia has the Smartphone with internet access. Sisters use digital technologies autonomously from 5 years. They learnt to use gadgets indirectly observing parents.

Girls like playing Sims online, know differences between versions of Sims, Minecraft, Yana also plays Survival Craft, My Talking Tom, Subway Surf, Hello Kitty, downloaded Slandergirl but Daria deleted that games; likes watching someone playing. Yana downloads applications and games from Goggle. Girls also like watching videos on YouTube (myfroggiestuff, Sasha Spielberg video blog). They credit videos using PicPac, Yana demonstrated her own presentation and is dreaming about sharing it on YouTube. She also attends online toy shops and chooses dolls. Both sisters like cartoons (Monsters High, The Barboskins). They perceive the Internet absolutely positively and to learn something new about digital technologies, e.g. Adobe Photoshop. On average the children use gadgets for about 30 minutes daily. Yana says she is interested in playing usual toys but no one else likes playing with her and it is boring to play alone.

Mum is worried about possible negative effect of Nintendo and PSP on Yana's psychics, she also notices herself affected with online technologies, is afraid of her own insufficient digital competency; mentions communicative risks, 'my husband is afraid of perverts'. The opportunity of distance communicating and plenty of information are noted as benefits. The husband likes watching videos on YouTube, football translations. Family members don't spend their time with gadgets together; girls only often play games with each other.

Evgenia and Yana use gadgets only when they parents allow. Time limit (30 minutes) was set when Daria noticed Yana becoming capricious after playing games. Girls usually monitor time on their own; they notice that rules differ depending on a family member, 'Dad can play twice longer whereas we can't. Parental position is very unstable, the mother can say she forbids playing the tablet but gives the gadget anyway.

"PSP should not be bought if you can't give it to your child for constant usage. I am not ready. Yana is very affected by gadgets; she would spend all day with gadgets unless being limited. At first she said that no one wanted to play with her at school. But it was found out later that all children bring PSP or Smartphone and play during the breaks. As a result, she wants too"

Family #5

Moscow, Russia

Family members

- Sergey, 25, high digital user
- Karina, 28, high digital user
- Sofya, 4, nursery school, low digital user

Narrative

Sofya has her own simple tablet; also she uses TV and laptop for watching cartoons (on her way to the nursery school in the car and on holidays). She prefers her mum's tablet as the screen is larger and brighter, listens to audio tales on Smart Phone before going to bed.

The kid does not use the internet, though she can play with tablet for quite a long time. Parents actively teach her to use the tablet, show some buttons to tap, how to act in a game and where to push in case she wants to quit the application.

Sofya likes educational applications (Dr. Panda, The Einsteins cartoon), learns the alphabet; she is interested in drawing, uses stamp, erases, color brushes. She can enter the application, play for a while and the exit. If some advertising banners emerge she goes to her parents and asks what to do. The kid used to spend many time with gadgets but now on average she uses digital technologies at about 10-15% of her all free time (gaming and learning), the same time is being spent for watching cartoons on TV and laptop.

Parents are active digital users and think that gadgets play positive role in their lives, purposely teach daughter to use gadgets. The primary usage of online technologies is searching for information (father) and communicating (mother), both parents highlight the easy access to information needed for work, the benefits of gadgets for parenting as they can get the child busy and explain her new things when she asks about something. What worries them most is irrelevant content and possible over usage of internet in the detriment of other activities, they are also afraid of child spending too much money online. Family members spend time together using Skype, watching movies on YouTube, playing new games with her.

The rules were set by Karina when the kid was extremely involved in playing the tablet. Karina has limited the time spending with gadgets, hiding devices, giving them only in special cases and under condition that Sofya behaved well. At the moment she states that rules are quite flexible and depend mostly on time the kid has already spent with device. Yet if Sofya is too involved in gaming or insists on getting the tablet too much parents take it away and set an extra ban on its usage. Earlier the child would have become hysteric or crying but now she is not that keen on gadgets and switches on other activities quite easily.

"Gadgets can be very useful, e.g. when you have to explain the kid why cleaning teeth is necessary. You just open the appropriate game and show an animal which have got ill because of worms in his teeth. It looks so natural that the daughter believes at once and doesn't even start arguing!"

Family #6

Moscow, Russia

Family members

- Boris (stepfather), 37, high digital user
- Viktoria, 35, high digital user
- Roman, 8, 2-nd year primary school, low digital user
- Anna, 7, 1-st year primary school, low digital user

Narrative

Children use laptop for watching cartoons and movies, doing their homework, playing games (Puzzles). Roman has a phone for making calls and playing simple games (The Snake). When they are on a visit they take tablet for gaming and taking photos.

"If children get into the web they do not see or listen to anything and can stay online endlessly!"

Viktoria and the granny taught children to use the devices; also they have special lessons at school. They can't turn on the laptop on their own (because the password is set), yet Roman enters the browser, opens the tab with cartoons. Both children are able to turn on the tablet and Roman uses Playmarket, playing games (racing). Anna is not that skilled and sometimes becomes confused, asks the adult. Children do not understand what the Internet is, they think they do not use it. Viktoria is not aware of whether her kids are able to use online technologies, 'I haven't experimented'. Sometimes children train on special programs (for improving grammar and counting) advised at school. Both kids perceive gadgets as ultimately positive. Children watch cartoons for about 30 minutes daily before going to bed, although they might spend more time with gadgets if they are ill or stay alone. They have no special time for gaming thus they spend most of their leisure time without digital technologies. Yet if not to set limit they can stay with gadgets much longer, it is hard for them to get switched to anything else.

Viktoria uses online technologies mostly for her work and Boris for entertainment purposes (football translations), both parents moderately use social networking and actively use Smartphone (especially GPS navigation). They note that online technologies can effect positively on parenting as they allow to spend more time with children and keep them busy. All family members watch movies together; children often are given a phone to speak with relatives. As for online risks, they mention negative effect on eyesight, content irrelevant for the children's age, low children's digital literacy (they can download viruses, delete some important files etc.), over usage of gadgets in the detriment of studying.

The rules about using gadgets were set directly by the mother and are very strict. All devices (except Roman's mobile phone) are only allowed to use with adults. Going online is possible only under mother's control for doing homework. The mobile phone is taken to school only in special cases (e.g. when a guided tour is arranged). When children behave badly they may not be allowed to watch cartoons, also adults use different excuses for not giving a device e.g. 'it has low battery'. Kids know the rules but do not always follow them, especially if they are alone or on a visit. Generally they follow the rules when adults are present.

Family #7

Moscow, Russia

Family members

- Grigory, 38, medium digital user
- Alica, 38, high digital user
- Maxim, 7, 1-st year primary school, low digital user

Narrative

Maxim has been using his personal tablet for about 2 years autonomously. He does not use PC, mobile phone and other devices.

The tablet was bought for educational purposes mainly for using applications that develop some particular skills, e.g. counting, reading; learning the alphabet and the kid was taught to do that. Maxim unblocks the tablet, easily finds the applications he needs to open, uses Google search for cartoons (Sponge Bob is the one he likes most). Also he likes horror games with zombies. In addition to that Maxim uses messengers (WhatsApp) and is interested in computer games. He thinks that applications might be useful (e.g. for learning English) and generally perceives them positively though is aware that some things can also be unsafe, says he has met some comments with bad words in feedback for applications.

"The internet can be harmful as well. e.g. when you want to download a game on your tablet and read some not very nice comments or feedback. Such bad words are sometimes written there!"

As Maxim has just entered the primary school he does not have lots of time for gadgets so he rarely plays the tablet at the moment and spend his leisure time doing his homework or playing board games with his parents.

Alica counts herself as an active confident user of digital technologies; she uses the internet for work and is sure it opens plenty of opportunities for learning new information. She is not against using gadgets, especially as her son has Informatics in school so they learn to use them correctly yet she is worried that Maxim lacks computer skills and can't use it independently. When she is at work Maxim messages her via WhatsApp.

The rules were offered mostly by parents after they noticed Maxim had started using his tablet too much but generally they try to come to an agreement with their child. Alicia says that Maxim used to lots of hours with the gadget so she had to hide the device or charger in order to make her child have a rest and set a time limits. At the moment parents do not regulate the time of playing at all as Maxim rarely uses the tablet and online technologies does not affect parenting and communication within the family. Some rules are still active, though, e.g. ban for using any devices while on a visit or during the meal. Maxim explains, "it is not polite to use gadgets when you are a guest as you come there for communicating with people", he prefers offline talks and understand the rules deeply. Due to his mother, "the child is not keen on gadgets now as he probably used to be and not that interested in them anymore".

Family #8

Moscow, Russia

Family members

- Konstantin, 39, high digital user
- Julia, 31, high digital user
- Alexandr, 14, 8-th year secondary school, high digital user
- Igor, 7, 1-st year primary school, high digital user

Narrative

Igor has a tablet, a mobile phone, a laptop and an X-Box. The tablet was given to him as a present on the recent birthday and now it is broken. A mobile phone was bought by parents a few weeks ago in order to be aware of where the son. Igor mentions the PC as a favorite gadget, also he likes X-box.

Igor uses most devices by his own, obtains skills autonomously. His elder brother taught him to play games and using gadgets so now if Igor has questions he can ask Alexandr or find the answer online using Google search. Igor likes online gaming (quests) very much, despite his hobby (Sports).

Sometimes he searches for hints and cheat codes in the web. He downloads games on his phone (TF4), searches for videos, and uses WhatsApp for talking to his mom. Igor has an ambivalent approach to digital technologies, for him they are good and bad at the same time. He says that he knows some educational applications but they do not attract him. Igor spends lots of time gaming. He confesses that it is not very good but they are extremely interesting for him.

All other family members are active users of online technologies as well. Parents use them for work, Igor spends many time in social networks. Julia highlights that internet opens plenty of opportunities for education for her and is essential for both adults and children and is very upset that Igor does not use internet for personal development. She also admits that spending lots of time with somewhat 'electronic' itself might be harmful, affecting normal child's development and positive parenting as family members spend less time together. Igor talks to his mum and dad using WhatsApp chat, sends them photos, all family members also talk to their dad via Skype as he is in a business trip at the moment.

There are time limits set for usage of gadgets, they firstly apply to Igor and involve anything 'electronic'. He can use gadgets only after having his homework done and for an hour maximum, then he must have a break. He is not allowed to take any devices outside and in public places; play during the meals, and this applies to all family members. Mum says, though, that sometimes she 'gives the indulgence' and allows playing gadgets during the weekend's breakfasts. Igor also admits that he does not always follow the time limit set, especially when parents are at work or busy he gets boring and plays online games longer than allowed.

"TV and other devices in our family are called 'electronics'. So we have the regulation declaring that if you have been playing somewhat 'electronic' for some time you must spend the equal time without any devices - go outside, draw or just have a rest"

Family #9

Moscow, Russia

Family members

- Alexey, 42, medium digital user
- Milena, 43, low digital user
- Alexandra, 23, high digital user
- Leonid, 7, 1-st year primary school, medium digital user

Narrative

Leonid has his personal tablet and mobile phone without Internet access; he also constantly uses the Alexandra's old laptop. He likes tablet very much, uses mobile rarely for keeping in touch with parents.

"I know how I can go online!
We have the box there – it is
the Wi-Fi router! Turn it on
and get the Internet!"

Alexandra is the only person who stays up to date with new technologies, she teaches her mum and Leonid to use devices, Alexandra asks her in case any problems emerge, so does Leonid. He knows how to make calls on his mobile, read texts, send SMS. Tablet is used for gaming only (NFS, other racing, educational games like puzzles and tag). Leonid knows the interface of Android, downloads applications (most interesting and popular with his friends) from the Play Market. From time to time he plays standard games on his PC (Win Mine etc.), types in MS Office and draws in Paint. He knows that he uses the Wi-Fi technology but is unable to browse online. Maxim likes the internet because it contains lots of games, also highlights the application 'Gramotey' (eng. Scholar) for correct spelling and notes that the internet has 'bad words', 'harmful cartoons and games'. In his mom's opinion, Leonid spends his leisure time playing the tablet or sitting in front of the TV thus interacting with gadgets 3-4 hours daily. The child says that if remained without a tablet he would be very upset.

Family members use online technologies differently. Alexey mostly uses e-mail and Google search. Milena is not a confident user so she uses devices with the help of Alexandra; usually she posts ads at Avito.ru and searches for information. Milena is worried that Leonid spends too much time with the tablet and thinks that gadgets interfere in family interaction lots. She states that 'online technologies do not develop kids so it is possible to live without them and adults should go online when it is really needed only', thus perceiving gadgets more negatively than positively. The same time Milena realizes that now many things in life depend on the Internet. All family members use gadgets regularly. When Alexandra was absent they were using Skype and WhatsApp for talking to her.

The rules about using devices were set by parents, right after the moment Leonid had learnt to use the tablet. They were aimed to make child spend his time with them and also studying effectively, not interrupted with online activities. He can play only after mom has his homework checked; he is not allowed to take gadgets to school and public places unless he goes somewhere with his elder sister. Also it is prohibited to all family members to use the devices during the meal and while interacting with each other. Leonid is aware of these rules though does not always follow them, each time he comes home after classes he asks whether he can play the tablet before doing his homework. Mum permits that from time to time.

Family #10

Moscow, Russia

Family members

- Vyacheslav, 47, low digital user
- Galina, 34, medium digital user
- Egor, 6, nursery school, low digital user

Narrative

Egor mostly uses the PC; he used to take his mom's tablet but broke it. He also broke two parents' laptops (smashed the buttons).

Egor was taught to use the devices by his elder sister (who does not live with them at the moment) and his mother. At the moment he uses the home PC and the tablet autonomously, usually he plays games (NFS, GTA), watches cartoons, searches for things (Yandex) and new games and videos. Egor thinks that the internet is very good and essential thing, 'you can find something online, buy and sell, watch videos and download music'. The most positive feedback he gives is about cartoons and games. The child is not aware of online risks and dangers.

"I don't know how to use PC at all but sometimes we play together with Egor, he teaches me to do that. So quickly does he make all these online things work!"

Egor generally is more interested spending his leisure time offline than online and not worried about the internet or involved in any online activities; prefers playing or walking with friends. He spends not much time in front of his PC, can play for an hour or so several evenings per week.

In the family mum uses the internet daily, the father does not use the PC at all although he thinks that the internet is 'very good and positive as it contains lots of useful information so everyone needs it'. Vyacheslav notes that it is convenient to make purchases online, search and download music. Among worries he mentions 'the issues of safety in the web' yet does not concretize which ones exactly. Family members do not spend time using gadgets together; just Egor and his father can play games from time to time whereas mum goes online only at her office. All in all, new technologies have little effect on the family life.

As the kid does not use online technologies often, rules are not set as parents do not experience any problems with regulating his online behavior.

Findings

How do children under the age of 8 engage with new (online) technologies?

The majority of children participated in the research live in the environment which contains lots of different electronic devices providing the Internet access. Kids are surrounded by Smartphones, tablets, PCs, laptops, PSPs used by their parents and elder siblings. Most children are equally good at using the majority of domestic devices unless their parents prohibit using them. Many kids attending school have their personal mobile phones with no internet access and use it mainly for communicating with parents. PCs, laptops and TVs are frequently used for watching cartoons as these devices have large and bright display. Nearly all children are able to turn on the TV and PC on their own. Nevertheless, findings show that the majority of children prefer using tablets. 7 children out of 10 have their personal tablets and the others use their parents' ones. In our opinion, it is determined by several points:

- Tablets have simple interface and children can learn to use it with minimum help of their parents just observing them doing something with the gadget. It is easier for kids to interact with tablets rather than PCs since a table's functioning has a simple subject logic involving concrete operatory thinking and eye-mindedness.
- The other feature of tablets attracting children is their multifunctionality. A tablet is smaller and more convenient than an ordinary PC but has equal opportunities for kids and has much more options than a mobile phone. Although the majority of interviewed children use tablets for gaming and watching cartoons, some of them like creating something, e.g. drawing, taking photos and compiling videos.
- One more important feature is tablets' portability. They can be easily taken to the other room, long journey or to the countryside. Parents often use tablets when they need to keep their kid quiet and busy in the moments of long waiting.

Many parents consciously buy tablets for their children as they are cheaper and in a whole more convenient whereas expensive home PCs and tablets laptops usually belong to parents and are protected with passwords. Thus, children are not able to use them freely although they desire their parents' devices as they are more up-to-date and interesting.

Interviewed children have demonstrated quite good skills of using digital devices. The majority of them are able to turn a gadget, find and load applications they already know, e.g. games. Their searching activity is very high as well; they like learn new functions of tablets and use Play market/App store for downloading applications; they are very interested in the process of searching itself. Nearly all children know how to use camera and voice recorder, some of them even create their own presentations and videos. Online communication is not that attractive for children of this age, but nevertheless, some of them have already got acquainted with social networks and messengers (Skype and WhatsApp). Also it is a surprising fact which has been emerged during our research that many parents have little knowledge about what their kids actually can do with devices.

As for the Internet, it should be mentioned that not all children are allowed to go online. Still many of them find and install applications using Play market/App store autonomously. The same time children rarely understand they are actually online and are

using the Internet while downloading an application. Generally the majority of them freely use Google and YouTube search when they want to find some cartoons or videos with their favorite characters.

In most cases children use their devices fully autonomously and were not specially taught to interact with them (except some particular functions e.g. how to quit a game). They were just observing their parents or elder siblings playing or doing something and after a while starting to explore gadgets on their own. Thus it can be considered as an indirect latent learning.

Time spent with gadgets vary from 30 minutes daily (in 3 families this period was mentioned as a general limit) to using some technologies (e.g. watching cartoons) up to 50% of the day or, to the opposite, just several times a week. Nearly all parents have said that unless children had time limits they would stay with gadgets much longer.

In general it must be said that the Internet has quite a big effect on interests and preferences of children nowadays. Kids like observing adults using gadgets and watch videos where a person demonstrates his skills or handiworks. Some of children even try to replicate it offline, e.g. make a model out of Lego construction set in order to make their own video and upload it on YouTube. Also the Internet influence on children's consuming behavior as they often ask parents to buy toys from their favorite cartoons or games. To sum it up, many children have a desire to repeat in their real life something they have seen online but take a photo and upload it online afterwards.

How are new (online) technologies perceived by the different family members?

Children mostly perceive gadgets and the internet absolutely positively as they bring lots of fun, cause interest and joy. In several cases the interest was excessive: on demonstrating skills of using gadgets to the observer some kids could become so involved in the process that it was extremely hard to distract them and continue interviewing.

As a rule, kids use digital technologies for entertaining. Just two kids out of ten are aware of potential risks the internet, such as 'bad words' and 'gaming too much' but even after this experience kids' perception of digital technologies remains highly positive. Most children admitted they would be upset if remained without a gadget. To sum it up, children's attitude to gadgets is generalized and diffused because of their age. That is why it is difficult for them to explain what actually attracts them in electronic devices.

Both preschoolers and their parents use gadgets mostly for entertaining. Unfortunately, the educational potential of these technologies is not used in a full extent. Many parents admitted buying their kid a device for education and development but after a while it would had become a tool for entertainment. Just in one family out of ten gadgets are used for educational purposes only.

Unlike children, parents do not perceive the Internet and other devices that definitely. Nevertheless, the majority of them are active users of the Web that is why they perceive digital technologies positively and say they bring a lot of benefits. Parents highlight the informational, educational and communicational opportunities (especially Skype) the Internet offers.

Among the main disadvantages are the effect of games and bright images in applications on little kids' behavior and psychics and aggressive and irrelevant for children's age

content. The excessive involvement of tablets and games causes lots of worries as nearly all parents have experienced rather serious consequences of the uncontrolled usage of gadgets by their preschool aged kids. They complain that children can behave bad, stop going for a walks, communicate with other children, and become capricious if parents try to take their favorite gadget away. Parents tend to think that the most effective way to solving the problem is setting time limits for kids concerning the usage of devices and as a rule the results are really good. As for the negative web content, most parents feel unable to manage with this issue so they regulate children's access to the Internet very strictly. In general it can be noticed that parents' attitude to the Internet and other technologies influences on their kids' activity. The more positive parental attitude is, the more freedom and opportunities a child has; the more negative it is, the more bans and limits are set for kids.

What role do these new (online) technologies play in the children's and parents' lives?

Digital technologies play an important role in children's life; they prefer gadgets to other toys and activities. Many children would play with their favorite gadget all their leisure time if they had an opportunity ignoring both parents and peers. Yet when the access to gadgets is limited children comparably easy can get switched to any other activity. As it has been said before, kids use digital technologies mostly for entertaining.

Most parents admit that online technologies play significant part in their life and in society in general, even those who have negative attitudes towards the internet. They use it for work, communication, entertaining, keeping in touch with relatives and friends living abroad or in other cities, etc. Cellular phones allow parents to control their children's location when they need. Although the majority of parents use different online technologies many times a day both in the office and at home they tend to diminish the role that the internet actually plays in their own lives stating it is not that essential for them.

Many parents use gadgets as an element of a punish-reward system. If a child behaves well he/she may take a device for a longer time for watching cartoons or gaming, if the behavior is bad a favorite device might be taken away. Tablets are widely used as a baby-sitters entertaining children while parents are busy. Parents rarely use devices together with their kids; Skype is the only exception as it allows talking to relatives whom all family members know. The reason for that might be that parents do not know how to use devices and applications together with their kids. Thus, online technologies rather separate family members than join them.

How do parents manage their younger children's use of (online) technologies?

In most families parental mediation is reduced to setting rules and bans concerning time limits and the Internet access restriction. On average parents allow children to use gadgets for one hour daily; during the weekends and long journeys the period might be prolonged. In some families gadgets are a reward for some certain activities, e.g. push-ups. Quite common are the bans for using gadgets during the meal and gaming before homework is done. As about the Internet, the majority of parents have quite a strict attitude and don't allow their children go online.

Parents from 7 families out of 10 said they had to set up a time limit after they had seen child spending too much time with gadgets and only in one family rules were set in advance. Parents rarely discuss rules with children and explain any reasons for limitations. It should be noticed also that parents themselves often do not follow their own rules concerning kids and make an indulgence for their children, unintentionally or consciously. E.g. when a kid insists on giving a device parents may allow taking a gadget although a child could already have exceeded the time limit. Thus, parental position is rather unstable and the majority of children is aware of rules but admits they do not follow them when an occasion emerges.

To summarize we can say that parents influence on how their children interact with gadgets. Buying to a kid a tablet for educational purposes, parents begin to use it for entertainment themselves and involve their children in these activities.

Method

Procedure

This section describes the process of implementing the study exactly as it occurred.

The sampling procedure

The sample designing was implemented by observers. Each of them asked their family members, friends or acquaintances to recommend families with kids under the age of 7 ready to participate in the interview and give their contacts or profiles in social networks. Thus, the sample consists mainly of 'second or third circle' observers' acquaintances.

Then the observer contacted them and explained the aim of the research, its significance and procedure was being explained. Also links to some past studies were given so that parents could get information about how the final report will be performed (it was very illustrative example of the confidence principle so that all parents were fully sure that results would be presented in a common way without involving real names, photos etc.). Afterward the observer answered to parents' questions (if they had any) and asked for their agreement for being interviewed and made an appointment. We didn't receive refusals as all families previously had information about us from their close friends so they had a certain amount of trust from the beginning.

Interviews were mostly held in the evenings, when family gets together after working day or studying and is not very busy. Before the appointment the observers contacted to the family once again in order to confirm their address and time of meeting.

In gratitude of participation in our research each parent got bright colorful manual issued by the Foundation for Internet Development (developed in collaboration with Google) for studying the issues of online safety together with their children, mini textbook with recommendations about safe Internet usage and informational leaflet about our helpline "Deti Online" (Kids Online). Each kid got the bright notebook and the ruler with the Foundation symbolic.

The sample

Alpha Family	Family code	Low – medium-high family income	Alpha Family Member Code	Sex	Age	Year school/ max level of education	Ethnicity
Mother	1	Medium	1.1	Female	26	Higher education	Russia
Son	1	Medium	1.2	Male	6	Nursery school	Russia
Father	2	Medium	2.1	Male	31	Higher education	Russia
Mother	2	Medium	2.2	Female	31	Higher education	Russia
Son	2	Medium	2.3	Male	7	1-st year (primary school)	Russia
Son	2	Medium	2.4	Male	4	Nursery school	Russia
Father	3	High	3.1	Male	34	Higher	Russia
Mother	3	High	3.2	Female	30	Higher	Russia
Son	3	High	3.3	Male	4	Nursery school	Russia
Father	4	Medium	4.1	Male	42	Higher	Russia
Mother	4	Medium	4.2	Female	36	Higher	Russia

Daughter	4	Medium	4.3	Female	10	5-th year (secondary school)	Russia
Daughter	4	Medium	4.4	Female	7	1-st year (primary school)	Russia
Father	5	Medium	5.1	Male	25	Higher	Russia
Mother	5	Medium	5.2	Female	28	College	Russia
Daughter	5	Medium	5.3	Female	4	Nursery school	Russia
Stepfather	6	Medium	6.1	Male	37	Higher	Russia
Mother	6	Medium	6.2	Female	35	Higher	Russia
Son	6	Medium	6.3	Male	8	2-nd year (primary school)	Russia
Daughter	6	Medium	6.4	Female	7	1-st year (primary school)	Russia
Father	7	Medium	7.1	Male	38	College	Russia
Mother	7	Medium	7.2	Female	38	Higher	Russia
Son	7	Medium	7.3	Male	7	1-st year (primary school)	Russia
Father	8	Medium	8.1	Male	31	College	Russia
Mother	8	Medium	8.2	Female	39	Higher	Russia
Son	8	Medium	8.3	Male	14	8-th year (secondary school)	Russia
Son	8	Medium	8.4	Male	7	1-st year (primary school)	Russia
Father	9	Medium	9.1	Male	42	Higher	Russia
Mother	9	Medium	9.2	Female	43	College	Russia
Daughter	9	Medium	9.3	Female	23	Higher, Post-graduate student	Russia
Son	9	Medium	9.4	Male	7	1-st year (primary school)	Russia
Father	10	Medium	10.1	Male	47	College	Russia
Mother	10	Medium	10.2	Female	43	College	Russia
Son	10	Medium	10.3	Male	6	1-st year (primary school)	Russia

Implementation of the protocol of observations

As all families were invited to participate in the research with the help of observers' acquaintances, the preliminary contact had easily been set via mobile phone or messaging already so we did not actually need special activities for ice-breaking. Mostly parents were very enthusiastic about the interview and appreciated it very much that their opinion would be taken into account in the international survey. So did children as they had an opportunity to gain the positive attention from the observer; besides during the interview they were allowed to take the most desired devices which are usually unavailable for them for a longer time. Thus, all family members had a very positive attitude towards the participating so the contact had been set in advance without any difficulties.

During the interviews observers were following the common scheme and oriented on its main topics: how do children under the age of 8 engage with new (online) technologies; how are new (online) technologies perceived by the different family members; what role do these new (online) technologies play in the children's and parents' lives; how do parents manage their younger children's use of (online) technologies? Questions for interviews were being chosen from the total amount of questions suggested in the research guide. They were being adapted for each new family as it was necessary to take into account its specifics, parents' personal traits, children's age and temper, some typical patterns of the family members' behaviour etc.

As a rule one interviewer was working with the family: children (or one child) was waiting in the other room and was kindly asked to not interfere with parents' dialog with the observer, so did parents when it was necessary to communicate with children. After interview with parents the observer could enter the room where kids use gadgets more often and communicated with them in a child-friendly manner, sometimes sitting on the floor (with the smallest kids). The observer asked kids about gadgets' usage, what they like in devices and what they can do with them etc. Such a structure of the interviewing process allowed implementing the in-depth qualitative analysis and checking the hypotheses emerged on discussing the topic with parents. It was found out that sometimes the real kids' interaction with devices does not match with what parents declare in the interview and they are not actually aware of what their children can do with gadgets or think about family rules. The same time if interviewed previously parents can provide valuable information about their child's specific and his general patterns of communicating, his way of thinking. Thus they mediate the process of the ice-breaking with the child and give the observer hints about the best ways for making child show his actual skills concerning gadgets. If two observers had worked some aspects obviously would had been missed because of the parallel way of process instead of sequential.

If to speak about the protocol structure, observers were quite strict and followed the steps and topics precisely, always keeping in mind the time limits and main direction of the interview. Nevertheless, they inspired parents and other siblings to share their personal opinion about the Internet and digital technologies. Mostly observers used the standard method of the semi-structured interview and sometimes they asked family members to speak about some particular topics freely, especially about the advantages and disadvantages of using the Internet so it reminded a sort of an essay.

During the interview with children observer asked them to make a mini-presentation of their favorite devices. Children were asked to bring their own device (or most used or favorite) and tell something about it, show the most frequently opened games and applications, cartoons. Also card with gadgets were used with the smallest kids in order to check which ones they know and can recall.

Recording

The demographical data about each family were fixing in the survey form right before the beginning of the interview and after obtaining parents' consent for participation. The interviews were being recorded via Smartphone's application Easy Voice Recorder; in addition to that observers could note some information on the paper (e.g. children's skills surprising findings, nonverbal information etc.)

During the interview with children observers were obliged to fix all child's actions, algorithms of actions and skills demonstrated with devices, e.g. 'a child turns on the tablet, opens Google Search, looking for cartoons, presses Play button' etc. Child's comments, emotional responses and nonverbal reactions were recorded as well, e.g. 'he is very excited, not reacting to the observers' words, is happy and smiles as he has completed the level' etc.

Implementation of the protocol of analysis

After the interviews were done the recordings were played on the office PC, listened by the observer working with the family and written to the protocol according to the scheme. We did not make full word-to-word transcripts because of the big amounts of the data gathered and because they contain some extra episodes not related to the topic and thus not necessary for the protocols. Yet it should be mentioned that protocols contain minimal interpretations and if presented they are always confirmed by exact citations or information obtained from the observational process (e.g. nonverbal reactions or pauses or comments) and noted on papers.

The data were analyzed, the brightest citations were chosen, also the recorded data were associated with paper notes made by observer while interviewing. There was no special encrypting of the recordings as they do not contain any personal data indentifying the families surveyed. For a final report the preliminary protocols (app. 800-1000 words) were minimized up to 350-400 words and translated into English.

Discussion

Why might the results have turned out that way?

The findings are consistent with our previous research data and illustrate statistic patterns obtained earlier (Soldatova, Shlyapnikov, 2014). Still this research gives us a deeper understanding of the problem, especially about questions of parental mediation and the role of the Internet in modern families.

Certainly few cultural factors have influenced on the results of the research, such as:

- As it was mentioned earlier, the research was conducted in Moscow, one of the most well-developed Russian regions;
- 9 families out of 10 represent middle class with medium family income;
- All families can be considered as relatively prosperous; besides the majority of parents are highly educated.

In this regard, the new issue emerges as we need to include in our investigation families who will be socioeconomically different from the already interviewed ones and other Russian regions. In this case only will we will provide the representativeness of the sample.

What are the methodological recommendations for future research?

Further research in the field require developing more exacting standardized methods of data gathering and fixation, e.g. experimental research disguised as a game.

It seems also reasonable to develop some test tasks with progressive levels of difficulty for more precise assessment of children's skills in using devices. This approach would provide not only qualitative but also quantitative evaluation of skills thus allowing comparing children from different countries and social groups.

For providing more objectiveness of data, it is essential to develop observation cards with more or less definite behavioral indicators which would allow comparing children in different groups.

Also the procedure itself needs to be more short as now it takes about 1,30-2 hours so children get tired (as they are waiting their parents to finish and spend time with them). It may be useful to divide the whole interview in two parts, observing kids using gadgets (hidden experiment) and distance parental survey. It would let to spend less time for each family yet survey more respondents.

What is the future direction for research on this topic?

One of the most interesting aspects of the field for future research is the problem of digital technologies effect on children's cognitive processes, in particular, on developing memory, attention, thinking, reading, writing, imagination.

The other important direction is researching the voluntary regulation's specifics of the digital generation. Combination of sociological and psychological research methods and procedures will give the deeper understanding of changes which occur in children within nowadays informational society.

Conclusions

Preschoolers actively explore digital technologies

The majority of children surveyed is well-acquainted with different digital technologies and possess all necessary skills for using gadgets. Most of them quickly master new devices and applications just observing what adults do. The most favorite gadget is a tablet – multifunctional and portable device which is widely used for entertaining. Many parents buy a tablet especially for their kids. An access to the Internet, PCs and laptops as a rule is restricted.

Kids do not notice the disadvantages of online technologies

The majority of children perceive digital technologies absolutely positively; they experience joy and interest which is sometimes excessive. Just a few children are ready to admit that tablets have disadvantages and still that does not effect on their general perception of gadgets which remains positive. Parents are more realistic in their attitude to digital technologies. They are mostly worried about excessive interest (or addiction, as they say) and negative content (especially cruel and violent scenes) which children can face while being online.

Digital technologies more separate than unite families

Unfortunately, online technologies seem to separate family members rather than joining them. As a rule, parents and children use digital technologies autonomously. The only exception is Skype as it allows parents and children to communicate with each other if any of them is absent at home (e.g. parents are in business trips). Gadgets are widely used as baby-sitters when parents need their child to be busy and stay quiet. Many

parents are aware of educational and developing opportunities the Internet offers but only one family out of ten actually uses them.

Parents set rules but do not follow them afterwards

Quite definite rules concerning time of devices' usage by kids and the Internet access exist in the majority of families. Mostly the rules are set only after facing some problems like the excessive interest to some gadget or activity like gaming. Parents rarely discuss rules with children and are ready to break them, e.g. in case they need to keep their child busy. In general, parental position concerning devices' usage is quite unstable and inconsistent.

To sum it all up it must be said that nowadays parents are not ready to become a guides into a world of digital technologies for their children. In this regard, special education programs for teaching and developing children should be elaborated.

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YOUNG CHILDREN (0-8) AND DIGITAL TECHNOLOGY

A qualitative exploratory study - National report - UK

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Executive Summary

Ten families from London, Sheffield and Edinburgh with at least one child aged 6 to 7 were recruited to examine children's digital technology use, including engagement with tablets, computers, gaming consoles and other devices. Interviews took place in October 2014 and were transcribed and analysed according to an agreed coding protocol.

Key findings

- The young children led active, varied lives in which technology played an important part. Technology use was balanced with many other activities, including outdoor play and non-digital toys. Technology was embedded into daily life, with extended family members and networks outside the home playing a key role in socialisation and communication.
- Tablets had a growing popularity and importance in young children's digital lives, particularly for leisure. The touchscreen interface means that young children were able to access tablets more independently at an earlier age than technologies such as laptops. A primary use was playing games, displacing games consoles as the technology of choice. Gaming was often restricted to a narrow range of titles, played repetitively.
- Children used portable devices to watch films, videos and television programmes, including streaming, on-demand and catch-up services. There was evidence of cross-platform brand recognition, with linked games, films, websites and soundtracks often favoured by children (such as Disney or CBeebies products). The portability of devices has probably led to a decrease in the number of children with televisions in their bedrooms.
- Educational apps were not commonly used by children aged 6 – 7, especially compared with younger children. Digital educational engagement was generally restricted to information gathering using a laptop or computer, creative production (such as drawing apps), instructional online videos and factual programming (via YouTube clips). Where children used digital devices creatively to take photographs or generate video clips, parental mediation was still required to edit and complete the process.
- Parents tended to focus explicitly on deliberate uses of digital devices for learning or fun, but they recognised that these devices were also used to fill the gaps in daily life when parents were busy and children need to be occupied or entertained. Consequently much of young children's use of digital devices was individual in nature, even little noticed by parents. Meanwhile, shared family activities tended to centre on non-digital activities that signalled 'good parenting' (in the eyes of parents) or on traditional media uses such as family television viewing in the living room.
- Parental spending priorities tended not to include app purchasing, favouring instead free apps, physical toys, books and magazines. This may expose children to in-app purchasing and targeted advertising, which are less prevalent in paid-for digital products.
- Children accessed a limited number of websites, usually assisted or overseen by parents or older siblings. These included YouTube, Google, CBeebies and Wikipedia. Children tended to have little or no understanding of the scope of the online world or associated risks. They could be relatively skilled in navigating some devices or apps but lacked skills in relation to others, and both their skills and limitations often went unrecognised by parents. Moreover, while children were

often able independently to figure out how to navigate a device, app or game, we observed more diversified skills and knowledge in those families where parents or older siblings spent time with the younger child explaining or playing on a device.

- Parents' strategies for managing children's internet use were patchy, tending to rely on ad hoc observation or the need to intervene given children's lack of skill. Many parents believed that robust strategies did not need to be developed until children get older, despite evidence that, on the one hand, some children could bypass safety settings while, on the other, some children would welcome new ideas or further guidance about how to use the devices and apps available to them.
- Encountering violence and strong language were of greater concern to parents than sexual content or unwanted contact. Parents would welcome advice on fostering children's online safety. Advice from schools appeared to be limited, nor did there appear to be substantive communication between schools and families on issues relating to technology.

Recommendations

There was evidence of gaps in parental knowledge relating to online risks. This report therefore recommends:

1. Development and promotion of parental and carer education materials. These should encompass safety settings, passwords, privacy protection and content filters, and they should assist with the mediation of unsupervised internet access by young children. Guidelines should be evidence-based and created in collaboration with industry representatives.
2. Development and promotion of communication strategies outlining how parents can talk to young children about managing online risks.

There was evidence of reluctance on the part of parents fully to capitalise on the benefits of children's digital technology use. This report therefore recommends:

3. Development and promotion of information materials outlining the positive benefits of engagement with digital technology, with a focus on educational, creative, communication and social outcomes.
4. Encouragement for schools to take a more active role in promoting creative and educational uses of digital technologies as well as addressing safety matters at home with parents and carers.

Additionally, children aged from birth to eight are active citizens in the digital age, yet there still remained significant gaps in knowledge with regard to their access to and uses of technology. This report therefore recommends:

5. A scaling-up of this pilot project to include larger, more representative national samples across the EU. A larger scale project should address the widely differing experiences and practices of younger children living in diverse circumstances.
6. The development of ethnographic and participatory investigative methods to capture young children's own opinions and experiences in more detail, and allow children's voices and agency to inform the study and recommendations further.

Suggestions for further research

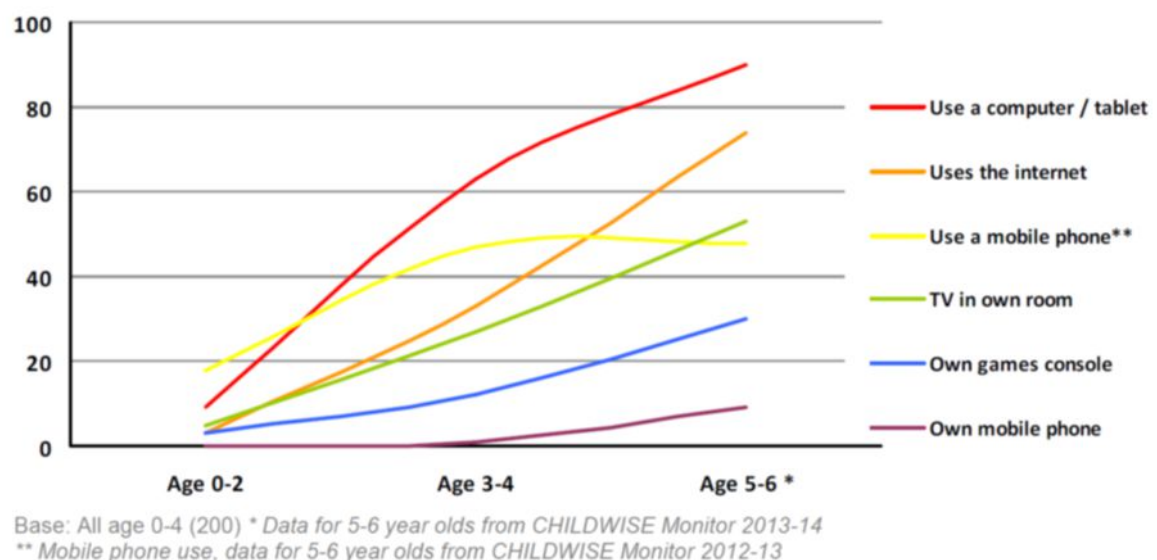
Future studies should consider the wider ecologies of children's digital use, including nursery and school settings and out-of-home engagement such as during car journeys.

Emergent technological trends, from 3D printing to the Internet of Things and Smart Homes, will have wide-ranging implications for children's digital practices, and should be addressed in future research projects. In particular, studies could focus on the ways in which digital technologies capture data about children's activities.

The study identified the need for further research on the most effective ways to develop parents' understanding and practices with regard to the development of their children's critical digital literacy. An intervention study is required which examines the effectiveness of family programmes in enhancing parental support of children's developing digital literacy skills. This should be complemented by an examination of the impact on family practices of online safety advice from educators.

The Digital Home

As UK homes acquire more digital technologies, and as those technologies become more portable and diverse, ever younger children are using the internet at home and school (Figure 1).



Yet research on very young children is sparse, with most knowledge to date focused on older children and teenagers (Olafsson et al., 2014). EU Kids Online's recent review of the available literature drew out some tentative findings (Green et al., 2013; see also Marsh 2005; Marsh, Hannon, Lewis and Ritchie, in press; Plowman & McPake, 2013; Plowman et al, 2012):

- Children engage in diverse activities online using a range of internet-connected devices;
- Online activities can stimulate imagination, fantasy, creativity and play;
- Up to a certain point, these help with learning, reading and navigating information;
- Many children use devices/contents not designed for their age group;
- Children's digital footprints often begin at birth, with unknown consequences;
- Younger children are more often upset about or vulnerable to risks of harm online;
- Children can be very trusting e.g. if invited to meet someone after playing a game.

But many questions remain unanswered about the physical, mental, emotional and social consequences (opportunities or risks) of internet/digital engagement for young children and their families.

This report presents the UK findings from an EC-funded seven-country collaboration designed to inform evidence-based policy development. It draws on findings from interviews and observations with ten families at home, each with a child aged six or seven, and often including younger siblings. Since it is a pilot study, we also reflect on the methodological challenges of working with this age group. The children were just starting Year 2 (in the English system), where curriculum expectations (by end of Year 1) are that pupils:

- Explore information from various sources, showing they know that it exists in different forms;
- Present and share ideas using text, images and sounds;
- Recognise that everyday devices respond to signals and make simple choices when using devices.

Research questions

1. How do children under the age of eight engage with new (online) technologies?
2. How are new (online) technologies perceived by the different family members?
3. What role do these technologies play in children's lives and in the family?
4. How do parents manage their young children's use of technologies?

The National Contexts

England

Since September 2010, all 3 and 4 year-olds in England are entitled to 15 hours a week of free preschool education for 38 weeks a year. Children attend a range of settings including nursery classes in primary schools, state-funded nursery schools private nurseries, voluntary preschool groups and childminders. The Early Years Foundation Stage is the regulatory and quality framework for all early years' settings offering provision for children from birth to age 5. Whilst 5 is the statutory school starting age in England, in practice many children start school when they are 4.¹ On completion of the Foundation Stage, at age 5, children undergo an assessment, the 'Early Years Foundation Stage Profile', which assesses the level of achievement across 17 early learning goals, the national outcomes of which are published annually.² If children attend state-funded schools, they are subject to the national curriculum, revised in 2014 to focus on a more narrowly-defined set of skills than was the case in the previous curriculum.

¹ In 2011, the government made it possible for all children in England to start school from the first September after her/ his fourth birthday, or take up a free full-time Nursery place instead until the child turns 5. Doing the latter means that parents whose child turns 5 in late spring or summer risk not finding a place in Reception/ Foundation Stage 2 (those terms used interchangeably for the first school class) when their child does turn 5 and the child therefore has to go straight into Year 1 from Nursery the September after they turn 5. In order to avoid that happening, the majority of parents place their child in full-time schooling from the first September after their fourth birthday.

² This is to be replaced by a baseline assessment from September 2016, which children will undertake when they enter a Reception class, and will focus on literacy, reasoning and cognition. From Reception classes, children move through Years 1-6 of primary school (ages 6-11).

Testing is recurrent throughout primary school. Children undergo a phonics screening test in Year 1, the outcomes of which are published nationally, and they take part in end of Key Stage 1 assessments at age 7.³

Scotland

Most children in preschool education in Scotland are three or four years old, with 96% of four-year-old children in part-time provision funded by the government and provided by the public, private, or voluntary sectors. Children typically spend most of the time in their preschool setting choosing freely from a range of activities provided by the educators. Play, alone or with others, is considered to be an important medium for learning. Primary schooling is organised as a separate level of education over seven years from age 5 to 12. The end of compulsory education is age 16, although secondary education can extend to age 18. Funding is the responsibility of local government councils, which receive government funding and local tax revenues, and make their own decisions about the proportion to spend on education.

The Curriculum for Excellence guides teaching and learning in Scotland for children and young people aged 3 to 18. This gives teachers some autonomy in deciding how to develop children's capacities as successful learners, confident individuals, responsible citizens and effective contributors. The Early Level encompasses children three to six years old and bridges the transition to primary school.

The Families

Family 1

London, UK

Family members

- Father, 51, high digital user (UK1f)
- Mother, 41, high digital user (UK1m)
- Boy, 8, unknown digital usage (UK1b8)
- Boy, 6, high digital user (UK1b6)
- Boy, 3, low digital user (UK1b3)



Narrative

³ From 2016, children of this age will undergo an English, grammar, spelling and punctuation test, which will be published nationally and will enable comparisons to be made between schools. This already occurs at the end of primary school, when children undertake national tests, the outcomes of which are published school by school and used to develop local and national 'league tables'.

The family lived in the suburbs of London in a small upstairs flat off a main road. The three boys shared one room; their grown-up half-sister did not live with them. Both parents completed college and used to be professional artists. They were a single income family, the mother stayed at home with the children and the father worked as a paramedic. The parents' artistic background showed in their living environment. The flat was filled with big boxes of art supplies and craft materials, books, children's games and many DVDs. The family possessed cultural capital, but not economic capital. The family owned five computers or laptops, an iPad, professional photographic equipment, a hand-me-down Nintendo in the children's bedroom, a TV and both parents had smartphones (which UK1b6 is not aware of). Yet the father said he had been 'dragged kicking and screaming into the digital age' and that he just 'learns on the hoof'. The mother had established a calm domestic routine; she particularly valued the internet for researching upcoming creative and craft events to take the family to.

This artistic family treats digital activities as more individual in nature, though they also share offline creative activities together.

Most of the children's interview was conducted with UK1b6. In terms of devices, UK1b6 enjoyed playing with the iPad the most, followed by the Nintendo. He presented himself as very invested in technology. He showed great interest in a number of games and could provide detailed descriptions of the games' functionality and depth. His memory and knowledge hinted at a lot of experience in playing these games. The father had taught UK1b6 how to google Children's BBC (CBBC) to find games to play. On the day of the interview, he had just learned a *Scooby Doo* game and was already able to talk about it knowledgeably: "you go on Google, and then you take away the Google. You type in Google, and then you just get it all out, and then you type in CBBC games... I normally do it on computer because then... you get more games, because on iPad you only get ten games." While the two older children had learned to google CBBC, they did not yet realize that the whole world is online. For example, UK1b6 had recently discovered the possibility of online shopping when he watched his mother complete a purchase.

UK1b6 was confident (at school, "I already know how to do all the games") and had a narrative of how games change and develop over time, although his understanding and skills had limits. He saw technology at school as uncertain in its purpose and sometimes it breaks. When on the tablet, UK1b6 got impatient at a game's loading time and tried to swipe the tablet to speed it up – a misunderstanding.

The two older boys both liked playing with the Nintendo, even though they often played separately. They took turns and the older one took precedence; the same happened with the tablet. While there were only a few games the brothers play together, they did play with friends. There was no indication of competitive game play, but the boys fought over use of the technologies at home. UK1b3 found the Nintendo more interesting than the iPad and attempted to join in. UK1b6 gave him a non-functional remote control to occupy him and the little brother thought he was playing along. As his parents said, UK1b3 liked to join in everything he can.

The mother researched software for the children, favouring aesthetically creative or alternative games (e.g. *Monument Valley*, *Machinarium*). She had downloaded and registered the older boys for a learning game, *Komodo*. UK1b6 said that it is not really a game and he struggles with the learning software. UK1b6 and his parents both also mentioned *Monument Valley*, while only the parents referred to *Minecraft* or *Machinarium*. Overall, the parents supported arty or aesthetic games and did not like violent games; UK1b6 appeared to feel the opposite. They disagreed about zombies and

other scary characters (e.g. Slenderman), the father saw this as central to narrative, the mother was worried the children will have nightmares. UK1b6 didn't indicate any concerns about unsafe, scary or dangerous content.

If he had to choose, UK1b6 preferred to do offline activities and crafts over digital games both at home and when visiting his grandparents. He hinted that these activities allow him to be more in control whereas a digital game dictates what he does. While UK1b6 was playing games on the iPad, his little brother didn't look at the screen or want to join in especially. He (UK1b3) had one game on the tablet which the mother had shown him. He didn't play it properly yet, but he enjoyed it.

The parents had introduced rules for technology use. The boys were only allowed to play the Nintendo on the weekends and with the iPad on Fridays and weekends. The mother thought this was now taking up too much time: "that's their thing for the weekend which we've got to try and stop a bit." Despite this concern, UK1b6 sometimes appeared to play before school. The children were obedient, orderly, calm and attentive, unless absorbed into a game. When digital devices evoked conflicts, the father was the one who got angry. Digital activities in this family were considered more individual and tended to be undertaken separately, while family activities were largely non-digital (e.g. board games, parks, activities in public museums, galleries, etc.). The parents chose and set up the media and its content for their children. They saw it as imaginative and entertaining. Yet, there was little convergence between online and offline play, e.g. Lego was a physical game, not also a website; *Scooby Doo* seemed a CBBC game, but perhaps not a TV show.

Family 2

London, UK

Family members

- Father, 39, high digital user (UK2f)
- Mother, 40, medium digital user (UK2m)
- Girl, 6, medium digital user (UK2g6)
- Boy, 5, medium digital user (UK2b5)



Narrative

The family lived in a small flat on a main road in the suburbs of London. It was rather sparse in décor, with few home comforts visible. They were a single income family.

Both parents had completed college degrees. The father worked in academia and while the mother had previously worked in higher education, she currently stayed at home with the children. The family was very lively and talkative; especially the younger child appeared restless and agitated. UK2b5 and UK2g6 each had a Nintendo DS and a LeapPad (of which one was broken), as well as a toy smartphone to share. The children's LeapPad was a learning technology similar to a tablet. However, since the children got their Nintendos, they hadn't used it much. In fact, it was out of battery when we asked them to show us what they could do with it.

Competing with each other on the Nintendo is continually absorbing for the children in this home.

Devices were separated between children and parents. The father had a smartphone and each parent had their own laptop; there was no tablet at home. However, the father enjoyed playing Nintendo with the children and the son talked of playing *Angry Birds* on his father's iPhone (something the father did not divulge). While the mother hated the *Super Mario* game (the music irritated her especially), she approved of a pink *Ponyclub* game and believed that caring for a 'living creature' taught her daughter good values ("the more you nurse it, you win prizes and the more you work in the stable, you earn money, and then you can buy things. So I actually really approve of that game, I really like it"). Indeed, she was very conscious of the values she sought to instil in her children, perhaps because they were a church-going family; she also judged other parents and feared being judged as a parent herself. One suspected that, although she was unusually explicit, these fears lurked in the minds of many parents:

"I don't want to be judged as a mother who doesn't take the time to do art and craft, to sit down and read, to go on nature walks, to you know, so I'm very careful about, that's why I say, I'm careful about how long they can go on the computer for. I don't want to be told that, you know, because some people do judge parents."

Upon our arrival, both children sat on the couch with their handheld Nintendos. The children's favourite game is was *Super Mario* and they played non-stop during our visit. They tended to play sitting next to each other, each on their own device and occasionally watching each other's progress. They competed in terms of how well they performed in a game and which games their parents purchased for them. UK2g6 was older and therefore the boss. Despite the family's clear separation of what's mine and what's yours, the girl was very keen on teaching us how to play *Super Mario* and gladly shared her device. The younger brother was absorbed into the game and he was clear about how it worked: "He's [Mario] a goodie, because he tries to save the princess and you see the princess on World Eight, and when you finish – when you finish all of the levels, you get to see the princess again. But when you've finished all of the levels, then you can actually – you meet Luigi."

According to UK2g6, the parents used their laptops daily. She said that she used to be allowed on the mother's computer, but it crashed and that privilege had now been withdrawn (the mother also told this story, as well as a story of her daughter accidentally turning on the webcam, leading the mother to stop the children using the laptop themselves). The children didn't understand what the internet is; they thought it is a computer. They had no perception of what "going online" meant. The mother said the laptop was used for work (though she did not work) and for researching how to parent, e.g. places to go, things to do, etc. She kept the laptop hidden so as not to bring work into the living space. The mother further explained that she played a reading game with UK2g6 on the laptop and showed both children how to google and find out things: "I use the laptop a lot for the kids; they don't use it, but like I'll sit there and I'll go on YouTube, if they've got homework. Like they had to listen to something about Strauss, the composer, and I got it up on YouTube and then they will sit there and listen to it, and I keep finding things on YouTube for them that are educational." Nonetheless, when asked, the children said it was their father who had taught them how to use the various technologies.

The children were not aware of any rules that restrict their usage of technologies. They were allowed to play until the mother interferes. When this was the case, the children say it was because she was worried about their eyesight, which indeed she was (and about their tripping over wires or having music too loud on headphones). The mother presented a somewhat different account, saying that the children were only allowed to play on the weekends, occasionally a few minutes before school and in situations when a time-filler was needed, such as in the supermarket queue or on long train rides. She also said her son "becomes grumpy and becomes isolated" if he played too much. But she also acknowledged

that unless she had “actually set up an art and craft activity for them” then they were likely to play Nintendo.

Overall, the family was digitally limited. The mother was very anxious about safety and violence. She kept a close eye on the children, while the father seemed less concerned. When playing the card game, the children did not recognize some of the devices. In contrast to other families, the children were not interested in a tablet and they instead wanted more games for their Nintendos. There seemed little else to do at home though we saw a few signs of children’s activities such as toys, books or art materials.

Family 3

London, UK

Family members

- Father, 51, high digital user (UK3f)
- Mother, 47, high digital user (UK3m)
- Boy, 16, high digital user (UK3b16)
- Boy, 13, high digital user (UK3b13)
- Girl, 6, high digital user (UK3g6)



Narrative

The family lived in a middle class neighbourhood and they were home owners. They were a double income family and both parents had completed college. The father used to work as a band manager in the music business and was now a web designer. Formerly a TV producer, the mother now ran her own small business as a child minder. The father occasionally helped with the family business. There was a considerable amount of technological expertise in the family as well as a diverse range of devices, although the father described himself as self-taught. The family owned four computers / laptops, both older brothers and parents each had a smartphone, the boys shared an Xbox, the father had an iPad (widely shared within the family) and there were several devices for listening to music, e.g. an iPad and docking station with speakers, stereo set, CD players, etc. The family’s home featured plenty of craftwork, homemade decorations and art material. UK3g6 enjoyed creative activities, as was evident from the homemade art work in her bedroom. There was no technology in her room except a pink children’s radio / CD player. She also had a Barbie computer which broke.

A digitally confident family with a very skilled six-year-old girl, though digital activities have not displaced traditional play.

UK3g6 loved playing with the iPad – as her parents said proudly, she picked it up really quickly and was soon “zooming around on it”. Her favourite games were dress up games which UK3b13 downloaded for her. One of them was in Chinese, but she navigated it based on visual recognition of the icons. She also understood change in technology and spoke of an older version of the game that had recently been updated. Another game worked with the iPad’s camera. She was able to use it to take selfies (which requires her to flip the camera) and she could show us where the images are stored on the device and how to access them (“I have this crazy hair app... you take pictures of your face ... and then you can

UK3g6 loved playing with the iPad – as her parents said proudly, she picked it up really quickly and was soon “zooming around on it”. Her favourite games were dress up games which UK3b13 downloaded for her. One of them was in Chinese, but she navigated it based on visual recognition of the icons. She also understood change in technology and spoke of an older version of the game that had recently been updated. Another game worked with the iPad’s camera. She was able to use it to take selfies (which requires her to flip the camera) and she could show us where the images are stored on the device and how to access them (“I have this crazy hair app... you take pictures of your face ... and then you can

change the top and also you can take pictures as well, and you dress up people crazily and you do their hair; you can spray paint it any colour you really like”). UK3g6 and UK3b13 had 17 different games on the father’s iPad and shared one folder in which all of them were organized. She occasionally played her older brother’s games, but did find some of them a bit scary. Sharing the iPad among the children led to conflicts, especially between UK3g6 and UK3b13. The father resolved these by banning the iPad for a day, but the mother worried that technology use is “getting out of control.”

UK3g6’s other favourite activity on the iPad was watching YouTube videos of princesses, dress up and dolls. UK3g6 also watched Play-Doh videos on YouTube and then made her own Play-Doh creations. She readily identified the app icon, knew how to open it and type in search commands. She explained that she used her finger to select the video she wanted to watch, “just like the mouse on a computer”. She realized that some of the videos she watched were uploaded by amateurs. The mother sometimes also turned on the computer for UK3g6 to use it to watch YouTube, but for no other online activities. UK3g6 also enjoyed watching the BBC iPlayer (mostly together with her parents) and playing *Paper Toss* on both the iPad and smartphone. She occasionally used a computer at school and also watched her mother shop online on eBay.

As a child minder, the mother implemented the early years’ curriculum from age two for the children she cared for, including teaching children to use the computer and mouse. However, the father and UK3b13 played the most active part in educating UK3g6 about technology. UK3g6 possessed a higher degree of digital literacy than any of the other children in London-based families. For most activities on the iPad, she used appropriate technical language (e.g. the “home screen” on the iPad, “apps”, the motion of “swiping”, etc.), competently and confidently explained how she navigated the device and could identify various components of apps and how they were organised on the device.

UK3g6 used the iPad on most days of the week. She was not aware of any rules that restricted her usage, except that she was not allowed to use it near bed time. According to her parents, she was only allowed to use it on Fridays and Saturday nights, but throughout the interview they fell into a narrative of their daughter engaging with digital devices on a daily on-and-off basis (and they were glad she uses it in the mornings to occupy herself if she woke earlier than they do). UK3g6 enjoyed the iPad most; she was also very keen on playing with Barbies and PlayMobil. She implied that digital games were structured, while these toys were more open to any form of creative and imaginative game.

Over the course of the interview, it emerged that the parents aimed to introduce cognitive uses of digital devices early but to delay social uses as long as possible; as the mother said, “my biggest fear is that it will take over her everyday living in the sense that her social skills will drop back.” However, the parents had different approaches to technology. The father was very enthusiastic about its potential, but was also aware of issues of freedom – for instance, he had taught his 16-year old son how to use the dark net to avoid surveillance. The mother had a lot of anxieties, worries and the desire to control the children’s technology use. Overall, this family took an individualistic approach to technology use: while for UK3g6 digital devices were shared in the family, for other family members they were personal possessions and activities. When we asked UK3g6, “is there an activity, maybe on the iPad or on the computer or maybe on the telly that you do together as a family?” her answer was prompt: “Not really, I don’t think.”

Family 4

London, UK

Family members

- Father, 40's, medium digital user (UK4f)
- Mother, 40s, high digital user (UK4m)
- Boy, 6, high digital user (UK4b6)

Narrative

The family rented a small, relatively impoverished flat in a middle-class suburb. Their income was above the median but they were clearly not very well off. Both parents were university educated. The mother was from Latin America and worked as a secretary; the father was Polish and was employed as a chef. They worked shifts so as to be there for UK4b6. They were very conscious that neither as British nor a native speaker, and so they had moved to this comfortable community location to give their son a place to belong. They spoke English at home. The flat was cramped and fairly dominated by the son's toys.

The mother was very talkative, so the father struggled to get a word in. She was keen to tell us how much they wanted to discuss digital matters with us, and that this interview was something they have been preparing for and wanted to build on later in reflecting together on how they managed their son's digital opportunities. The mother emphasized her liberal approach to technology, but in fact she communicated a lot of anxiety. The father was indeed concerned about what risks their son might encounter online, thus he used his technical knowledge to research filters and safety tools, and had recently created passwords for the family laptop so that each family member had a separate login (though he did not apply any filters; rather, the son's activities were automatically reported to the parents' joint email account).

The family had a television with Sky TV, one laptop, a Wii, and each family member had a smartphone, although the son's was contested between the parents (his mother gave him her old smartphone and the father was upset about this). UK4b6 loved playing with the Wii. He had seven games; his least favourite was a Lego game and he liked the FIFA football games best – he played the newest *FIFA 2014* game on his smartphone. He had his own passworded account on the family laptop and used it to play CBeebies games. He enjoyed a game called *Treasure Hunt*, but didn't care about any of the other games in particular – though for a while he played *Happy Wheels* till his parents saw it and banned it for its gory violence. He played with the phone and Wii every day and watched cartoons or children's programmes that he had recorded from the TV every night. Although the families of both parents were abroad, Skype wasn't really used – partly because the father didn't like it, partly because the son didn't really speak the language of his relatives on either side.

The parents told us that they were proud of their son's digital competence and emphasized how he could start, search, and select what he wanted to do on the Wii, YouTube, television and recorder. While we observed that UK4b6 was indeed able to independently open and start games on the Wii, laptop and phone, he struggled with most other digital activities.



These parents overestimate their son's digital skills, while he is mainly keen on FIFA games online to fill up his spare time.

He had trouble explaining the technical navigation of a game or device without actually being on it. He followed visual markers as they came up, unaware of what the next step or screen would look like or require him to do. When we asked UK4b6 to show us what he could do on the laptop, Google Search was open. He didn't know what it was and when we told him, he said he had never heard of it. He also didn't know what the internet was or a web page. This observation clashed with the mother's narrative of her son's advanced digital skills. According to her, he even converged technology, e.g. when he watched a television programme that he himself had recorded, and then searched for more info on a particular element he liked (e.g. a band, character, etc.) on the laptop via YouTube or Google.

Contrary to the other London-based children, UK4b6 expressed little understanding of improvement in skills over time. His engagement appeared highly reward-driven – if something took longer or didn't tell him he did well (e.g. scoring goals in *FIFA*), he visibly got bored within a matter of minutes and dropped the activity. He also could not articulate how playing football either on a device such as the Wii or a smartphone and with friends outside in the park were different activities. Despite being keen on football, playing the *FIFA* game didn't make him want to go outside and play himself, although he would kick a ball around with the neighbouring children outside. By contrast with children in some of the other families, UK4b6 appeared to lack the curiosity to want to understand technology or wonder about how it works.

Similarly to the other London families, digital activities tended not to be shared experiences as a family and if they are shared, the father seemed to be more involved. UK4f occasionally played with the son on the Wii, but engaging with technology mostly happened on an individual basis. Despite the mother's strong and opinionated presence during the interview, she was almost absent from UK4b6's narrative about his digital world.

The parents didn't watch their son play, and nor did UK4b6 watch them on the laptop and was unaware of what they use it for. Overall, the parents talked down the amount of their son's device use, but as with the other families the devices were commonly used in practice to fill gaps in the day, to deal with domestic difficulties or when the parents needed a moment to themselves. The parents planned to spend the incentive we had given them for their participation on getting a tablet. The son said if he could choose one thing he really wanted his parents to buy for him, it would be another football game for the Wii.

Family 5

Sheffield, UK

Family members

- Mother, 40s, low digital user (UK5m)
- Boy, 12, medium digital user (UK5b12)
- Girl, 10, medium digital user (UK5g10)
- Girl, 6, low digital user (UK5gi6)
- Girl, 6, low digital user (UK5gii6)



Narrative

This single parent family consisted of a mother and her four children, including twin 6-year-old girls, who all lived in a Victorian terrace. The father lived nearby following the parents' divorce and the children spent one night a week and alternate weekends at their father's house. Household income was around the national median. The mother was university educated and described the family as White British. She volunteered at a special needs school one or two days a week. The mother planned an active week for the children, taking them to swimming and

gymnastics and ensuring they went out for regular walks at weekends. The family loved baking together. The mother allowed the twins to use the iPad as a treat if they had finished their tasks towards the end of the week and at weekends. The family went to the cinema more regularly now that the twins were older and they tended to watch family comedies and Disney films. There was a television, a DVD player, two smartphones (UK5m's and UK5b12's), one laptop, one X-Box, three CD Players, an MP3 player, a Nintendo DS, a radio and an iPad in the home.

The mother did not want technology to dominate the children's lives and she regulated its use by all the children, allowing the older two to use technology more frequently than the twins. The nursery they attended enabled the children to use computers from an early age, but the mother described the twins as not being very interested in their use at that stage. Now she estimated their technology use at an hour a day during the week and two to three hours a day at the weekend.

The children's interview was conducted primarily with the twin girls, UK5gi6 and UK5gii6. They were very close and sometimes completed each other's sentences. UK5fi6 was more confident than UK5gii6 and occasionally answered on behalf of her sister. The girls used to enjoy playing the free games website *friv.co.uk* on the family laptop, but since the mother bought an iPad, they have primarily used that and have lost interest in *FRIV*. As all of the family used the iPad, time on it is strictly limited. The children used a timer and allowed each other to play on the iPad for approximately ten minutes each at any one time. The twins played a number of games on the iPad but spent most of their time playing either a *Frozen* game or *Minecraft*. The mother described *Minecraft* as being like a modern board game as all four children played it together, with those not in control of the iPad watching and advising the person playing the game. UK5gi6 and UK5gii6 were confident in using the *Frozen* game and *Minecraft* independently, demonstrating an ability to control the iPad and navigate key aspects of the games. UK5gi6 and UK5gii6 liked to play games on the mother's smartphone, but they particularly liked making videos of themselves role-playing and dancing using the video camera.

The older brother played a FIFA game on his X-box in the cellar and the twins rarely played on this, enjoying games such as skiing when their older sister played with them but when she moved off Xbox play, they also lost interest. The twins loved to listen to their older sister's musical choices on Spotify, dancing along to the tunes. UK5gi6 and UK5gii6 liked to listen to the *Frozen* soundtrack on a CD player they had in their bedroom and also enjoyed Capital Radio, which the mother played in the car.

UK5gi6 and UK5gii6 watched more television when staying at their father's house than they did when at the mother's house. The main technology use at the father's house was

The 6 year-old twin girls play *Minecraft* with their older brother and sister, the four of them playing the game together as they watch and advise each other.

television and the use of his smartphone to play games. The twins watched television both together and with the whole family. UK5gi6 and UK5gii6 were influenced by their older siblings' choices when watching television, so they watched *Wolfblood* with them (a fantasy/supernatural series aimed at teenagers) and *Tracey Beaker*. The twins watched the two main UK children's television channels, CBBC and Milkshake together, but they also enjoyed viewing programmes that they used to watch regularly on CBeebies (a preschool television channel). The whole family enjoyed viewing family-oriented programmes together, such as *Strictly Come Dancing* and *British Bake-off*, but the mother stated that they didn't like 'reality television' programmes such as *X-Factor*.

The mother had conducted online searches with UK5gi6 and UK5gii6 as part of a homework task on explorers, but she found it frustrating, as it was difficult to find information pitched at their age group. She was concerned about the children finding inappropriate content online and also about them accessing information that was incorrect, feeling that information found in an encyclopaedia or a book was more reliable. She did use a password on her smartphone and iPad (although not successfully, as the children knew the password) and had been shown how to place a firewall on her phone during a school session for parents, but she was not aware how to manage safety systems otherwise and would value gaining this knowledge.

Technology played only one part in what is a rich and stimulating play life for the twins. UK5gi6 and UK5gii6 loved to role-play. For example, they take on the characters in *Frozen*, re-enacting the scenes and singing the songs, and they also liked to play school, with their older sister taking on the role of the teacher. The twins also enjoyed writing in journals and drawing and painting. They didn't play with toys as much as their mother would like them to do, but they did play with a farm set and Playmobil. Reading was a favourite activity, with over 100 children's books in the house.

Family 6

Sheffield, UK

Family members

- Mother, 30s, high digital user (UK6m)
- Step-father, 40s, high digital user (UK6f)
- Boy, 16, high digital user (UK6b16)
- Girl, 6, high digital user (UK6g6)
- Girl, 5, high digital user (UK6g5)



Narrative

The family lived in a semi-detached house and had a household income that was just above the median. The mother worked shifts as a carer for people with alcohol and mental health problems. She had recently completed a degree in social care. The step-father had been educated to college level and was self-employed as a painter and decorator. The mother described the family's ethnicity as Afro-Caribbean. The house was focused on the children's interests, with a cat and two rabbits having the run of the garden. The family liked to have movie nights together, where they watched films chosen by the youngest girls. They also liked to eat together at local restaurants. The children had an active life, going swimming and playing with friends, visiting grandmother and occasionally staying at their father's house. There were four televisions, a DVD player, three smartphones (the mother's, step-father's and UK6b16's), one computer, a laptop, an X-Box, Wii and Sony Playstation2, a CD Player and a radio in the home.

This family enjoys using a range of technologies, both separately and together, with Facebook being a source of interaction around news and photographs.

UK6g6 and UK6g5 used a range of technologies over the week. The mother found it hard to estimate the amount of time spent on various technologies over a week, as it differed so much, but the descriptions of use suggested that the girls used technology for more than an average amount of time. They enjoyed television, watching programmes about witches aimed at teenagers, and also liked films, particularly Disney princess films, including *Frozen*, which they have watched repeatedly. The family recently got Netflix and so the children enjoyed watching films on that. UK6g6 also used catch-up services if she missed films and programmes that she had wanted to see.

UK6g6 could use the mother's smartphone for hours at a time. She downloaded free apps and liked to play games, her favourite current game being *Temple Run*. She liked to listen to music on the phone and has downloaded her own songs, with R&B being popular along with the *Frozen* hits. There was music playing in the house all day, as all the family enjoy music.

UK6g6 liked to watch her favourite singers on YouTube. UK6g6 enjoyed taking photographs of various things, people and artefacts using her mother's smartphone, and then sent some of them to her mother's friends. She has even taken one of her mother asleep and sent it on to friends. UK6g6 and UK6g5 made lots of films on their mother's smartphone of their role-play, and they interviewed each other in role as fantasy characters, such as witches.

UK6g6 used the family laptop early in the morning, before everyone else got up. She sat on the mother's bed sometimes as she used it, downloading and playing games, but also writing stories. The mother tried to play educational games with UK6g6, but suggested that she got bored with those and moved on to more entertainment-focused uses of the laptop. UK6g6 spent a lot of time looking at her brother's Facebook page, with him guiding her. The mother also shared information about what friends and family are doing on Facebook. The girls liked to find photographs of themselves on Facebook.

UK6b16 played videogames such as *Call of Duty* and UK6g6 played with him. However, the mother said that UK6g6 didn't stay on the game very long as it was not appropriate for her. She would pick a character and gun, but then exit the game before any violence

occurs. Similarly, she played a car-racing video game, but spent most of her time choosing and designing a car.

UK6g6 owned a range of toys and artefacts that related to her online interests. For example, she liked to watch *Winx*, an American television programme about fairies, and played online games and owns toys related to it. The mother stated that UK6g6 asked for toys that she has seen advertised on television and so she has ended up with five toy laptops. Two of these were displayed on the visit and UK6g6 and her sister used them to play phonics and number games.

Although UK6g6 spent a lot of time using technology, she also had a range of other interests. She enjoyed reading, but found reading difficult and relied on memory to retell stories. UK6g6 liked to play with her friends in the street and she enjoyed gardening. The mother did not have significant concerns about online play, as she said UK6g6 always called her if she came across something she did not understand or did not like and indeed she said that she was more concerned about UK6g6's safety when playing out than when online. She had set parental controls on her phone so that YouTube, for example, could not show inappropriate content. The mother's main concern was about ensuring that too much time was not spent with technology, but she suggested UK6g6 had a balanced life.

Family 7

Sheffield, UK

Family members

- Father, 40s, low digital user (UK7f)
- Mother, 40s, low digital user (UK7m)
- Girl, 7, low/ medium digital user (UK7g7)
- Girl, 4, low/ medium digital user (UK7g4)



Narrative

The family lived in a detached house and had a household income that was above the median, but not high. The mother worked part-time as a psychotherapist and the father worked part-time delivering organic fruit and vegetables. The father used to work in land development in London but tired of the lack of ethics in the field and so moved north to take up a part-time job and lead a less pressurised life. He felt that the new way of life suits the family better. The father described the family's ethnicity as White British. The mother did not participate in the interview and the father described her as not being very interested in technology. He was the one who oversaw the children's media use. The father described the children as 'outdoorsy kids' and stated that technology was not widely used in the family. The family enjoyed walking in the countryside, visiting grandparents who lived in the city and visiting the local farmer's market and parks. The family owned a television, a DVD player, two

This family enjoys both individual and collaborative uses of technologies, such as communicating with distant family members using Skype and Facetime.

smartphones (the mother's and father's), one computer and two laptops, a Playstation, a CD player, MP3 player and an iPad Mini.

The family enjoyed watching films together and preferred high quality, independent children's films, such as *The Fox and the Child*. The father suggested that the children did enjoy popular films, such as *Monsters Inc* and *Frozen*, but they moved on to new interests regularly. UK7g7's favourite activity was reading books, which she would do until midnight if her parents didn't make her turn off her light. UK7g7 and UK7g4 watched television together, enjoying CBeebies and CBBC, public broadcasting channels. They also enjoyed watching nature programmes, comedy programmes and family programmes such as *Strictly Come Dancing* with their parents.

The family had an iPad Mini, which UK7g7 and her sister enjoyed using. The girls played games on it, such as *Angry Birds*, *Monsters Run* and *R C Plane*. They also enjoyed playing the same games on the father's iPhone. UK7g7 had played *Monsters Run* frequently for several months, becoming very competent in playing the game, but had become bored with it. UK7g7 played games on other platforms (e.g. Wii) at friends' houses and asked for the console when she returned home, but then forgot about it.

The father identified how the children worked out the password for his phone eighteen months ago and they now accessed it independently. He had now put password protection in for purchases, as he was concerned about them buying goods online. UK7g7 had been interested in apps since she was three and used to play with drawing apps and the compass on her father's iPhone, working out quickly that the arrow always pointed North. UK7g7 used the iPhone to take photographs from a very early age and understood how to frame images from the age of three. UK7g4 also took photographs using the same phone, although was not as discerning in topic as UK7g7. UK7g7 used the iPhone to take videos of natural phenomena such as birds and the sea. UK7g7 liked to send text messages to family members and she had also uploaded photographs to her father's Twitter feed.

The girls enjoyed listening to music videos on YouTube and they linked the iPhone up to the television so they could watch the videos on the large screen. UK7g7 also plugged her father's smartphone into a Bluetooth-connected speaker stand and took it around the house, dancing to music, with Katy Perry and Bruno Mars being particular favourites. The girls enjoyed listening to a Mozart CD at bedtime, a CD that they have listened to daily since birth (a Don Campbell compilation, marketed as enhancing children's intelligence).

The children used the iPhone and iPad mini to access the internet with their father, using Wikipedia to identify facts, or search the web using Safari. This hardware was also important in communicating with family members in Wiltshire, London and Australia using Skype and FaceTime. These activities were also undertaken on one of the family's computers, but less often. The father stated that the family didn't have rules, as UK7g7 managed technology use well, although he felt that he would have to have rules with UK7g4 as she got older, as she was more interested in technology than UK7g7.

Much of UK7g7 and UK7g4's time was spent engaging in a range of playful activities including outdoor play, imaginative play, drawing and painting and technology played a relatively small, but important, part in their lives.

Family 8

Edinburgh, UK

Family members

- Father, 40, low digital user (UK8f)
- Mother, 40, low digital user (UK8m)
- Girl, 7, low/ medium digital user (UK8g7)
- Boy, 4, low/ medium digital user (UK8b4)

Narrative

The family lived in a semi-detached house in the suburbs of Edinburgh. The father was a secondary school teacher, while the mother was currently retraining, and was away on a course during our visit. The family was comfortably off, but led a consciously low-tech life, favouring outdoor activities. They owned a laptop, a television, a DVD player, a CD player and amplifier, a VTech Power Xtra toy laptop, a digital camera, and both children had CD players in their bedrooms. The mother had recently purchased a smartphone, although the father had not, describing himself repeatedly as a “technophobe” and “Luddite”.

Most of the children’s interview was conducted with UK8g7, with UK8b4 joining in enthusiastically. They were both very active, constantly running around the room, jumping on furniture and showing off gymnastic moves. UK8g7 repeatedly cited sports as her favourite activities, rather than a physical object or digital device, while her father noted that drawing and craft activities tended to hold her attention. Board games were a feature of family time, although the children tended not to play them together. UK8g7 also enjoyed playing with loom bands, but the range of physical toys presented to the interviewer was limited, despite an array of toys in both the sitting room and bedrooms.

Technology use was very limited, for all four family members. Television was restricted to 30-60 minutes of “Telly Time” each evening, with another short window in the morning at weekends. The children owned around 20 DVDs, which they had watched many times. The parents rarely watched television or films with them. BBC iPlayer was used “very occasionally”, but programmes were generally recorded from the television. UK8g7 used YouTube on the laptop to view clips of animals, and UK8b4 had been allowed to watch short clips of Pixar’s *Cars* when younger, although this seemed to have been due to a brief obsession with the film, now channelled into *Cars* toys and role play. The only consistent interaction with the laptop was for checking weather reports each day during holidays and at weekends, reinforcing their outdoor lifestyle.



“I tend to think that the world they’re going to be part of is going to be so heavily digitalised anyway; they’re going to spend a huge amount of their lives in front of screens, I’m not sure they need to be steeped in that kind of culture by me yet.”



Aside from television and DVDs, their main access to digital entertainment was via their cousins, who “have loads of iPads”. UK8b4 also had access to tablets at his nursery. Notably, neither child knew the names of the iPad apps they had played, although their descriptions were detailed enough to permit identification. UK8g7 had played *Temple Run* several times on her mother’s new smartphone, and knew it by name. The CD players in their

bedroom were generally used for listening to storybooks on CD, with 10-15 stories in UK8g7’s bedside drawer. She also had a digital camera (“not an expensive one, because it’s likely to get lost, but it’s a proper little digital camera”) which she enjoyed using. However, she appeared to have struggled with it at some point, deleting images accidentally, so she restricted herself to taking images, leaving uploading and printing to her mother.

The father provided an eloquent justification for their low-tech lifestyle, stating that children would be exposed to screen culture for much of their lives, so there was little need to push it on them now. He saw the future as inevitably “digital”, but was waiting for his children to request devices before purchasing anything, which they had not yet done. The mother had helped UK8g7 to use the VTech toy laptop, and allowed her to watch her working at the laptop, but there was little evidence of modelling behaviours in relation to digital devices, nor of an engagement with educational games or apps.

Overall, the family were unusually low users of technology. Their television was regularly used, and cited as the favourite device by both children, but was old-fashioned and small. Digital technology was only for use when bored or unable to go outside. Social media was barely mentioned, and there were no games consoles, handheld devices, MP3 players or tablets in the home. As the father stated several times: “I do feel like a bit of a Luddite... I think there are other ways of keeping myself busy.”

Family 9

Edinburgh, UK

Family members

- Father, 51, medium/high digital user (UK9f)
- Mother, 46, low digital user (UK9m)
- Girl, 6, medium digital user (UK9g6)



Narrative

The family lived in a small terraced house in suburban Edinburgh. Both parents were in full-time employment, with the mother working as a secretary and the father in fibre-optic communications. The family owned two televisions, a DVD player, two laptops (one exclusively for the father’s work), an iPad Mini, two iPods, a Wii (barely used and missing both controllers), a digital camera and two smartphones. The daughter had a LeapPad (now broken). The daughter’s devices (iPod, camera) tended to be hand-me-downs from her mother.

The family were active and enjoyed outdoor play, but positively disposed to technology. Like Family 8, tablet and phone use was primarily for games, rather than educational activities. The child's usage was variable – the mother suggested that her daughter went through phases of favouring certain devices, and this seemed to be confirmed by the daughter. For example, she had to ask for the passcode to the iPad, having not used it for some weeks. She demonstrated some sophistication in her use of the laptop, citing specific search terms for the loom band videos she liked on YouTube, and her mother suggested that she could engage with sites such as CBeebies on her own. The daughter also made a clear distinction between digital devices and “stuff that doesn't use battery”. UK9g6 was very keen to show off her expertise, but also expressed frustration with some apps. She was melodramatically frustrated with loading times, and when it went wrong. There was an element of performing to the new adult in the room.

Rules were few, but firmly adhered to: an hour of television before bed, and perhaps some time in the morning at weekends. UK9g6 expressed some disquiet about the lack of parental controls on the laptop, but not because of inappropriate content: “I think there should be [a password] because if someone asks to have a look at your computer, they might open it up and try to steal stuff off your computer.” She seemed unaware of the meaning of “online” versus apps or games. The mother is unconcerned about her usage, noting that “she uses the technology, but it's not the most important thing in her little world.” For example, the family used FaceTime to speak to UK9g6's godfather in the USA, but the mother reported some reticence to engage.

School was identified by both interviewees as a key site for finding out about new apps and games – teacher recommendation was a common source for new content. This may make the family positively disposed to technology – it had cachet and legitimacy when recommended by an education provider, rather than a peer. However, teenage children of the mother's friends often showed her how to use new apps. Overall, the family viewed technology as positive, as part of a varied programme of leisure activity. Educational potential, aside from a stargazing app, had not been explored, and digital devices were seen as modes of entertainment.

“It's through school that I think she's learned to navigate through websites and things, not through us really teaching her.”



Family 10

Edinburgh, UK

Family members

- Father, 50, medium/high digital user (UK10f)
- Mother, 49, medium digital user (UK10m)
- Boy, 7, high digital user (UK10b7)
- Boy, 9, high digital user (UK10b9)



Narrative

The family lived in a small terraced house in the suburbs of Edinburgh. They were high earners, and well educated: the mother recently completed a PhD and had two part-time jobs; the father worked freelance from home. The house was well-kept with a small garden. The sons shared a bedroom, crammed with toys and books, while the sitting room downstairs was neater. Technology was generally restricted to usage downstairs. The family owned a desktop computer (located in the home office for the father's work), a laptop (for the mother's work), a television with TiVo and Virgin On Demand, an Xbox 360, two Kobo Arc tablets, two Nintendo DSs, a Blackberry, a Kindle, a smartphone and a radio (broken). Previously, they had a Leapster. The broadband router was kept out of reach, and only switched on when required.

“Minecraft is something [else] – they build on the worlds that they’ve created. The infinite possibilities in particular of that style of game – I think it’s more creative.”

The parent interview was mainly with the mother, but the father joined in towards the end. They expressed a clear desire to monitor usage by both children, mainly in order to ensure they did not encounter violence or swearing. YouTube was viewed via the TV, mainly for music videos, but they used a parental lock. Sexuality was not yet an issue, and was treated less seriously: “[the son’s friend] typed in ‘naked ladies’, so they were all sort of giggling about that.” The father self-identified as an early adopter, although he disliked tablets and generally shunned social media, along with the mother. The children seemed to have a similar antipathy for Facebook, Twitter, etc. Surprisingly, both parents had their own Xbox games, such as *Batman: Arkham Asylum* [rated 15].



The family favoured free apps, with occasional purchases for *Minecraft* on the Xbox. In-app purchasing and access to credit accounts was a cause for concern. They also demonstrated an obsession with breakages, making the children transport their tablets in the original box when out of the house, and banning use in bed. Rules relating to time spent on *Minecraft* or tablets were strict, and the children complied.

The family were generally high digital users, with a nuanced understanding of many issues relating to digital use. Their choice of the Kobo Arc tablet perhaps suggested a willingness to carry out research before purchasing. As with families 8 and 9, tablet use was overwhelmingly seen as for gaming, rather than educational outcomes, although the parents noted benefits such as hand-eye coordination which they believed sprang from gaming.

Findings

How do children under the age of eight engage with new (online) technologies?

Digital technologies played an important role in young children's lives, and they generally embraced them with enthusiasm and pleasure. Globalised popular cultural texts and artefacts permeated young children's use of digital technologies, with the most widely used games, texts and artefacts being those that are popular in many countries (Disney films and games, *Angry Birds*, *Minecraft* and so on.) If the family owned a tablet, this is generally the most popular device with children, followed by handheld devices such as a Nintendo DS or the parents' smartphone. The most common form of engaging with these was for a range of games, followed by YouTube (or similar) and some learning software. Listening to music, visiting familiar/favourite websites and the production of photographs and videos were also popular. Often the activities observed were highly repetitive – the same game would be played over and over, or the same site visited, or the same search terms entered into YouTube. These might change over time, but at any one time, children liked to repeat just a small handful of activities, or even just one game.

The type of medium, form of engagement and amount of time spent with any technology largely depended on the domestic context, i.e. which devices the family owned and where they were located, and what the family dynamics, habits and rules were. In other words, the meaning of a device (its affordances in a particular family or for a particular child) was not fixed but depends on context and inclination.

It also depended heavily on parental interest and modelling: children were close observers of their parents' activities online as well as offline. The parents were not always aware that this happens but children paid attention to the mother doing online shopping for example, or how an older sibling played games on a digital device.

Most children revealed a confident facility in using devices. For example, UK3g6 was delighted to show us the functionality of the iPad: "this is how you turn the sound up. Sometimes it doesn't work, it plays this weird music. So you can take pictures by pressing that and you get the pictures from here ... And then if you go back and go on here again, and then you go back,... if you press that you take a picture of yourself ... That's also my game and that's my dad's game ... And you can also get stuff off eBay and I watch *Bake-Off* [on the BBC iPlayer] on here."

Some just used a device for a few games, others could use a range of apps. Games machines, smartphones and laptops tended to be used for just one or two games or activities while the tablet was more used for multiple functions, suggesting that the design of the device makes a difference to what children can do. UK3m, who taught preschool children IT skills, observed that, "you need a lot of patience to teach a three year-old to use a mouse" because of the challenge of hand-eye coordination, something that was much easier on a tablet than a computer.

Parents seemed tempted to infer more skill from observing a single activity than was warranted when we tried out different activities with a child. In other words, functional skill in using a device should not be confused with depth of understanding or critical

awareness. In all these regards, children's levels of digital skill and literacy varied considerably. While some children were able to say something about the relation between software and hardware, how apps were acquired or updated, others were less able to articulate this (though it is hard to know just what they understood).

Children under seven worked with an interface that they could barely read (though they seemed to recognise basic words – Play, OK, Click, Next). Nor could they write much; this mattered mainly when trying to use search boxes. As UK1f said, “spelling is an issue, obviously, because they're, you know, they're young, and they'll phonetically put it in. Sometimes they'll get it, you know.” Children seemed willing to undertake trial-and-error searching (via Google or YouTube). More generally, visual stimuli or audio commands were the primary markers for how all children navigated any technology.

To facilitate most digital activities, parents were needed to set up, initiate or act as proxy users. For instance, in the majority of cases, parents would search for and select appropriate websites, download apps, file/arrange the desktop and type search terms into Google or YouTube – as well as fixing any problems. UK1m said, “I think I usually need to show them, they might try but they often press something that they weren't meant to, I think, and they don't know how to get back.” In principle, older siblings could play a similar role but in practice, the majority of children and parents talked about this being a parental responsibility.

The interface design matters. Once a child was on YouTube, they could select from the list of suggested links on the right of the screen. (Parents tended to see this as skilled independent use by the child, with seemingly little awareness of what content might appear in the YouTube menu, although UK1f was worried that the boys might find ‘Pikachu on acid’ when searching for *Pokémon* videos). Set-up on the tablet or laptop also mattered – once a parent had downloaded games or apps and shown the child where they were kept, children could generally locate and use these unaided. Children's skills in navigating games, sites or search interfaces were variable, as expected given their age and cognitive development.

A few children were keen on the camera function of the phone or tablet, even using apps that edited ‘selfies’ to comic effect. Some children created videos using their parents' phones and these were often of imaginative role-play scenarios. For example, one mother reported that her twin daughters “like taking photos of just anything. So a bowl of fruit, or just anything, the shelf, and they'll take videos of each other doing little sketches, or doing a guided tour around a room” (UK5m). Other parents reported children videoing role-play scenarios, or interviews with each other in role as imaginary or television characters. The subject matter of children's photographs often appeared to be quite random, although UK7f said his 7-year-old daughter was more discerning than his 4-year-old daughter and liked to take photographs of natural objects and wildlife, which mirrored her interest in nature programmes on television. In many families, the shared viewing of photographs was also a significant activity, which included children viewing and sharing photographs on smartphones and iPad and with other family members via text-messaging (and in one case using a father's Twitter account). In one of the Sheffield families, Facebook was an important resource for sharing family photographs and the young children engaged in this activity.

While games were generally the most-preferred activity, music was also a key driver of children's uses of technology. Listening to pop music on smartphones using MP3 files or the streaming service Spotify and replaying favourite music videos on YouTube were popular activities. UK7f reported that his seven-year-old daughter would “hear something on the radio and say ‘Oh can you check it out on YouTube, there's bound to be a video,

there's bound to be a music video'. So we go to YouTube and we check it out. And we put up with the adverts." Older technologies such as CD players were generally confined to bedrooms; joint family music was generally shared through smartphones plugged into speakers or connected through Bluetooth in shared spaces. Digital radio was prevalent in children's lives, particularly at breakfast time or on car journeys. Television programmes and films were watched across a number of platforms including television sets, smartphones, tablets and console players.

Although we witnessed lots of enthusiastic use of digital devices, it should not be assumed that these activities dominated or were always preferred over others. Children also talked with enthusiasm about playing with friends, doing creative or craft activities, engaging in sports or playing outside, playing board games with their family or undertaking shared or solitary imaginative/fantasy games at home.

How are new (online) technologies perceived by the different family members?

For children, the opportunities offered by digital devices were fairly straightforward: fun and relaxation, something to share with siblings or friends, something to pass the time pleasurably when alone, something to test yourself against (getting to the next level, trying out a new challenge), and possibly something for informal learning (although we did not ask the children directly about learning). Most appreciated seemed to be the fact that a device always patiently awaits and is ready and available for any moment when the child wished to play a game, check something out or fill some time.

For parents, articulating the opportunities offered by the devices they were actively bringing into the home was more challenging. They were aware of the at-times hyperbolic claims for their educational benefits but not necessarily convinced by them. Indeed, while parents could see the immediate entertainment value of games they were unsure if other benefits were on offer. As UK1f said, "that's purely games really... they don't look to it as ...a learning sort of tool, even though they're learning subliminally from it."

When asked what the children were learning, the parents volunteered navigation, use of buttons and search, making quick decisions, perhaps the patience required for repetitive play; but they did not think the children understood the wider online world that the screen could link them to. In UK2, the parents saw the learning possibilities as those the software directly teaches (e.g. a phonics game, handwriting practice, good values). The father in UK3 offered a more naturalistic account: "no-one's taught them, it just comes naturally because ... they've evolved with the technology." UK6m felt that the use of the internet expanded her children's general knowledge: "I also think that certain things that they go on are actually teaching them some things that parents don't explain to children as well about little things in life, and they come and ask questions after, you know. I mean because if she does go on something and she'll say 'Mummy why has that happened?' and then you start to explain things."

Parents were vaguely aware that their children may not share the same perception of the opportunities but preferred not to dwell on these differences in perceptions, recognising that children favoured fun over learning activities. Many seemed unaware that their children learnt by observing parents (e.g. that a phone can be used for shopping) or that they learnt from their parents' practices rather than principles (e.g. that a tablet is good as a babysitter or time-filler).

The media-savvy UK1f could think of better ways to design the child-computer interaction, saying “it would be quite nice if, in technology, although I don’t really see it happening if they, if they’re on a website like CBeebies or something and they didn’t encourage them to play different games, if it would say, right, why don’t you go off and make this? But I don’t see they’re ever going to do that really.” But generally, few parents thought much about how the devices could be differently designed, perhaps making them more child-friendly.

Most children had little or no perception of risk associated with any devices or content other than the parents’ repeated arguments of interventions (e.g. it is bad for your eyes, you get dizzy/ill if you play for too long). They were aware of the risks of breakage, however, and occasions when something had been broken remained in the family narrative long after. They were also aware of their parents’ concerns about the risks associated with digital devices but they did not seem to feel these as significant in and of themselves; they merely represented the kind of familiar parental anxiety linked to the imposition of limits on what they were allowed to do as children.

Parents saw risks largely in terms of amount of use and the other activities that were being displaced, rather than dangers of content or contact. Amongst the parents, individual concerns varied widely: a sense that this technology was somehow out of one’s control was foremost in their minds; they were also aware of their own levels of digital literacy (if high, this gave them confidence, but more were aware of their own limitations). Some (UK3f, UK8m) were concerned about the damaging effects of instant gratification, or the fact that children became so absorbed in the technology that they ignored those around them. Some were concerned that children would no longer appreciate books (UK1f, UK3m) while others were heartened that their children still liked books (UK2m, UK5m).

In terms of content risks, we heard of few experiences with sexual content but quite a lot of talk from parents about violent, scary or gory content. Strong language also caused anxiety. Sometimes this was a concern to the parent but not the child, sometimes for both. Most parents did not spontaneously talk about specific commercial risks or about an over-commercialised environment, but when it was raised by the interviewer they recognised the concern and could talk about it as potentially problematic. UK7f reported that his seven year old daughter disliked pop-ups so much that it put her off the game: “She’s like, ‘Oh I hate these pop-ups, I don’t want that game, I don’t want that thing’, and she’ll inadvertently press it because the X to get rid of these pop-ups is tiny, deliberately so. So she’ll press it and then you’re at the app store ‘Buy, buy, buy’ and she’s like, ‘Oh dad, get rid of it’.”

The London team heard little from children and parents about contact or conduct risks – actual or potential (except for the mothers in UK2 and UK3). In Sheffield, both children and parent in one family mentioned this as a potential risk, but did not seem overly concerned, with the mother suggesting that she had more concerns about offline contact: “I’ve got more fears about when they’re out and about actually than them actually being online... Yeah, I’ve got more fears about that, because at least you know that they’re in the house. And I actually... I always get my children to know that even if they end up having a conversation, they’re not leaving this house to go and meet some stranger, you know.” (UK6m)

Parents were quite keen to talk about “where it’s all going”. They offered sci-fi visions of the digital future, and several had heard of driver-less cars, smart homes, geolocation chips or surveillance technologies. There was some interest in the convenience and personalised lifestyle this could offer but many visions of the future were dystopian. It seems they fear the loss of the life that they themselves lived as children, even sometimes fearing for society’s humanity. These changes also led parents to reflect on their own childhood (e.g.

UK2m: “the way I was brought up, I didn’t approve of any sort of digital equipment”; UK3m: “She doesn’t play outside. I did, as a child. You know, I’d be out all summer ...”). While the father in UK4 was teaching his teenage son to use the darknet to avoid government surveillance, the mother in UK2 welcomed the idea of geo-chipping her children to know that they were safe. She also recognised that future employment will increasingly demand IT skills and is glad the school has begun to teach coding: “I don’t want them to be behind the rest, I do sometimes think, maybe we should learn more, so that they can learn faster and be ahead of the game.”

What role do these new (online) technologies play in the children’s and parents’ lives?

New (online) technologies have become a prominent feature in most family members’ lives. The commonalities across families were more salient than the differences. Nonetheless, some aspects of family philosophy or style were manifested also in the ways that parents and children had appropriated the devices into their lives – an artistic family selected aesthetically-alternative games, for instance; a technologically-savvy family had a daughter with a high level of digital skills; a child in a family that liked outdoor experiences used technology to capture images of nature.

There was less consonance between parental values and children’s activities when it came to practices of use. Parents with many safety and health concerns, for instance, were not necessarily effective in limiting their children’s use. Parents who talked of losing control over the technologies (or their children) were not necessarily more controlling in practice. Indeed, parental anxieties – which are fairly high in the UK, often caused by media panics about smartphone addiction, technological innovation and its supposed threat to youthful innocence – were striking. They appeared to fuel a lot of talk about technology, but only a partial translation into family practices. Many parents felt that they would welcome guidance on managing children’s online safety and technology use.

Smartphones were generally regarded as personal property, though many children would confidently ask their parents when they wanted to use them. Laptops and tablets varied – they could be defined as personal or shared property, depending in part on how many the household possessed. The young children were the least likely in the family to own any device personally, except a handheld games machine, MP3/CD player or games console, and they knew well which household devices they were allowed to use, and whether or not explicit permission was required.

New (online) technologies were not perceived as an integral part of shared family life in most families. Rather, engaging with a digital device was considered as an individual activity, unlike offline family activities such as going to the park or playing a board game. As UK1b6 explained, although he and his brother played the same games, “most of the time we play by ourselves.” We saw only a few shared digital experiences between parents and children. Two of the families in Sheffield discussed playing online and/or videogames together. In one Sheffield family, all four children regularly played Minecraft together and the mother described this as a modern type of board game. Siblings tended to play together more often and while this is rarely initiated by the parents, they were ready to step in to deal with conflicts or to enforce rules about taking turns.

Thus while digital devices were commonplace in the family home, they were not necessarily integrated into shared family life. Devices were often considered to be personal, and each activity online seemed to be predominantly engaged with on an individual basis. In most families, it was reported that the children negotiated well amongst themselves in order to

attempt to manage access fairly, although parents sometimes had to intervene to distribute access to and time on any device equally or implement punishments, such as the removal of the device for a day or so. In families with more than one child, there appeared to be an older/younger sibling effect, i.e. acquired skills and knowledge were often transferred to the other sibling(s). Conflicts could often only be resolved by parental intervention, leading, in UK10, to the purchase of a second device: “It was just a hassle for us when we had to share one tablet. UK10b9 got his first. So we really needed to get one each” (UK10b7).

Occasionally, parents shared an activity with the child to either guide them for learning purposes or for a new device or game. After this initial parental guidance, however, some children played alone without any immediate or regular supervision by their parents. Children seemed sensitive to whether a parent’s pleasure in sharing an activity with them was genuine or dutiful (the need to show or guide or demonstrate or check up on, rather than share fun). We heard of and observed only a few spontaneously shared digital activities in the family for pleasure, although we were only in the home for a short time.

Often online activities were treated as stand-alone activities with little evidence of convergence and cross-over from one device to another, from the online to the offline or vice versa. Especially in the London families, it could not be assumed that children who saw something on television would go online to find out more about it, or that a child who listened to something on YouTube would then try and do/make/play it themselves afterwards. However, in some families we did witness cross-over from online to offline, as children played out scenarios from online games or sites, or played with toys related to online interests. In one Sheffield family, children searched the internet for a song they were learning for a school assembly and in all three families, children played online games that related to films and/or television programmes they had watched and enjoyed. Offline activities informed online communications with family members in two families who used Facebook, Twitter, Skype and FaceTime to share stories and photographs. There was also some cross-over between devices in one family, who used Bluetooth to display on their television the YouTube videos they played on the father’s smartphone. The same family also managed photo-sharing across various devices. The Edinburgh families described online to offline crossover, usually relating to instructional videos on loom bands or football skills on YouTube, although the reverse was explicitly avoided; in one example, a child discussed the option of placing action replays from *FIFA14* online: “I don’t really want to be on YouTube, because I’ve heard myself [recorded] on the iPad, and I sound a bit like a toddler” (UK10b7).

Genuine family activities shared between parents and children seem to be mainly offline, such as going out, eating together, playing board games or doing craft activities. Children positively enjoyed these shared offline activities and tended to rank them higher than time spent with digital devices. For parents, too, such activities were a source of pride, for they saw them as evidence of good parenting. For the interstices of daily life, however, portable digital devices were viewed favourably, often serving the role of time-filler and dealing with boredom on car journeys, in waiting rooms or in the supermarket queue.

How do parents manage their younger children’s use of (online) technologies?

Noting that parental mediation strategies identified in the research literature include active mediation and co-use as well as restrictive strategies such as rules and limits (Livingstone & Helsper, 2008), we looked out for a range of mediating activities on the part of parents. As noted above, we saw relatively little co-use (except when explicitly guiding

the child), though we did hear of some instances of shared game play between parents and children.

Some parents were keen to tell us of their rules almost as soon as we entered the home. It seemed to be part of demonstrating good parenting that they could display their rules and restrictions up front. Expectations of parents were also uppermost in the minds of quite a few parents, particularly since they realised they did not meet their own (or others') expectations:

"I think what happens, and I don't know if you've found this in the other families, we both work fulltime, there are days that we are absolutely exhausted and we just want that one hour to help us with some rest, and then sometimes when we get lazy we'll ask him, 'okay, do you want to play one hour?', but it's never more than one hour, I feel extremely guilty about that, 'do you want to play one hour on the computer or research things or check your game or play on your phone?'..." (UK4m)

Many parental rules were restrictive. Some were quite creative – in UK3, "on Sunday the internet shuts down at 6 o'clock" and the children are told that since the computers are all networked together, "what you can see in your computer... I can see on mine". Similarly, UK10 switched off their broadband modem for much of the day. Some parents had little to say about the benefits of digital activities. They had few ideas about which activities, sites or games they wanted to encourage or how they, as parents, could mediate their child's digital activities and engage positively, whether sociably or imaginatively. In other families, parents had quite definite ideas about what they saw as the benefits of digital activities and emphasised knowledge acquisition, educational provision that could be accessed through mobile technologies at a point of need, hand-eye coordination and enhanced communication skills.

Within the family, the parents appeared to play different roles. Fathers tended to be more laissez-faire or more involved in facilitating than restricting children's engagement with technology for fun. Mothers appeared more often to guide, manage, limit and control their children's use of technology, although some fathers did undertake this role (e.g. UK7f). This included a range of activities from researching and selecting games or websites that accorded with the family's values to imposing rules about when and for how long certain devices could be used (e.g. UK1, UK2, UK5).

Mediation of online use was varied. One family used technical tools to monitor their child's activities on the family laptop. None of the London parents had installed filters, however (such as the active content function or the safety feature on YouTube – although UK3 were considering it after a friend's child typed 'hot male' for Hotmail). Two of the Sheffield families had used filters on smartphones but not on laptops and computers, whilst one parent reported filters on all devices. In two of these families, parents insisted that children did not go online at home without their own involvement. In the same families, the children talked about work they had undertaken at school on internet safety. Children outlined how they had been introduced to the e-safety programme Hector's World, with one child commenting that, "If it like comes up with something really scary, we press on him and there's like a nice picture under the sea" (UK5gi6). One Edinburgh family employed safety features on YouTube, both for tablets and TiVo on the television. Another Edinburgh parent noted that, "We can't supervise games all the time, so they have to be age-appropriate." Parents suggested that these issues would be important to consider in the future: "Sometimes when they come to me and ask to do an image search on really quite innocent subjects, you'll be scrolling down and there's something really inappropriate. You have to deal with it. Increasingly, there's the importance of getting parental locks on these things." An Edinburgh father suggested that their children could not access unwelcome

material because of the level of their writing skills: “They’re both still at a point where they maybe have to check what the spelling is. So that’s another way we’re always checking, able to monitor what’s going on. Although I would say when UK10b9 gets to high school, he’ll have his own room, he’ll probably have his own computer in the room, and that’s really where parental locks will be coming into play. At the moment, they don’t – there’s no need for it.”

Parents had rules that manage their children’s use of technology. The most common rule distinguished restricted weekday use from more flexible weekend use. Parents tended to claim that early mornings and bedtimes were more restricted than other times, but conversations with both parents and children suggested that these rules were less often followed, and generally without sanction (UK2b5: “I am very cheeky around Nintendo...I always try to get Nintendo at snack time. Sometimes I try and sneak in under the table at snack time”). It was clear that digital devices were used to fill in all kinds of ‘gaps’ in the family timetable – with children overtly or tacitly picking them up when parents were busy, tired, cooking, shopping, driving or otherwise engaged. For example, UK7f said, “particularly in the winter time, we come home from school and nursery and they’re tired. I’ve got to cook dinner, it’s easy for them to sit for an hour, maybe, and they might do five hours in a week Monday to Friday... maybe an hour and a quarter. Sometimes they stretch it to two.”

Parents tried to limit the time spent on devices, with provision as a reward and removal as a punishment. As a result, the devices become all the more desirable to the children. One mother, however, suggested that this approach did not work for her, as it was too difficult to ensure compliance: “I might say, ‘If you don’t behave yourself when we get home, you’re not...’ but it doesn’t really work because there’s so many places for them to go and hide.” Meanwhile parents confused young children when setting time limits, since the children were generally too young to have a clear sense of time. Parents’ management in terms of content varied. While some provided parental guidance on how to find and play games (e.g. showing the children how to google CBBC), others were unaware that their child knew how to access the Google Playstore and download new games. All children were allowed to engage with technology without immediate parental supervision, although some parents reported checking regularly on children’s activities. Parental concerns were primarily about the extent of use and the extent to which it was likely to displace other activities. Further concerns included eyestrain, disrupting bedtime or sleep, affecting schoolwork (though only for older siblings, e.g. in UK3). Some worried about unexpected charges on the mobile or through apps (e.g. UK2, UK4) though none had actually experienced this. Parents seemed confident that their children were too young to have been exposed to sexual or pornographic content, though several were worried about scary or violent content giving children nightmares or exposure to content they were too young to understand (e.g. “Pikachu on acid”, UK1; or “adult things [that] have children’s icons”, UK2m).

Children had an understanding of how parental rules were age-appropriate, recognising as legitimate that older siblings could do more, use different devices or play different games because they were older, even though they might complain about this on occasion. There was an issue around time-based restrictions on use, since children under seven lack a clear sense of time and so may not understand parental injunctions.

While parents tended to overestimate their children’s digital skills (tending to generalise from facility with one device to others, as noted above), it seemed also that they tended to underestimate their children’s digital use in terms of time spent or range of activities or devices used when parents’ and children’s accounts were compared. This might be because so much digital use was to fill time when the parent was otherwise engaged.

Overall, schools were trusted to deliver the needed technology exposure and parents took their lead from the school, in some cases taking advice from teachers about suitable apps. On the other hand, the demand from the school to parents seemed fairly low. Parents were aware of some of the ways that the school used technology (for a reward, to practise certain skills, via a school intranet) but did not see this as particularly interesting, noteworthy or problematic. Some had been invited into the school for a briefing on, say, the school's intranet, but they tended to be unclear on how this worked or whether it could be judged successful. UK3m was clear that she would prefer a verbal interaction with her child's teacher rather than an email one.

Surprising findings

One of the interesting findings that has emerged in this study was the disconnect that sometimes occurs between parents' and young children's accounts of technology use. This is often the case with older children and young people (e.g. Valentine, Marsh and Pattie, 2005; Livingstone and Bober, 2006; Livingstone and Helsper, 2008), but since young children often had their parents or carers close by in the home, it is more surprising that this gap existed also for them. For example, one of the Sheffield mothers outlined how she ensured that her children could not access devices independently: "The devices, I do have control in that there are pass codes, so I have to put the password in before they can start using them. So none of them know my – even the 12 year old can't use the iPad without me putting the control in, so it has to come through me before they can put it on" (UK5m). However, one of her six-year-old twin daughters entered the password for the iPad when asked by the researcher to demonstrate her use of the device. Her mother was surprised to see her on the device when she entered the room, and the child blamed her mother for revealing the password when she herself used the iPad:

UK5m:	How did you get on to that?
UK5gi6:	I don't know.
Researcher:	She put a password in.
UK5m:	Oh! Have you...?
UK5gi6:	It's straight up the middle.
UK5m:	So you figured it out. Right, we've got to change that again now.
UK5gi6:	Well it's your fault 'cos you're, like, showing us.

A further point of interest was the way in which *Minecraft* was creating opportunities for numerous siblings to play together simultaneously. Whilst family use of virtual worlds has been noted in previous studies (e.g. Marsh, 2011), that has tended to be simultaneous use of a site using two separate accounts on two different devices, with avatars meeting on screen. In this study, two families (UK5, UK10) played together on *Minecraft* using one device and were able to save the separate *Minecraft* worlds of family members on the same iPad.

Another surprising finding relates to the lack of explicitly educational apps and games. The primary purpose of tablets was generally for gaming, in contrast to tablet use by younger children and preschoolers. There may be several factors at play here:

- 1) Parents of preschoolers may be more likely to download educational apps, such as number or spelling games, as a preparation for school. Older children saw tablets as part of leisure time, and may seek to avoid educational products.
- 2) Fewer preschoolers possessed their own tablets, suggesting that content is curated by adults. With the older age-group, the tablet was more likely to be for their exclusive use, meaning that they chose their games, rather than being presented with a selection by a parent.
- 3) The target age-group was three or four years old at the launch of the iPad and competitor products, meaning that they were already too old for the plethora of educational preschool products now available. They and their parents therefore did not associate tablets with educational ends, and may not be aware of the range of products in this genre.
- 4) Books, especially encyclopaedias, were presented to the researchers on several visits, yet the equivalent apps (by mainstream publishers such as Dorling Kindersley) were absent. There may be a perception by parents of 7-year-olds that 'book learning' cannot be delivered on a tablet, whereas parents of younger children may be seeking out more educational apps as their children grow, such as astronomy, dinosaurs or the human body, since they were already accustomed to digital education.

Finally, the mothers in both UK2 and UK4 used YouTube to show their young children poverty – they wanted them to understand how lucky they were and how difficult life could be in other parts of the world.

Method

Procedure and research ethics

The UK research was based on a contract between LSE and the European Commission – Joint Research Center, with subcontracts from LSE to the University of Sheffield and the University of Edinburgh.

Research ethics approval was requested and obtained from LSE for all three of the research locations. This covered the whole research design and implementation, with detailed provision for the following:

- Processes of recruitment via schools or day care centres, and incentives offered (this varied by location);
- Obtaining informed consent from both parents and children, plus reminders to all participants that they could refuse any questions and withdraw at any time (see Annex);
- Use of cards and play materials to put children at their ease;
- Use of a camera to record devices in the home but no photos were taken of faces or other identifying details without explicit consent;
- Confidentiality was offered conditional upon the researcher identifying no grounds for considering a child to be at risk – a protocol was also developed should a child be considered potentially to be at risk;

- Anonymity (via anonymised transcripts and reports, and encryption of all personally-identifying data including audio-recordings– these were retained only for the duration of the project);
- Data sharing – only anonymised data transcripts and codes to be shared within the national and comparative project;
- Risks to the researchers (addressed by two researchers visiting the home together);
- Offer to the family – a financial incentive, JRC goodie bags for the children in each family, a copy of the report was promised to all (and several expressed a desire to receive this in due course).

The research teams in the three locations across the UK (London, Sheffield and Edinburgh) separately recruited participants. They each visited families at home, implementing the interview schedule and observational protocol as agreed for the European comparative project overall. They shared insights on design and implementation throughout the research process, and have collaborated in the writing of this report. Minor variations in procedure across the three locations are noted in what follows. Since this was a pilot study, the challenges of methodology are also noted below, along with recommendations for further research.

Recruitment

Participants were recruited via a mix of strategies including letters sent home from primary schools (see Annex) or via daycare centres, and through indirect but personal connections when recruitment via more formal means proved difficult within the tight time-scale of the pilot project. In Edinburgh, snowball sampling produced a group of participants from the same school and suburban area.

Participants were selected based on a combination of criteria. We were particularly interested in families with children aged 6 or 7 (year 2 in the English school system, P3 in the Scottish school system), ideally with one or more younger siblings. While we were keen on finding families from low socio-economic backgrounds, this was not always feasible due to the timescale of the project. Finally, families were also selected according to their availability to accommodate the researcher's visit in a timely fashion.

Each family received a shopping voucher as a financial incentive for their participation. The research team further offered to provide material and arrange a talk on children and digital technologies if there was wider interest amongst the family's school community. The children were invited to keep the card game used during the child interview. At the end of the visit, we gave each family one of the children's goodie bags the European Commission (JRC) had provided. The Edinburgh children also received a 'Young Researcher' certificate that included their name 'for taking part in research with the University of Edinburgh' and these were very popular.

The sample

Location	Family code	Family income	Family Member Code	Sex	Age	Year school/ max level of education	Ethnicity (using categories from the UK Census)
London	1	Medium	UK1m UK1f UK1b3 UK1b6 UK1b8	female male male male male	41 51 3 6 8	Completed college Completed college Kindergarten Year 2 Year 4	White British Other mixed background Other mixed background Other mixed background Other mixed background
London	2	High	UK2m UK2f UK2b5 UK2g6	female male male female	39 40 5 6	Completed college Completed college Year 1 Year 2	White and Asian Other White European Other mixed background Other mixed background
London	3	High	UK3m UK3f UK3g6 UK3b13 UK3b16	female male female male male	47 51 6 13 16	Completed college Completed college Year 2 Year 9 Year 12	White British White British White British White British White British
London	4	High (but clearly not well off)	UK4m UK4f UK4b6	female male male	40s 40s 6	Completed college Completed college Year 2	Latina Other White European Other mixed background
Sheffield	5	Medium	UK5m UK5b12 UK5g10 UK5gi6 UK5gii6	female male female female female	40s 12 10 6 6	Completed college Y12 Y11 Y2 Y2	White British White British White British White British White British
Sheffield	6	Medium	UK6m UK6f UK6b16 UK6g6 UK6g5	female male male female female	30s 40s 16 6 5	Completed college Completed college Completed secondary Y2 Y2	Black British Black British Black British Black British Black British
Sheffield	7	Medium	UK7m UK7f UK7g7 UK7g5	female male female female	40s 40s 7 5	Completed college Completed college Y2 Y2	White British White British White British White British
Edinburgh	8	Medium	UK8m UK8f UK8g7 UK8b4	female male female male	40 40 7 4	Completed college Completed college P3 (Eng Y2) Kindergarten	White British White British White British White British
Edinburgh	9	High	UK9m UK9f UK9g6	female male female	46 51 6	Completed secondary Attended college P3 (Eng Y2)	White British White British White British
Edinburgh	10	High	UK10m UK10f UK10b9 UK10b7	female male male male	49 50 9 7	Completed college Completed college P5 (Eng Y4) P3 (Eng Y2)	White British White British White British White British

Implementing the interview and observation protocol

Generally, families were welcoming, relaxed and willing to share their experiences with digital technologies. Parents were happy for their children to be interviewed separately, although they were generally just about within earshot, and also for the researchers to take photos of their home and devices. The elements of each interview were identical: introduction, ice-breaker activity, parallel interviews with the parents and child(ren),

child-guided walk around the house and drawing activity (while the parents were still being interviewed), closing and final questions with the whole family. Each family visit lasted between 1.5 to 2 hours.

The visit started with a short introduction to explain the purpose and scope of the study, answer any questions, give each family the shopping voucher and ask them to sign the parental consent form.

Families differed in their apparent need for an ice-breaker task (using the European Schoolnet activity book in which children were invited to place stickers depicting cartoon images of typical daily activities onto a time line of the day). In some families no such task was needed as the children were already very relaxed and open; in other families, the task was attempted but only partially worked. This was because children aged six or seven, and most certainly any younger siblings, are not yet old enough to understand the concept of time. They struggled with identifying the hours of the day and could only manage with significant help from adults. In addition, the images on the stickers were tricky to identify and/or not the right images, e.g. images of a tablet, listening to music, the family having dinner, etc. were missing.

After the joint exercise, which had the merit of getting everyone chatting about their lives, the interviewers interviewed parents and child(ren) separately (either with two researchers visiting the home together, or with one researcher making two visits to the home). Parent interviews were generally lively – the question of how digital technologies were integrated into family life, and associated hopes, concerns and practices proved a welcome topic of conversation. Parents were aware that they were revealing their values and private practices in the interview, but at the same time this topic was not seen as intrusive or embarrassing (even when parents discussed conflict between themselves) and the legitimacy of researching digital activities at home was accepted. The only difficulty for some of the parent interviews was the tendency of one parent to dominate, or to speak for both, requiring the interviewer to exercise some tact in hearing from the other parent.

In some child interviews, more effort was required by the researcher to ease them into the topic and to get comfortable with the researcher. We first asked them to indicate their willingness to be interviewed on an age-appropriate child consent form. All children agreed to partake and we started the interview by playing a card game with them. Each card showed an image of a digital device or other toy and we asked the children to pick out those they have at home. Subsequently, we asked them to order the cards according to how much they liked playing with each device or toy. These were then photographed as a record and the children invited to keep the cards. (See Edinburgh Appendix EA.1: children were given stickers of smiley faces to put on the cards representing the devices they liked best.) The card game was a successful activity to engage children. However, some of the visuals were difficult to identify, such as the old-fashioned image of a tablet or MP3 player. Overall, it served well as a prompt and point of reference for the remaining interview questions.

We then asked the children to show us what they can do with a device of their choice. We watched them navigate the technology (e.g. the family tablet or parent's smartphone) and documented their activities with photos. The parent interview tended to take longer than the child interview and, eventually, children became noticeably bored and impatient with our questions.

The media/technology tour of the home was used in most family visits, whether just with the child or with parents and child together, though this depended on available time and circumstances. In some families, children were invited to draw their digital activities (e.g. while waiting for the parent interview to conclude). While the drawings revealed the children's knowledge of a device (though limited by the child's drawing abilities), observing

the children navigate their preferred device was most useful for gaining insights into their skills and understanding of the technology.

The interviews generally worked well, although the schedule was very long, forcing the interviewers to be selective in which questions they asked. The observation protocol was a good point of reference, but not very applicable in the conversation with a child, as sustaining the interaction was already demanding, or with the parent, as writing during the conversation might have undermined parental confidence.

Many of the suggested questions were not posed in an age-appropriate language and needed significant rephrasing and simplification. We also found that the interview technique is only feasible for children of five years or older. One of the London families had a three-year-old child who was too young to participate very much or focus on our questions or games.

At the end of our visit, we reconvened with the whole family, expressed our gratitude for their participation and answered any remaining questions.

Recording

Researchers from the London and Edinburgh teams visited homes equipped with two audio recorders, a camera and note pads, as well as colouring pencils for the children. All interviews were audio-recorded. In addition, the researchers took notes, where practical, of behavioural patterns, themes in the family's narrative, the set-up of the home and presence of devices as well as other non-audible observations while on site. The Edinburgh team also took contextual photographs of the street outside (excluding the participants' house), some of which are shown above. After each family visit, the researchers backed-up the audio files, discussed the research techniques and collated interview notes, leading to enriched data and useful comparisons of the parent and child interviews (see Plowman, 2014, for a discussion of these co-constructed research accounts).

The Sheffield researcher also audio-recorded the interviews and took photographs and videos using an iPad. Notes were made following the interviews on reflections regarding the families and their use of technologies. Interviews were transcribed and coded in HyperResearch using a mixture of inductive and deductive codes.

Discussion

In this section, the findings in relation to access and use of various devices, skills and learning and parental mediation are discussed in relation to other studies, with variations from previous research being considered in the light of the methodological and sampling approaches taken to the present study.

Devices, access and usage

Television was still the most widely accessed device for children of this age. The most recent Ofcom survey found that 99% of children between 3 and 7 watch television programmes on a traditional TV set. Less than 10% ever use a different device such as laptops, tablets or smartphones to watch programmes (Ofcom, 2014). In this study, some children did watch television through on-demand and catch-up services on tablets and smartphones, but for most of the time they watched films and television on large-screen sets placed in living rooms. There has been significant rise in SmartTV ownership in households with small children across the UK, growing from 12% in the homes of 5-7 year olds in 2013 (15% for 3-4 year olds) to 38% in 2014 (38% also in the homes of 3-4 year olds) (Ofcom, 2014). The numbers seem quite high, yet the findings from this study did not provide evidence of SmartTV popularity, with only a minority of families owning one and parents and children not mentioning them as a device they would like to own. This may be related to the socio-economic and educational profiles of the parents in the study.

In the UK, watching television is the most frequent use of media amongst 5-7 year olds (83%), followed by books, magazines and comics (40%) and tablet usage (29%) (Ofcom, 2014), a pattern seen in this study. Amongst children under five, BBC CBeebies dominates TV viewing and the most frequent viewing time is in the early mornings before school (Childwise, 2014). In this study, the over-6s appeared to have moved from CBeebies to CBBC, although a few watched CBeebies with younger siblings. Many families reported family viewing of popular programmes such as *British Bake Off*, *Strictly Come Dancing* or *X-Factor*. There were also reports of family viewing of films, both at home and at the cinema, indicating that the affordances of the television screen, around which family members may easily cluster, offered more opportunities for co-viewing than the smaller screens of computers, laptops and tablets.

The Ofcom survey (2014) found that the tablet is the one media device that has grown most in popularity amongst 5-7 year olds over the last year, with 54% using it in 2014 as compared to 39% in 2013. In this study, the majority of children in families that owned a tablet stated that it was their favourite device, and when families did not own a tablet, then games consoles or televisions were mentioned as children's favourites. This contrasts with the Ofcom (2014) report, which indicated that games consoles / players still outdo tablets in usage amongst 5-7 year olds (66%). This may be due to the socio-economic profile of the families in the current study, given that social class differences in console game use have been reported in previous surveys (e.g. Marsh et al., 2005).

According to Ofcom (2014), 34% of 5-7 year olds and 11% of 3-4 year olds across the UK own their own tablets. In this study, however, only in one family (UK10) did the children own tablets, and they were low-cost devices. In all of the other families, children shared tablet use with other family members. It is not clear why this pattern might be the case within the families interviewed in this study, although it should be noted that whilst all of the households had income levels at or above the national median, this did not appear to lead to extensive purchasing of technologies in some families. Instead, ownership of technologies was related to parents' views with regard to the role and value of technology

within society, as has been found with other studies (Plowman et al, 2012, Plowman, forthcoming).

The most common use for the tablet was to play games, primarily for entertainment rather than for educational purposes. Popular games included running games such as *Temple Run*, aim-and-shoot games such as *Angry Birds*, and games related to popular films such as *Frozen* or *Monsters Inc.* Also popular in some families was the multiplayer sandbox game, *Minecraft*, which is widely played, with a reported user base of over 100 million (Makuch, 2014). Previous studies of this age group's use of online virtual worlds have identified other sites that have been popular, such as *Club Penguin* and *Moshi Monsters* (Marsh, 2011; 2014). The use of these sites was not prevalent in the present study, which may reflect the socio-economic profile of the families. Alternatively, it may be due to their lack of use in the schools attended by the children, given the effect of the viral marketing of these sites that takes place in playgrounds, as this may lead to a clustering effect in relation to popular cultural interests (Marsh, in press). A further point of interest in relation to the apps that were played was that whilst a few families reported children using overtly educational apps, such as those that focus on learning sound-letter relationships, these were not as widely used as has been reported in studies with younger children (Plowman et al, 2012). The potential reasons for this are outlined above.

Many of the games played on the tablets were also played on smartphones. Whilst only one of the children in the study owned his own smartphone, the majority of children reported using parents' smartphones regularly. This is in contrast to the Ofcom (2014) study, which found that only 22% of 5-7 year olds regularly use a mobile phone (Ofcom, 2014). Childwise (2014) finds that one in three preschoolers (35%) uses a parent's mobile phone, half of them twice a week or more, which is more in line with the findings in the present study. Children used the smartphones primarily to play games, take photographs and videos and access YouTube and popular websites such as CBeebies, which is also the case in other studies of young children's use of technologies (e.g. Marsh, Hannon, Lewis and Ritchie, in press). The preference for the smartphone rather than tablets to take photographs and create videos may relate to the more accessible size of the smartphone for this age group, which enables small hands to manipulate it effectively.

In 2014, for the first time tablets are the most used device among both 3-4 year olds (40%) and 5-7 year olds (37%) to go online, followed by laptops (26% for 3-4, 35% for 5-7) (Ofcom, 2014). This was not the case in all of the families in this study. In a few families, children primarily played apps offline and undertook most of their online activities on a family computer or laptop that was stationed in a shared living space. This was due to parents' concerns about children's online access. Childwise (2014) report that 20% of preschoolers use the internet, 2-3 times per week on average and spend just over an hour online. When preschoolers are online, 75% use it for gaming and 55% watch TV programmes and video clips. Not surprisingly, parents indicate that their children's favourite websites are CBeebies, YouTube and Disney, with YouTube growing the most in popularity (Childwise, 2014). Our findings definitely align with this – not only for preschoolers, but also for older children. Other popular sites included CBBC, Google and Wikipedia.

There has been a small decrease in the positioning of devices in children's bedrooms, with Ofcom (2014) reporting that amongst 5-7 year olds, the presence of TVs (35%) and game consoles/players (27%) in the bedroom have overall decreased by two percentage points each as compared to last year, while internet access through a laptop or computer (44%) in the bedroom has remained stable. In the majority of the families in this study, children had no devices in their bedroom with the exception of a CD player / radio, although some parents reported technology use in bedrooms through the mobile use of laptops and tablets.

It may be that as technologies become more mobile, there is less need to station devices permanently in particular rooms.

Ofcom (2014) report suggests that screen use for age 3-4s is as follows: 14 hours of TV, 6.6 hours on the internet and 6.1 hours gaming per week. For 5-7s, they report 14.6 hours of TV, 12.5 hours on the internet and 9.3 hours gaming. While the children in this study did engage in use of a wide variety of technologies, with some demonstrating this level (or more) of screen use, this was only one aspect of a rich and diverse set of activities, which also included playing with non-digital toys, playing with friends, playing outdoors, taking part in swimming, music and dancing lessons and so on. This is similar to previous studies of young children's digital lives (Marsh et al., 2005; Plowman & Stevenson, 2012). Childwise (2014) finds that 67% of preschool children take part in some form of organised offline activity such as swimming or music. Children from higher socio-economic backgrounds are more likely to take part in these activities, which may be the reason why these activities were so prevalent in the families in this study.

There was evidence in many families of 'transmedia play' (Herr-Stephenson and Alper, 2013), that is, play with the same narratives or characters across a range of media. In addition, this play often took place fluidly across online and offline domains. To children, on- and offline activities are not mutually exclusive or happen at the expense of one or the other. This pattern will only increase in the years ahead, given developments in technology, which includes play with toys and apps that utilise augmented reality (Burke and Marsh, 2013). In a study of children's engagement with physical objects that interact with online games (characteristic of the 'Internet of Things' (IoT)), Manches et al. (forthcoming) found that data can be collected about children's online practices in this way:

"The more IoT objects are able to capture children's interactions with everyday things, the more they are able to build a comprehensive picture of children's day-to-day lives. The point here is that the IoT has the potential to generate powerful data about children's lives, in a way that has some similarities with the ways in which companies capture data about adults' lives from their online interactions. There is a need, then, to monitor what data is being captured on children's activity, and how this is being used."

(Manches et al., forthcoming)

This will obviously be an important issue to address in future research projects, along with research that considers the implications of other technological trends in the years ahead, such as 3D printing and the use of robots.

Skills and learning

Whilst the focus for much of the use of technologies was on fun and entertainment, some educational purposes were revealed. Ofcom (2014) report that a laptop is the preferred device to find information across all age groups of children and teenagers. For many of the families in this study, computers were used for this purpose rather than laptops, although the reason for this finding is not entirely clear. Laptops in many families tended to be used for gaming and video viewing as we found for tablets.

The majority of children in this study did not currently use a child-targeted electronic gadget with a screen, such as the Leapfrog LeapPad for teaching children digital skills. Whilst most children in the study had used these devices previously, these were generally now broken or in storage, having been outgrown. Childwise (2014) report that 59% of 3-4 year olds own them and they have been used by preschoolers in previous studies of young

children's use of technologies (Marsh, Hannon, Lewis and Ritchie, in press; Plowman et al., 2012). One six-year-old child had five toy laptops and these appeared to be used primarily for literacy and numeracy games. This child had, according to her mother, difficulties in reading, so this may be the case for the extended use of these devices in her case.

All of the children demonstrated independence in accessing and using a range of devices. Childwise (2014) finds that by the age of three, 63% of children know how to use a touchscreen phone or tablet and 40% can play on a games console. Children aged six and seven also demonstrated a range of other skills, such as the ability to input passwords, navigate multimodal screens and manage sub-menus and folder structures.

The EU Kids Online (2014) report highlights that it has not been established that children under nine years old have the capacity to engage with the internet in a safe and beneficial manner in all circumstances, especially when it comes to this age group socialising online, either within age-appropriate virtual worlds or as under-aged participants on sites intended for teenagers and adults, such as YouTube). The findings from this study suggest that children loved YouTube and parents allowed its use and the majority of children had limited to no awareness or ability to understand the scope of the online world and its risks.

The EU Kids Online (2014) report also emphasizes how the variety of mobile technologies enhances access to and enjoyment of the internet for all children. At the same time, privacy and safety settings for the multiple devices that children are using can be complicated for both parents and children and often involve different operating environments even in apparently similar technologies. In many of the families in this study, parents clearly struggled with this. Some did not use search filters at all, some used filters on smartphones but not on laptops and only a few parents seemed aware of the safety features on YouTube. Some parents stated that they would be looking into this as their children grew up, seeing it as inevitable but not yet necessary. While some children did access the internet alongside their parents, all children were able to access devices independently and this enabled them to access the internet. Whether they did so or not was dependent on a wide range of factors, but it was also the case that there was potential for children to access the internet without the knowledge of their parents.

Parental mediation

Ofcom (2014) defines four categories of strategies for parental mediation which parents enforce to different degrees: (i) various technical tools including content filters, PINs and passwords and safe search, (ii) talking to their child(ren) about managing online risks, (iii) rules or restrictions around online access and use and (iv) supervision when online (see also Livingstone and Helsper, 2008). Ofcom (2014) reports differences amongst parents with regard to the strategies used. For 3-4 year olds, 16% of parents use a combination of all four strategies, 35% a combination of three, 34% a combination of two and 14% simply supervise the child when online. For 5-7 year olds, 33% of parents use a combination of all four strategies, 31% a combination of three, 21% a combination of two and a small minority selects only one of the strategies. Surprisingly, 5% of parents do not mediate their child's digital engagement at all. For the families in this study, the majority appeared to focus on strategies (iii) and (iv). Only a few families mentioned talking to children about managing online risks and, as has been indicated, use of filters was uneven and use of passwords did not prevent some children from accessing devices independently. The variation in findings may be due to the fact that the Ofcom survey included parents of children aged up to fifteen, whereas this study focused on the parenting of children aged under eight.

When online, Ofcom (2014) report that 50% of 5-7 year olds are only allowed to use sites approved by parents. This was certainly the case for many of the families in this study, although, as has been indicated above, there may have been opportunities for children to navigate the internet unsupervised. Ofcom (2014) also suggest that 60% of parents of 5-6 year olds (57% for 3-4 year olds) say they are nearby and regularly check what a child is doing online, 59% say they sit beside them to watch and help (71% for 3-4), 30% say they ask about the activities 27% for 3-4), and 17% check the browser history (14% for 3-4). None of the parents in this study mentioned browser history or discussing activity proactively; they tended to rely on the child's lack of skill or reported that they monitored children's activities by looking over their shoulders or using the internet alongside them.

According to Childwise (2014), 93% of mothers supervise their preschool children online, as compared with 55% of fathers. Older siblings also play an important role, with 24% supervising their preschool sibling online. In general, where there is an older sibling in the family, 43% of them get involved in the younger child's engagement with technology. In the majority of families in this study, it was mothers who supervised their young children's online use, whilst many fathers were responsible for setting up systems, such as downloading new products and creating parental locks. The majority of older siblings were involved at some point in their young brother's or sister's use of technology, even if this involvement had diminished in recent years due to their broadening interests outside of the family as teenagers.

Family engagement with young children around technologies is a key aspect of their experience. As other studies have demonstrated, intergenerational communication and play with technologies is a part of young children's digital lives, with children engaging in activities such as playing online games and making video calls (using Skype or Facetime) with grandparents and extended family members, (Marsh et al., in press; McPake et al, 2013).

In relation to young children's digital lives, therefore, the findings of this study are in line with previous studies, which have indicated that young children's media use is shaped partly by parents' beliefs, values and ethnotheories (Marsh et al., in press; Plowman et al., 2012), in addition to other influences, such as the extended family, peers and institutions such as nurseries and schools.

How could the study be improved?

Given the timescales involved, all teams had difficulties with recruiting families from low socio-economic backgrounds. A different recruitment strategy in which parents are met informally or at a school event first and then invited to participate may be more effective.

During the family visit, it was difficult to manage the interview and capture observations of the setting and the children's activities, especially the details of their engagement with various technologies. Managing the situation with more than one child and more than one parent was challenging at times.

As 6-7 year olds often have siblings a few years younger than themselves it is important to adopt non-interview based strategies suitable for involving preschool children in the research. A combination of ethnographic and participatory methods such as video diaries, drawing and puppets are suitable for this age range.

The study focused on devices within a domestic setting, but neglected the use of such devices outside the home or in transit, such as in-car DVD systems or iPod docks, tablet

use in cafes and when travelling or digital cameras on holiday. Questions relating to digital usage for leisure outside the home may produce some interesting findings.

We might want to consider ethics more comprehensively. It is generally considered good ethical practice to obtain consent from children as well as parents, and so the UK teams opted to make use of simple consent forms. One ethical dilemma highlighted by family 8 was parents putting pressure on their child to participate, regardless of their signs of reluctance. In this case, the girl's uncertainty stemmed from her shyness and she enjoyed the experience once this was overcome. If the purpose of the first visit is for familiarisation only, children can see the researcher(s) welcomed in the house as a guest and recognise them on the second visit.

It was not possible to examine issues relating to vectors of identity such as gender, ethnicity, social class and disability, given the limited sample. This would need to be addressed in future studies.

Given that children in England and other countries in the EU (e.g. Estonia) are now learning to program at this age, it would be interesting to examine what, if any, impact this might be having on types of activity and favoured devices.

Methodological recommendations for future research

The observation protocol and interview guides were helpful points of orientation for each team to implement the study. However, the timetable for the project was very ambitious and left limited time for recruitment and analysis.

Based on the pilot findings, more research is needed to identify and test different methods and activities that engage children aged five and younger. In addition, to make optimal use of the breadth and depth of insights that family interviews offer, different methods are needed to capture observational data. The codebook was very complex and could be streamlined in a future study.

We would need some categorisation of high, medium and low digital use across the nations. This needs careful consideration as research shows clearly that high levels of ownership do not equate to high levels of use – for preschool children, at least (Plowman et al., 2012).

If children's competence and skills in using digital technologies are going to be assessed, we need standardised measures and should undertake more than one visit to each family.

Future directions for research on this topic

This pilot study has indicated that there is a great deal of information to be gained from research that involves both parents and children reflecting on the same issues. There is a need to scale up the project to include larger, more representative national samples. Some of the questions pursued in this study need addressing at this broader level.

In addition, it is clear that the influences on young children's use of digital technologies extend beyond the home, to extended family members, neighbours, peers and institutions such as nurseries and schools. In Scotland, for instance, 87% of 6 year olds have one or more grandparent living nearby (within 20-30 minutes' drive) and grandparents are a key source of regular informal childcare for parents (Jamieson et al., 2012).

This study included children aged under six, but they were not the key respondents in all of the family interviews. There is a need to address the differences in experiences and practices for children of different ages e.g. 0-1, 2-3, 4-5 and 6-7.

Further participatory methods should be included in future research, in order that children's voice and agency can inform the study in greater depth.

Research is needed that traces children's practices across home and school domains and examines the impact of school input on online safety on family practices.

Finally, the study identified the need for further research on the most effective ways to develop parents' understanding and practices with regard to the development of their children's critical digital literacy. An intervention study is required which examines the effectiveness of family digital literacy programmes in enhancing parental support of children's developing digital literacy skills.

Conclusions

The children in this study led active and varied lives in which technology played an important, but not overwhelming part. Use of technology was balanced with many other activities, including outdoor play and play with non-digital toys. Technology was embedded into everyday family life and included intergenerational interactions around technology. Extended family members and networks outside of the home play an important part in socialisation with regard to children's technology use.

This study indicated that tablets have a growing importance in young children's digital lives. Although the children in this study rarely owned them, many used parents' or siblings' tablets, or had access to them outside of the home. For the families in this study, tablets appeared to be displacing games consoles as the gaming device of choice. The touchscreen interface meant that young children were able to access tablets more independently at an earlier age than they can other technologies, such as laptops and computers. Tablets were used for a variety of purposes, including creative production (for example through the use of drawing apps), but a primary use was the playing of games. Children also enjoyed watching moving image media (films, videos and television programmes) on them. Generally, only free apps were permitted for download, suggesting that spending priorities may not extend to app purchasing, favouring instead physical toys, books or magazines. Parents had not yet realised that paid-for apps may be better value in as much as there may not be the same risks of in-app purchases or advertising content. There was a notable lack of use of educational apps, especially when compared with younger children and families generally did not engage with providers such as Dorling Kindersley (apps such as the human body, dinosaurs, times tables), preferring book encyclopaedias.

The games played on tablets were also frequently played on parents' smartphones. A narrow range of games may be played repetitively until children got bored of them, or became competent at them and completed all levels, at which point they moved on to a new game. Smartphones were also used for viewing moving image media. These activities also took place on computers and laptops. Frequently, games played and videos watched across these devices related to children's popular cultural interests, such as Disney films or popular music. Some children were competent at using smartphones to take photographs and create short videos, although it was often parents who managed these (e.g. deleting unwanted media and uploading photographs and videos to desktop computers or laptops).

There was evidence from this study that young children were watching television across portable media such as laptops, tablets and smartphones, using on-demand and catch-up facilities. There was an increasing use of streaming services to access films and music (e.g. Netflix, Spotify). The portability of devices meant that children access media in a range of spaces, including parents' and siblings' bedrooms, so there was less reliance on TV sets and DVD players in children's bedrooms than has previously been the case.

Whilst young children did access online sites, many of them had limited understanding of the risks associated with online use. Parents' strategies for managing children's online use were patchy in nature and many parents believed that they needed only to develop further strategies when children get older. There was sometimes a disconnect between a parent's and a child's accounts of technology use and when this related to access to devices through the use of passwords, it highlighted the need for use of filters. Encountering violence and strong language were of more concern for many parents than sexual content or contact issues. Some parents suggested that they would welcome advice on fostering children's online safety. Advice from schools appeared to be limited nor did there appear to be substantive communication between schools and homes on issues relating to uses of technology.

Whilst these findings are of interest, they are based on a limited sample and, thus, the study has identified the need for more extensive research in this area. It is clear that children aged from birth to eight are active citizens in the digital age, yet there still remain significant gaps in knowledge with regard to their access to and uses of technology. If Europe is to meet the societal and economic challenges of the decades ahead and to promote more equitable access to the literacy resources of a digitally mediated community, then urgent action needs to be taken in relation to the issues identified in this pilot study.

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Annex

School Invitation Letter (London version)



Dear XX (Headteacher)

Study of Young Children (0-8) and Digital Technology

I am a professor from the London School of Economics and Political Science who is working with the European Commission to study young children and their families' experiences with digital technologies such as smartphones, tablets, computers and games. By learning about the views, experiences and concerns of families, we hope to help create a better internet for children.

I am writing in the hope that you could suggest some families to participate in this study.

We are looking for a few families with a child in Year 2 (aged 6 or 7) and one or more younger children. We wish to visit these families at home in the coming few weeks. I attach a letter of explanation for the families. Ideally, they would not be selected for any special reason – the aim is to have a mix of families (in terms of family composition, ethnicity, etc.), preferably from less-than wealthy homes.

The goal of this study is to gain a better understanding of how children between 0 to 8 years old engage with (online) technologies, and to identify potential benefits and risks associated with their (online) interactions with new technologies. The study is pioneering in Europe, and will include 60 families in total, and is also being conducted in Belgium, Finland, Germany, Italy and the Czech Republic. The project has received ethical approval from the European Commission and the LSE, and I have an enhanced CRB check.

I hope I may call you in the next day or two to discuss this possibility? Easiest might be if a year 2 teacher could send the parent letter home with a class one day this week, and we see which parents get in touch with me? Or, a year 2 teacher might perhaps select some of the less wealthier families for me to approach? I would be happy to offer the school something in return – a presentation to teachers or parents maybe, or some feedback on the findings to the school and/or parents?

I understand that this is a busy time of year, but really hope that this is of interest to you. I would be happy to discuss any questions you may have. Thanks for your kind attention.

Yours sincerely, etc.

Parental Consent Form (London version)⁴



Dear Parent

Research Project Title: Young children (0-8) and Digital technology

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Thank you for reading this.

What is the project's purpose and who is funding it?

The European Commission (Joint Research Centre - Institute for the Protection and Security of the Citizen) is financing and conducting a research project to explore young children and their families' experiences with digital technologies. Seventy families are included in the study. We will look at how families use these technologies and the potential benefits and risks. The results of this study will inform future research and recommendations on the benefits and challenges of young children's use of digital technologies.

Why have I been chosen?

We are approaching parents of children in Year 2, often those who also have a younger child or children. We will recruit 4 families in total.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, you can still withdraw at any time without it affecting any benefits that you are entitled to in any way. You do not have to give a reason

What will happen to me if I take part?

The research project will be conducted from September to December 2014. You, as parent(s), will be contacted by Professor Sonia Livingstone from the London School of Economics and Political Science who will arrange to conduct the interview with your family at home.

The family visit will be for around 1.5-2 hours. Interviews will be audio-recorded and the researcher will take notes as well during the interview.

We would like to talk to any of your children present during the interviews, but our primary interest is your 6/7 year-old and any younger children.

First we will talk with parents and children together. Then we would like one researcher to talk to your child/ children separately, using age appropriate tools such as cards games or toys. At the same time, the other researcher will interview the parent(s). The researcher may ask if he/ she can observe your child using digital technologies, if this is acceptable to you.

What are the possible disadvantages and risks of taking part?

There are no risks associated with taking part. A potential disadvantage is the time your family will devote to the interviews.

⁴ A similar version of this form was used in Sheffield and Edinburgh.

What are the possible benefits of taking part?

Families will benefit from the discussion with the researcher in reflecting in more depth on their own use of digital technologies. You and your children can ask us questions too, if you wish. When the study is complete, we will send you a short report of our findings.

What if something goes wrong?

If something happens which means you cannot take part in or wish to withdraw from the interview, please inform the Principal Investigator, Professor Sonia Livingstone (s.livingstone@lse.ac.uk; tel. 07791663698).

If you wish to express a concern or complaint about the research team, you may contact Mrs. Stephane Chaudron, coordinator of this international study and researcher at the Joint Research Center (JRC) of the European Commission – Stephane.chaudron@jrc.ec.europa.eu, +39 0332 789401.

Will my taking part in this project be kept confidential?

All the information that we collect about you during the course of the research will be kept strictly confidential and anonymous. Your personal data won't be revealed by the researchers to anyone else and you will not be identified in any reports or publications.

Will I be recorded, and how will the recorded media be used?

You and your children will be recorded using a digital voice recorder. The recordings will be stored encrypted in a temporary repository of the University for the time necessary to produce an anonymised transcript version. As soon as the transcript is available, the audio recording will be permanently deleted.

Photographs may be taken of tools, devices and children's digital-related activities but not of any faces, so no-one will be identifiable.

What will happen to the results of the research project?

The research team conducting this research at the London School of Economics, which is the guarantor of the anonymisation process. The research project may lead to publications (reports, journal papers, chapters in books) and conference presentations. You and your children will not be identifiable in any publications and presentations.

Once anonymised, the interview and observation materials may be reviewed by the research teams conducting this research at KU Leuven (Belgium), Masaryk University Brno (Czech Republic); University Medical Center Mainz (Germany), Future School Research Center (Finland), Università del Sacro Cuore Milano (Italy), Moscow State University (Russia), University of Edinburgh (UK), London School of Economics (UK), University of Sheffield (UK); and any other University that may join the research project, and also by the Coordinating research team at the Joint Research Center of the European Commission supporting the study.

Who has ethically reviewed the project?

The European Data Protection Supervisor and the London School of Economics Research Ethics Committee reviewed this research project and found it to be acceptable according to applicable national and European legislation (European directive 95/46/EC) and university policies designed to protect the rights and welfare of participants in research.

Contact for further information

Prof. Sonia Livingstone (s.livingstone@lse.ac.uk; tel. 07791663698).

Signing the informed consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree participate to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

I have received £100 as a High Street Voucher.

_____ Printed name	_____ Signature
_____	_____ Date and time
_____ Printed name	_____ Signature
_____	_____ Date and time

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signatures above. There are no blanks in this document. A copy of this form has been given to the participant.

_____ Printed name of person obtaining consent	_____ Signature of person obtaining consent

Child Consent Form

Finding out about your digital life

[Tick one box ✓]

I am happy to take part in this project and to answer questions about how I use digital technologies



☐

I am not happy to take part in this project and I do not want to answer questions about how I use digital technologies.



☐

My name is.....

To be completed by researcher:

Date:

Participant identification number for this project:

Finding out about your digital life



I would like to ask you some questions about how you use digital technologies, such as computers, laptops, mobile phones and so on. I will record your answers on a voice recorder.

I want to find out about how you use these and what you think about them. We are also asking children in other countries in Europe the same questions, so we will be able to think about what is the same and what is different about children using technology in different countries.

If I ask you a question that you do not want to answer, that is fine, just don't say anything, or tell me that you don't want to answer it.

If I say something you don't understand, please ask me to explain it.

We can stop the interview at any point and you can go to do something else. Please do not worry about that, just let me know.





Your name or photograph will not appear in any writing about the project and they will not be put on a website.

Please let me know if you are happy to take part by putting a tick in the box next to the smiley face on the next page, or if you do not want to take part, put a tick in the box next to the sad face.

Edinburgh Appendix

EA.1 – Icebreaker card game images



Family 8 (participants UK8g7 & UK8b4)

Items selected: radio, MP3 player, toy car, VTech toy
laptop, Playmobil, TV, ball

(identification as given by child)

Note: UK8b4 also selected the radio, toy car, Playmobil,
TV and ball, but did not select any of the digital devices.



Family 9 (participant UK9g6)

Items selected: MP3 player, Playmobil, smartphone, TV,
LeapPad, tablet, iPod, radio, Barbie, laptop, games console,
toy car

(identification as given by child)



Family 10 (participant UK10b7)

Items selected: games console, TV, tablet, Playmobil,
ball, iPod

(identification as given by child)

Appendix

Appendix A: Observation Protocol

Appendix B: Informed Consent

Appendix C: Ice-breaker activity - example

Appendix D: Card game

Appendix E: Demographic data of the national samples

Observation protocol

Please remember that the protocol goes beyond a recording of events and provides an overall context for the data. Therefore, think of the following during each family visit:

- Describe the setting, i.e., where the observation took place and what the physical setting was like;
- Identify and describe family members, i.e. family constitution, age of children & parents, ethnic background, schools/day-care children attend, parent`s work, etc.);
- Document the interactions between observers and observed putting special attention on these 5 categories:
 1. Digital-related activities
 2. Devices used
 3. Children`s skills
 4. Family rules
 5. Any other surprising, unusual or unexpected aspect
- Be alert to unanticipated events that might require refocusing one or more questions/areas of interest.

Family name (Pseudonym) : _____

Observer 1 Initials |__|__|__|

Observer 2 Initials |__|__|__|

Family constitution: (*circle all that applies*):

Father

Mother

Other adult (specify) _____

7-year old child

Younger sibling(s) (age) _____

Older sibling(s) (age) _____

other: _____

Audio file: |__|__|__|

Date |__|__|/|__|__|/|__|__|

Introduction (10 min.)

All together:

- Introduce yourselves
- I am _____ from _____ (Observer 1)
- I am _____ from _____ (Observer 2)
- Explain general purpose of the study in a child-friendly way. For instance mention that one of the objectives is:
 - o To learn if children and their families use (devices such as) mobile phones, smart phone, iPad, game consoles, and what they think of them...
 - o To learn about what if children and their families like/don't like about the internet, smartphones, i-pads, etc.
- Mention who is involved in the process (JRC, other country participants)
- Explain why the participants' cooperation is important
- Ask family members to introduce themselves using first names and ask how old the children are
- Explain aims of the discussion and expected duration (1.5-2.5 hours max.)
- Remind participants that it is important for us to hear everyone's ideas and opinions. There are no right or wrong answers – just ideas, experiences and opinions, which are all valuable.
- It is important for us to hear all sides of an issue – the positive/nice and the negative.
- Confidentiality is assured. "What is said in the home cannot be traced back to the home"; "if you don't wish to have a specific piece of information appear in the report let us know", etc.
- Ask if they have any questions
- Check position and functioning of recording device
- Check for everyone's consent to participate and be recorded and have informed consent forms signed by parent(s)

Ice-breaker (all) (15 to 30 min.)

After this short introduction, the children and parents will stay together to perform a short ice-breaking activity. Page 10 of the *Activity Book - Play and learn: Being online*. and its stickers has been chosen as a way for the family to determine the activities done as a family all together in a typical day requesting to match time and activities thanks to stickers provided with the book. This is set as a common start for all interviews.

After this activity explain that from now on parents will go to another room with observer 1 and children will stay in the living room (or the other way around) with observer 2, if that's OK for the parents and children.

Children Interview (1 hr.)

- Ask siblings to define their own ground rules, for example:
 - o Only one person talks at a time.
 - o We first listen to what others have to say and then we can give our opinion.
 - o We don't need to agree on everything. If you think in a different way you can always say it.
- Now we are going to talk about your experiences with the objects you have shown me during the tour (so, the iPad, the smartphone etc. etc.)/ the objects you have seen during the memory game we played...

Devices employed and activities

During the interview it is important to find out about the types of devices and new technologies that children use, when they use them and why. Talking about these devices and observing children interact with them is also a great opportunity to find out about the child's perceptions of new as well as more traditional technologies such as the TV. Activities and questions such as the ones listed below can be performed/asked during the interview. You don't need to ask ALL these questions or perform ALL these activities, you can even ask different ones. What is important is to try to get a good overview of the technologies children use, their contexts of use and the child's perceptions of these technologies, but also not to make the child feel uncomfortable with any activities or questions we may ask. In other words, collect enough information so as to be able to provide answers to all our research questions in a child-friendly way.

The request to use family devices is a matter of trust and therefore it is a question to ask when a trustable relationship is established between the researchers and the family members. It has been agreed by all participant to request the possibility to use the device on the spot.

Warming-up/setting up the context (20 min.)

In order to have a better understanding of the role new technologies play in children's lives it is important to understand what children's lives are like, what they do, what they like/don't like, their hobbies, etc. Collecting this type of information is also important to contextualize our findings. This will also give us the opportunity to understand the child's world better while the child may actually feel more at ease as they would feel that they themselves (not just their use of new technologies) is important to us. So, maybe we should start both the children's and parents' interviews by asking a few of these questions, just as a warm-up:

- Can you tell me what you did today/yesterday? (E.g. going to school, playing with toys, reading books, watching TV, playing football, etc.)?
- Do you have any favourite toys, books, magazines? Can you show them to me?
- Do you have any hobbies? Which ones?
- Do you practice any sports? Which one?
- Do you have a best friend? What is his/her name? What do you like doing together, etc.?
- Is there anything you like (doing) a lot? Why?
- Is there anything that you don't like (doing)? Why?

- And what about your family? How many brothers/sisters do you have? What are their names? How old are they? Do they go to school? Do you do things together, e.g. play together, watch TV, etc.? What kinds of games do you play together? And with your parents? What kinds of things do you do together?

After having had this conversation we should try to make a smooth transition towards the topic of new technologies and start with (some of) about traditional media such as watching TV, watching films, etc. as the questions below.

- Do you sometimes watch films together with your family? Or do you ever go to the cinema?
- Which movie was the last one you saw? Was it on TV, Cinema, Youtube?
- What is your favourite movie? Why?
- Do you ever watch movies or videos on YouTube/the laptop?/i-pad?/your dad/mum's telephone, etc.?

Possible activities (optional depending on the interviews conditions and settings)

- Activity 1: CARD GAME (displaying cards of tablets/ laptops/ PCs/ smartphones (as well as traditional toys) Could you put all of the pictures in a line, with the picture at this end (point to left) of the thing you like using best, then the next best and so on to the other end of the line, where you can put what you like using least (point to right). So, let's start with what you like using best – which is it? (then prompt for each one after that)
 - o As the child identifies a digital device, but only if you think that the child will be able (and willing) to tell you, ask questions about frequency of use, where they use it, who they use it with, what times of day they use it and so on. 1b/ 3a
- Activity 2: draw me a picture of your best app/ game/ site. [When it is drawn] – Tell me about the drawing. 1a/1b/ 2a
- Activity 3: Digital Tour done with the Children as facilitators: children could perform a digital tour with the observer but only if parents allow it. Alternatively, the tour could be carried out by the whole family at the end of the divided session between parents and children, but parents should be asked to let their children take the initiative and “guide the tour” and *NOT to interfere unless asked by their children*.

Possible questions related to the use of new technologies

- I would like to know if you sometimes use mobile phones, computers, tablets, and so on. I have pictures here of some of these things – which ones do you use? [Show child pictures of common devices]. 1a
- What do you use X, Y for (if necessary prompt: to watch cartoons, to play games, etc.)? 1.a
- Tell me about some of the things you like to do best on TV/ computer/ tablet/ music player/ radio/ games console. 1c
- Observe/listen to what a child is able to do on different devices. If that does not come naturally, prompt the child to show you what he/she can do on X device (through memory cards or, if possible, show you directly in a device such as the family i-pad, laptop, etc. what they can do) 1a/ 1c
- Do you ever visit websites? What are your favourite ones? Why? 1b
- Can you show me your favourite game on your mother's phone/family iPad? 1b

- Out of all of the things you have shown me (e.g. smartphone/ tablet/ laptop, etc.), which (would you miss the most if it was taken away from you? Alternatively, you can use one of the activities described below:1b/ 3a
- With the help of the CARD GAME displaying cards of tablets/ laptops/ PCs/ smartphones (as well as traditional toys) you can ask (some of) the following questions:
 - o Which [app/ game/ site] do you like best? Do you want to show it to me? 1b
 - o How do you use/ play it? 1a
 - o Tell me why you like it 1b
 - o When do you play/ use it? Do you use it a lot? 1a
 - o How did you learn to use the (smart) phone? To do this? Who taught you how to do this? 1d
 - o Do you use it/ play it with anyone else? Who? 1a.
 - What do you do with him/ her when you play/ use it? 1a
 - o Do you have any toys/ books/ stickers etc. of this [app/ game/site?] 1e
 - o Which [app/ game/ site] would you tell your friends to play? Why? 1b
 - o What other apps/ games/ sites do you use? Tell me what you do on these. 1a
- Are there any good or bad things about using the internet (or X device)? 2a
- What do you think about [name device]? If you had to choose a word to describe it, what word would you choose? 2a/ 2b
- Using the pictures as a prompt, ask the child, ‘Are any of these things not safe to use sometimes? Why?’ 2c

Skills

Skills refer to what a child is able to do in a general sense as observed or told by the child, e.g. turn i-pad on/off, search for information, find pictures, videos on specific devices, scroll through different screens, select specific games, Apps, download things, identify certain icons (e.g. Google, YouTube, Facebook, etc.), etc. The emphasis for this theme should be our observations of the child’s online activities, and avoid questioning them simply about what they say they can do.

Possible questions

- Which of these (show cards with devices) is easiest/hardest to use? Why? 1c
- Which of these (show cards) can you use on your own? 1c
- Which of these (show cards) can you use with someone else’s help, e.g. your brother/sister, mum, dad, your teacher? 1c
- Why do you need help to use X, Y (and not to use Z)? 1c
- How did you learn to do this? Who showed/taught you how to do this? 1d.
- Do you sometimes play at the same time with the [Device] and [Traditional Game]? 1e
- Do you watch videos or play games of your favorite [traditional toy](e.g. Do you look for lego video’s or do you play lego’s game on the Wii?) 1e
- Do you get inspired by any video, picture, website to play with [Traditional toy] 1e

Parental Mediation

- 4.0 Do your parent show you things online, guide you to discover new things online?
- 4.0 Are there particular things your parents encourage you to do or to explore online? Would you like them to do more of something? (e.g. showing more cool stuff, play with you more, ...)

- 4.0 Do you sometimes sit with them while they go online? Or just stay nearby to keep an eye on what they do online? If so, do you like it, why?
- 4.0 Are there activities that you and your parents do together online? Who ask for it? Do you? Does your parents do? Is it for school purposes? Or just like that like playing football or jigsaw together..
- 4.0 If your parents show you something, why do you think they do this? Do you think that's that helpful? Are there other things you would like your parents to do with you, or talk to you about, when you go online?

Family rules

Family rules refer to the agreements surrounding the use of digital devices at home (and outside home), implicit and explicit rules governing the use of these devices, etc. Refer to when these rules apply, but also when can these be broken.

Possible questions

- Can you use these (show cards with devices present at home) as much as you want? If not, why not? 4e
- Can you use [x] device(s) everywhere (at home, at school, at restaurants, etc.)? 4e
- Can you use [x] on your own or should mum or dad be present when you want to use it? 4e
- Does mum or dad tell you how long, when or where you can use [X] device or play [Y] game? If so, why? 4b/4e
- Can you play or use [device] at any time and for the time you wish? '4/4e:'
- If there are rules who created the rules?' 4/4e
- Did you discuss, negotiated them? 'Do you follow them?' What happens if you do not follow the rules?' 4.b / 4d/4e
- Are the rules the same for [device X] and [device Y], for different family members (e.g. can your little brother/sister play the same games as you do? Or can you visit the same websites that your older brother/sister visit?)? 4c.

Unusual/unexpected/surprising

If there is anything important, interesting, relevant, surprising, unusual said or observed and not included in the categories above, please include them here.
some incentives for their participation.

Parent Interview (1 hr.)

- Explain what will happen with the collected information and that the participants' data will be treated anonymously and confidentially.
- Start the interview with a sentence like: "Now we are going to talk about your child/children's experiences with new technologies and devices such as laptops, smartphones, iPad, etc."
- End with collecting participants' demographic details either within a semi-conducted interview or by asking the parents to fill-in a short survey or shall we ask relevant questions directly.

Devices employed, activities and skills

During the interview it is important to find out about the types of devices and new technologies that children use, when they use them and why. What is important is to try to get a good overview of the technologies children use and their contexts of use from the parents' perspective. We can then compare this information to the one obtained from children so as to better understand the role new technologies play in both the children's lives but also in the family life.

Warming-up/setting up the context (20 min.)

In order to have a better understanding of the role new technologies play in children's lives it is important to understand what children's lives are like, what they do, what they like/don't like, their hobbies, etc. Collecting this type of information from the parents' point of view is also important to contextualize our findings. This will also give us the opportunity to understand the child's world better while the child may actually feel more at ease as they would feel that they themselves (not just their use of new technologies) is important to us. So, maybe we should start the parents' interviews by asking them questions like:

- Can you tell me about your family? How many children do you have? How old are they? Etc.
- Can you tell me what your child [7-year old child + younger sibling] does during a typical week including the weekend (e.g. going to school, playing, doing homework reading books, watching TV, playing football, etc.)? 1a/ 3a

After having had this conversation we should try to make a smooth transition towards the topic of new technologies and start with some questions about traditional media such as watching TV, watching films, etc. as the questions below.

- Do you sometimes watch films together with your children? Or do you ever go to the cinema with the children?
- And do you ever watch movies or videos on YouTube/the laptop? /i-pad? /your smartphone, etc.? 3d

Possible questions:

The researcher will first ask parents to freely talk about the technological devices they have at home in general and, in particular, identify the ones their children use/like most – (the Card Game can be used as well with parents for collecting this information). We could then ask more specific questions about those devices that seem to be the most important ones. Here some general questions taking the smartphone as starting point followed by some of the device-related questions, chose between the device-list the most appropriate ones:

- Does anyone in the family possess a mobile phone or a smartphone? What about the children? 1a
- Since when does child X possess a phone? What does s/he use it for? 1a/ 1c
- If child does not possess a phone, ask: Does your child ever try to use someone else's mobile phone? If so, what does he/she do with it? 1c
- How did your child learn to use the (smart) phone? 1d
- Apart from the smartphone, what other technological devices do you have at home?
- Of these, which ones does your child use/know how to use? 1a
- How did your child learn to use [X] device? Did anybody teach him/her? 1d
- Which of these devices can your child master independently? And which ones can he/she use with someone else's help (e.g. because they are difficult to use)? 1c
- Which device(s) does he/she use more frequently? Why? 1a
- According to you what is/are your child favourite device(s)? Why? What does he do with it/them? 1b/ 2a
- Does your child play any online games? Which one(s)? 1a
- In which device does he/she usually play these game(s)? 1a
- Does your child use the internet? What for? 1a/ 1c
- In which device does he/she usually use the internet? 1a
- What are his/her favourite websites? Why do you think he/she likes them? 1b/ 2b
- Does your child take pictures, record videos or sounds with devices? Do they or you share them or upload them on the internet? Do they create or curate other content? 1a/ 1c
- Can your child use any devices or the internet any time s/he wants? If not, why not? This can be a good question to lead us towards the topic of family rules, parental concerns, etc. 4, 4c
- Do you use any digital technology to encourage, stimulate, and/or educate your child? 3f/3g

Depending on the child's favourite devices you can choose some of the questions below, but it may be better to focus more on what a child does (most likely across devices) than on the specific devices/gadgets they child uses. If we focus on every device, it may be difficult to keep a natural conversation flow because many questions will be repeated all over again and most likely, parents will jump from device to device while telling us what their child is able to do (ex. playing online games online, on the laptop, on the Wii, etc.).

Possible questions about Tablets

- How many working tablets do you have in the home? 1a
- At what age did he/ she start using it? Who taught him/ her to use? 1a
- What does he/ she like to do on it? 1a/ 1c
- For how long would you say he/ she uses the tablet on a typical week-day/ on a weekend day? 1a
- Does he/ she use the tablet with anyone? If so, how? 1a/ 1d
- Who uploaded them? 3g
- Which games/ apps are his/ her favourite? 1b/ 2a/ 2b
- Who taught him/ her to use the tablet and from what age? 1d

- Did you child teach you anything in the use of the tablet? Where do you think this knowledge comes from? 1c/ 2d
- What kinds of things do you think he/she learns from using tablets, if anything? 1c/ 2d(i)

Possible questions about Games consoles

- Does your child use a games console at home? 1a
- At what age did he/ she start using it? 1a
- Which games does he/she like to play best? 1b
- For how long would you say he/ she uses the games console on a typical week-day/ on a weekend day? 1a
- Who chooses which games he/she can play? 4/ 4b/ 4c
- Are your children following the rules?' What happens if they do not follow them?' 4e
- Does he/ she play on the games console with anyone? 3d
- Do you ever play games with your child? Which ones? 3d
- What kinds of things do you think he/she learns from playing videogames, if anything? 1c

Possible questions about Computer/ laptop

- How many working computers/ laptops do you have in the home?
- Does your child have his/ her own computer/ laptop?
- For how long does your child use the computer/ laptop on a typical week-day/ on a weekend-day? 1a
- What does he/ she do on it and who with? [Prompt: searching information, images, watching videos, playing online games, skype, SNS, ...] 1a/ 1c
- Do you ever use the computer/ laptop with him/ her? If so, what for? 3d
- Who taught him/ her to use the computer/ laptop and from what age?1d
- What kinds of things do you think he/she learns from using computers/ laptops, if anything? 1c/ 2d(i)

Possible questions about music (radio, MP3/ Music player – MP4 / video player)

- For how long does your child listen to music on a typical week-day/ on a weekend-day?
- What does he or she like to listen to? 1a
- Does your child have an MP3/ music player of his own? How often does your child listen to it on a typical week-day/ on a weekend-day? 1a
- What does he or she like to listen to/ watch to? 1b
- Does he/ she ever ask you to buy specific songs or upload a specific video and if so, can you give me an example? 1a

Possible questions about Television

- Does your child have a TV in his/ her bedroom?
- For how long does he/ she watch TV on a typical week-day/ on a typical weekend day? 1a
- Which TV programmes does your child like watching? 1b
- What are his/her favourite films? 1b
- How independent is he/ she in using the TV and DVD player? 1c
- For how long does he/ she watch films on a typical week-day/ on a typical weekend day? 1a
- What programmes do you watch together? 3d
- Do you use/play with [Device] with your brothers/sisters/ parents? When? For how long?

Who is the best at it? Why? 3d

- Does he/ she watch TV on any of these devices: a pc/ laptop/ netbook; games console player; mobile phone; tablet computer; portable media player? When? 1a
- What kinds of things does [child's name] do when watching TV? [Prompt if necessary – sings/dances/plays, etc.] What are the most prevalent activities? 1a
- Does any of [child's name]'s play relate to TV or film? If so, what do they play? [Probe how, e.g. dressing up, asking other family members to also be characters, etc].

Off-line and On-line practices

- Does your child have any favourite toys, books, magazines? Which ones? 1e
- Does your child have any hobbies? Which ones? 1a/ 1b/ 1e/ 2a (if interests relate to technologies)
- What does your child like doing with his/her friends, etc.? 1a/ 1b/ 1e/ 2a (if interests relate to technologies)
- Is there anything your child likes (doing) a lot? 1a/ 1b/ 1e/ 2a (if interests relate to technologies)
- Is there anything that your child doesn't like (doing)? 1a/b/ 1e/ 2a (if interests relate to technologies)
- Do your children play or do other things together? 1a/3c/ 1e/ 3d (if interests relate to technologies)
- Are there any things that your children do together with dad (but not with mum) (e.g. playing football, playing videogames, going to school, etc.) and vice versa? 1e/ 3c/ 3d (if interests relate to technologies)
- What kinds of things do you all do together (the whole family), e.g. watch TV, etc.? 1e/ 3c/ 3d
- Compared to other toys, books, etc. your child possess, how much do you think your child technological devices (e.g. like device [x]) 1e
- Compared to other toys, books, your child possess, how often does your child use device [x]? 1e
- How do you choose the games/ apps to download to the tablet/Smartphone? [Prompt: by default on the tablet, app liked with children toys or films, free or not, trust? children choice...] 1e

Parental Mediation

- 4.0 Do you talk to XX to try to guide how they go online or what they might do online?
- 4.0 Are there particular things you encourage XX to do or explore online? Would you like them to do more of something online?
- 4.0 Do you sometimes sit with your child/ren while they go online? Or just stay nearby to keep an eye on what they do online? If so, why?
- 4.0 Are there activities that you and your child do together online? Why (do you perform these activities together (and not others)?

After each question – ask why.

Follow up questions: What do you think could be the benefits/harm? Do you do this because you want to or your child wants you to or because you've discussed this with your child? How effective do you

think you are in doing this (e.g. is it hard to find the time, or do domestic tasks or other children make your efforts difficult)?

Family rules

- Are there any rules concerning the use of digital devices/internet/etc. at home? 4
- Are they the same for all? 4c
- Who makes these rules? Do your children have a say in the making of the rules? 4b
- Are you making some decisions about what programs/games/apps/ your children can use/see? If yes how? 4 **(or question added as to 'what' are the rules)/** 4a
- Do all family members accept these rules? If not, how do you deal with children's resisting the rules? 4d
- Have these rules changed with time? If yes, why? 4a/ 4b
- Are digital devices part of the 'reward-punishment' system of the family? If yes, how and with whom? 4.1 / 4c
- Do you have parental controls installed on laptops/ computers? 4.1 / 4c
- Do you use the safety mode features offered on websites or by internet providers, for instance, on YouTube? 4.1 /4a

Parents` perceptions of new technologies and parental concerns

- Do you think any technologies are particularly "positive" or "negative" for your children? Which ones? Why? 2d(i)
- Are you worried in any ways about your children`s experiences with new (online) technologies (e.g. children spending too much time, fear of their child being contacted by strangers, etc.)? Why? 2d (ii)
- How important do you think are (online) technologies for your children? 2d(i) / 2d (ii)/ 3a
- How important are new (online) technologies for you? And for family life? 3b/3c
- Do you think that your children`s use of (online) technologies interfere in any way (positive and/or negative) with family life? (E.g. family interaction is decreasing). 2d (ii)/ 3e/ 3f
- Do you feel that family parenthood is helped or influenced or affected in any ways by the use of new (online) technologies at home? How? 3g
- Do you feel that your child benefit from using any of these technologies? Which ones? Why? 2d(i) / 2d (ii)/
- Do you have any worries or concerns about your child using these technologies? Or about the use of new technologies at home? If you do, what do you do about it? 2d(i) / 2d (ii)/
- Has anyone in your family experienced a positive/exciting/enlightening situation online? What happened? What did you/your child do about it? 2d(i) / 2d (ii)
- Has anyone in your family experienced a difficult/unpleasant situation online? What happened? What did you/your child do about it? 2d(i) / 2d (ii)
- Using the pictures as a prompt (if necessary) , ask the parent, 'Are any of these things not safe to use sometimes? Why?'2c

Unusual/unexpected/surprising

If there is anything important, interesting, relevant, surprising, unusual said or observed and not included in the categories above, please include them here

Closing

We are now approaching the end of our visit. Is there anything else anyone would like to add about that we have not talked about?

- ✓ Summarise
- ✓ Thank participants
- ✓ Provide extra information (Insafe Activity Book and JRC's materials) and contacts to participants

Appendix B: Informed Consents Form for Participation in Research

Informed Consent Form for Participation in Research

Study Title: Young children (0-8) and Digital technology

Researcher: [Provide the name of the Principal Investigator]

Sponsor and partner: European Commission, Joint Research Center (JRC)

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider this information carefully. Feel free to discuss the study with your friends and family and to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:

You are being asked to participate in this research study because the European Commission - Joint Research Centre - Institute for the Protection and Security of the Citizen - is conducting a research project aiming at exploring young children and their families' experiences with digital technologies. In particular, we will look at their digital technological engagement as well as the potential benefits and risks associated to their digital interactions with new technologies. The results of this study will serve as a basis for recommendations on what should be looked at when launching larger EU studies on the benefits and challenges associated to young children's use of new digital technologies. This study will involve fifty families and will be simultaneously implemented in five European countries, and performed by researchers from selected universities: KULeuven, Masaryk University Brno; Universität Mainz, Università del Sacro Cuore Milano, University of Edinburgh, London School of Economics, University of Sheffield.

The environment of this research is limited to the home and family context. It will focus on interviewing children that use digital technology at least once a week, as well as their family (at least one parent); the children should be aged between 6 and 7 (just entering in September 2014 in 2nd grade of primary school and possibly with at least one younger sibling).

Procedures/Tasks:

The research will be conducted from September to December 2014.

You will be contacted by a team of two researchers from [NAME OF YOUR UNIVERSITY] which will conduct the interview with the family, at home. The length of the interview may vary following the availability of the family and the rhythm of the interview but will not be less than one hour and half and

not more than two hours and half. The visits to the family will be audio-recorded and the researchers will take notes as well during the interview. The interviews will be divided into three parts. A short family introduction will gather at first, the children and parents in a joined discussion and activity. Then, parents and children will be divided and they will be engaged into two different activities. Parents will have a short interview with one of the researchers; the other will discuss with the child/children using age appropriate tools such as cards games or toys. Those two activities will be performed in connected space or in the same space provided that this is large enough to host the two activities and allows correct recording conditions for both. A conclusive session will gather again the whole family and the two researchers.

Duration:

The interviews of this study will take place from in September and October 2014. A report on this exploratory research will be publically available in early 2015. You may leave the study at any time.

Risks and Benefits:

There are no potential physical, social, economic, psychological, or legal harms foreseen in this study. Families will benefit from the discussion with our researcher in reflecting more in depth on their own use of digital technologies. The participating families will be invited to ask questions in return to the researcher who will return them to experts. At the end of the study, a short report will be provided to each family including the answer to their potential questions.

Confidentiality:

Your study-related information will be kept confidential, unless anonymized and used only for research purposes and scientific publications. Anonymisation is a process that removes or replaces identity information from a communication or record. Communications and records may be made pseudonymous, in which case the same subject will always have the same replacement identity but cannot be identified as an individual. In order to facilitate the note-taking process during the interview, the researchers may capture illustrative photos of tools, devices and children digital-related activities paying attention not to capture persons and children from front face pose, anonymising pictures with automatic face blurring in photo capturing tools (e.g. ObscuraCamapp), eventually anonymising the images through manual face blurring in the analysis stage (e.g. using GimpPhoto editor). Following the data collection activities, the information gathered will be reviewed for anonymisation, analysis and aggregation activities into a final report. All acquired audio streams will be stored encrypted in a temporary repository of the University for the time necessary to produce an anonymised transcript version with the most relevant observations. As soon as the transcript is available, the audio stream will be permanently deleted. Concerning the pictures, in addition to the care not to capture front-person shots, the photos will be blurred automatically for anonymisation during the capturing. If necessary, further editing for anonymisation will be performed with a photo editor (e.g. Gimp). After anonymisation, the information will be analysed and compiled into aggregate country reports. During the whole study, all collected personal data will be stored with appropriate secure and protective measures.

Your personal records may be reviewed by the following group:

- The research team conducting this research at [\[NAME OF YOUR UNIVERSITY\]](#) which is the guarantor of the anonymisation process.

Your anonymised personal records may be reviewed by the following groups:

- The research teams conducting this research at KULeuven, Masaryk University Brno; Universität Mainz, Università del Sacro Cuore Milano, University of Edinburgh, London School of Economics, University of Sheffield;
- The Coordinating research team at the Joint Research Center of the European Commission supporting the study.

Incentives:

At the end of the interview, children will be offered the *Activity book: Play and learn: Being online* issued by the Insafe network and some other educational materials. At the end of the study, parents will be offered a copy of the study report.

Participant Rights:

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study. The European Data Protection Supervisor and [the \[National Research Ethics Committee\] / \[Institutional Research Ethics Committee at NAME OF YOUR UNIVERSITY\]](#) reviewed this research project and found it to be acceptable, according to applicable national and European legislation (European directive 95/46/EC) and University policies designed to protect the rights and welfare of participants in research.

Contacts and Questions:

This form constituted an informed consent letter but as well a request for collaboration and collaborative development of knowledge in the field. Therefore, should you have any questions, comments, concerns, or complaints about the study, please do not hesitate to contact [\[Provide here the name of the Principal Investigator – email – phone number\]](#).

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact [\[Provide here the name of the Adequate person- his/her job title – email – phone number\]](#) or Mrs. Stephane Chaudron, researcher at the Joint Research Center (JRC) of the European Commission – Stephane.chaudron@jrc.ec.europa.eu, +39 0332 789401.

Signing the informed consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree participate to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Printed name

Signature

Date and time

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent

Signature of person obtaining consent

Date and time

Parental Permission For Child's Participation in Research

Study Title: Young children (0-8) and Digital technology

Researcher: [Provide the name of the Principal Investigator]

Sponsor and partner: European Commission, Joint Research Center (JRC)

This is a parental permission form for research participation. It contains important information about this study and what to expect if you permit your child/children to participate.

Your child/children's participation is voluntary.

Please consider this information carefully. It is desirable that according to their maturity children can be told this information in an appropriate way. Feel free to discuss the study with your friends and family and to ask questions before making your decision whether or not to permit your child/children to participate. If you decide to permit your child/children to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:

You and your child/children are being asked to participate in this research study because the European Commission - Joint Research Centre - Institute for the Protection and Security of the Citizen - is conducting a research project aiming at exploring young children and their families' experiences with digital technologies. In particular, we will look at their digital technological engagement as well as the potential benefits and risks associated to their digital interactions with new technologies. The results of this study will serve as a basis for recommendations on what should be looked at when launching larger EU studies on the benefits and challenges associated to young children's use of new digital technologies. This study will involve fifty families and will be simultaneously implemented in five European countries, and performed by researchers from selected universities: KULeuven, Masaryk University Brno; Universität Mainz, Università del Sacro Cuore Milano, University of Edinburgh, London School of Economics, University of Sheffield.

The environment of this research is limited to the home and family context. It will focus on interviewing children that use digital technology at least once a week, as well as their family (at least one parent); the children should be aged between 6 and 7 (just entering in September 2014 in 2nd grade of primary school and possibly with at least one younger sibling).

Procedures/Tasks:

The research will be conducted from September to December 2014.

You will be contacted by a team of two researchers from [NAME OF YOUR UNIVERSITY] which will conduct the interview with the family, at home. The length of the interview may vary following the availability of the family and the rhythm of the interview but will not be less than one hour and not more than two hours and half. The visits to the family will be audio-recorded and the researchers will take notes as well during the interview. The interviews will be divided into three parts. A short family introduction will gather at first, the children and parents in a joined discussion and activity. Then, parents and children will be divided and they will be engaged into two different activities. Parents will have a short interview with one of the researchers; the other will discuss with the child/children using age appropriate tools such as cards games or toys. Those two activities will be performed in connected space or in the same space provided that this is large enough to host the two activities and allows correct recording conditions for both. A conclusive session will gather again the whole family and the two researchers.

Duration:

The interviews of this study will take place from in September and October 2014. A report on this exploratory research will be publically available in early 2015. Your child/children may leave the study at any time.

Risks and Benefits:

There are no potential physical, social, economic, psychological, or legal harms foreseen in this study. Families will benefit from the discussion with our researcher in reflecting more in depth on their own use of digital technologies. The participating families will be invited to ask questions in return to the researcher who will return them to experts. At the end of the study, a short report will be provided to each family including the answer to their potential questions.

Confidentiality:

Your child's/children study-related information will be kept confidential, unless anonymized and used only for research purposes and scientific publications. Anonymisation is a process that removes or replaces identity information from a communication or record. Communications and records may be made pseudonymous, in which case the same subject will always have the same replacement identity but cannot be identified as an individual. In order to facilitate the note-taking process during the interview, the researchers may capture illustrative photos of tools, devices and children digital-related activities paying attention not to capture persons and children from front face pose, anonymising pictures with automatic face blurring in photo capturing tools (e.g. ObscuraCamapp), eventually anonymising the images through manual face blurring in the analysis stage (e.g. using GimpPhoto editor). Following the data collection activities, the information gathered will be reviewed for anonymisation, analysis and aggregation activities into a final report. All acquired audio streams will be stored encrypted in a temporary repository of the University for the time necessary to produce an anonymised transcript version with the most relevant observations. As soon as the transcript is available, the audio stream will be permanently deleted. Concerning the pictures, in addition to the care not to capture front-person shots, the photos will be blurred automatically for anonymisation during the capturing. If necessary, further editing for anonymisation will be performed with a photo editor (e.g. Gimp). After anonymisation, the

information will be analysed and compiled into aggregate country reports. During the whole study, all collected personal data will be stored with appropriate secure and protective measures.

Your child/children's records may be reviewed by the following group:

- The research team conducting this research at [\[NAME OF YOUR UNIVERSITY\]](#) which is the guarantor of the anonymisation process.

Your anonymised child/children's records may be reviewed by the following groups:

- The research teams conducting this research at KULeuven, Masaryk University Brno; Universität Mainz, Università del Sacro Cuore Milano, University of Edinburgh, London School of Economics, University of Sheffield;
- The Coordinating research team at the Joint Research Center of the European Commission supporting the study.

Incentives:

At the end of the interview, children will be offered the *Activity book: Play and learn: Being online* issued by the Insafe network and some other educational materials. At the end of the study, parents will be offered a copy of the study report.

Participant Rights:

If you and your child choose to participate in the study, you may discontinue participation at any time. By signing this form, you do not give up any personal legal rights your child may have as a participant in this study. The European Data Protection Supervisor and [the \[National Research Ethics Committee\] / \[Institutional Research Ethics Committee at NAME OF YOUR UNIVERSITY\]](#) reviewed this research project and found it to be acceptable, according to applicable national and European legislation (European directive 95/46/EC) and University policies designed to protect the rights and welfare of participants in research.

Contacts and Questions:

This form constituted an informed consent letter but as well a request for collaboration and collaborative development of knowledge in the field. Therefore, should you have any questions, comments, concerns, or complaints about the study, please do not hesitate to contact [\[Provide here the name of the Principal Investigator – email – phone number\]](#).

For questions about your child's rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact [\[Provide here the name of the Adequate person- his/her job title – email – phone number\]](#) or Mrs. Stephane Chaudron, researcher at the Joint Research Center (JRC) of the European Commission – Stephane.chaudron@jrc.ec.europa.eu, +39 0332 789401.

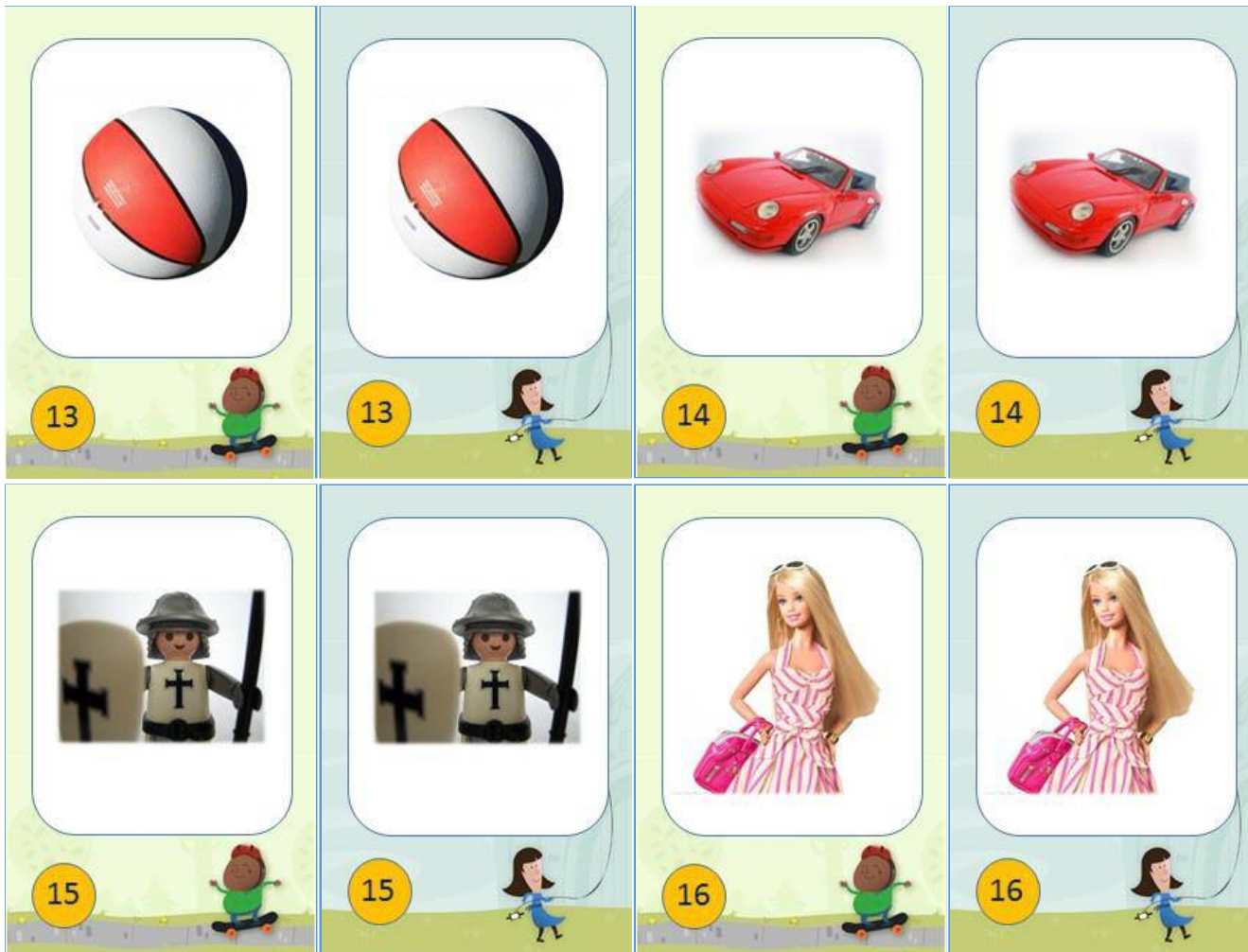
Appendix C: Ice-breaking activity – Example – G03-YB



Appendix D: Card Game









Appendix E: Demographic data of the national samples

Belgian Families	Family code	Low – medium-high family income	Alpha Family Member Code	Sex	Age	Year school/ max level of education	Ethnicity
Alpha family	B1	High	B1m	Male	40	Tertiary	Latin
			B1f,	Female	41	Tertiary	Latin
			B1b6,	Male	6	1st grade	Latin
			B1g0	Female	0	/	Latin
Beta family	B2	Low	B2m	Female	39	High school	Asian
			B2b9	Male	9	3rd grade	Asian
			B2b8	Male	8	2nd grade	Asian
			B2b4	Male	4	Kindergarten	Asian
			B2bgm	Female	72		Asian
			B2bgf	Male	76		Asian
Gamma family	B3	High	B3m	Female	37	Tertiary	Caucasian
			B3f	Male	41	Tertiary	Caucasian
			B3b6	Male	6	1st grade	Caucasian
			B3b4	Male	4	Kindergarten	Caucasian
Delta family	B4	High	B4m	Female	35	Tertiary	Caucasian
			B4f	Male	34	Tertiary	Caucasian
			B4g6	Female	6	1st grade	Caucasian
			B4b4	Male	4	Kindergarten	Caucasian
			B4g4	Female	4	Kindergarten	Caucasian
Epsilon family	B5	Low	B5m	Female	Unknown	None	Asian
			B5f,	Male	Unknown	None	Asian
			B5b6,	Male	6	1st grade	Asian
Zeta family	B6	High	B6m	Female	36	Tertiary	Caucasian
			B6f	Male	40	High school	Caucasian
			B6g6	Female	6	1st grade	Caucasian
			B6b2	Male	2	/	Caucasian
Eta family	B7	High	B7m	Female	34	Tertiary	Caucasian
			B7f	Male	31	High school	Caucasian

			B7b7	Male	7	1st grade	Caucasian
			B7b4	Male	4	Kindergarten	Caucasian
Theta family	B8	Low	B8m	Female	37	Tertiary	Caucasian
			B8g6	Female	6	2nd grade	Caucasian/African
			B8g3	Male	3	Kindergarten	Caucasian/African
Iota family	B5	Low	B9m	Female	30	None	Caucasian
			B9f	Male	45	None	Caucasian
			B9g5	Female	5	Kindergarten	Caucasian
			B9g7	Female	7	1st grade	Caucasian
			B9?10	Unknown	10	Unknown	Caucasian
			B9g10	Female	10	Unknown	Caucasian
			B9b15	Male	15	Unknown	Caucasian
			B9b19	Male	19	Unknown	Caucasian
Kappa family	B6	High	B10m	Female	38	Tertiary	Caucasian
			B10f	Male	38	High school	Caucasian
			B10g6	Female	6	1st grade	Caucasian
			B10b9	Male	9	3rd grade	Caucasian

Czech Families	Family code	Low – medium-high family income	Alpha Family Member Code	Sex	Age	Year school/ max level of education	Ethnicity
1st	C1	/	C1m	F	35 yrs	Apprenticeship	/
		/	C1g7	F	7 yrs 6 mos	2nd class of primary school	/
		/	C1b1	M	1 yr 6 mos	-	/
2nd	C2	/	C2f	M	37 yrs	University	/
		/	C2m	F	39 yrs	University	/
		/	C2b7	M	7 yrs 11 mos	2nd class of primary school	/
		/	C2g6	F	6 yrs 2 mos	1st class of primary school	/
3rd	C3	/	C3m	F	35 yrs	University	/
		/	C3f	M	35 yrs	University	/
		/	C3b7	M	7 yrs 4 mos	2nd class of primary school	/
		/	C3b3	M	3 yrs 6 mos	-	/
4th	C4	/	C4f	M	38 yrs	Apprenticeship	/
		/	C4m	F	40 yrs	University	/
		/	C4b7	M	7 yrs 8 mos	2nd class of primary school	/

		/	C4g4	F	4 yrs 5 mos	-	/
		/	C4g20	F	20 yrs	Secondary School	/
5th	C5	/	C5f	M	40	Secondary School	/
		/	C5m	F	41	Secondary School	/
		/	C5g7	f	7 yrs 6 mos	2nd class of primary school	/
		/	C5g5	F	5 yrs 5 mos	-	/
6th	C6	/	C6m	F	35 yrs	Higher vocational school	/
		/	C6b9	M	9 yrs 7 mos	3rd class of primary school	/
		/	C6b7	M	7 yrs 9 mos	2nd class of primary school	/
7th	C7	/	C7m	F	39 yrs	University	/
		/	C7f	M	41 yrs	University	/
		/	C7b9	M	9 yrs	4th class of primary school	/
		/	C7b7	M	7 yrs	2nd class of primary school	/
		/	C7g5	F	5 yrs	-	/
		/	C7g0	F	5 mos	-	/
8th	C8	/	C8f	M	41 yrs	University	/
		/	C8m	F	40 yrs	University	/
		/	C8b10	M	10 yrs	4th class of primary school	/
		/	C8g7	F	7 yrs 3 mos	2nd class of primary school	/
		/	C8gf	M	76 yrs	University	/
8th	C9	/	C9f	M	37 yrs	University	/
		/	C9m	F	36 yrs	University	/
		/	C9b8	M	8 yrs 3 mos	2nd class of primary school	/
		/	C9g6	F	6 yrs 8 mos	1st class of primary school	/
10th	C10	/	C10m	F	35 yrs	University	/
		/	C10g7	F	7 yrs 1 mo	2nd class of primary school	/

Finn Families	Family code	Family income	Family Member code	Sex	Age	Year school/max level of education	Ethnicity
1	F1	not reported	F1m F1f F1b7	female male male	7	Completed university Completed university Year 1	Finn Finn Finn
2	F2	low	F2m F2f F2og11 F2g8	female male female female	11 8	Studying Studying Year 5 Year2	Finn Finn Finn Finn

3	F3	medium	F3m F3f F3ob16 F3ob14 F3og13 F3ob10 F3b7	female male male male female male male	 16 14 13 10 7	Completed university of applied sciences Completed university of applied sciences Unknown Unknown Unknown Unknown Year 1	Finn Finn Finn Finn Finn Finn Finn
4	F4	low	F4m F4f F4og17 F4og15 F4ob14 F4ob12 F4ob10 F4g8 F4b6 F4yg4 F4yb3 F4yb1	female male female female male male male female male female male male	 17 15 14 12 10 8 6 4 3 1	Completed secondary Completed vocational Unknown Unknown Unknown Unknown Unknown Year 2 Kindergarten Unknown Unknown Unknown	Italian Italian Italian Italian Italian Italian Italian Italian Italian Italian Italian Italian
5	F5	high	F5m F5f F5g7 F5g5	female male female female	 7 5	Completed university of applied sciences Completed vocational Year 2 Kindergarten	Finn Finn Finn Finn
6	F6	high	F6m F6f F6b7 F6g5	female male male female	 7 5	Completed university Completed university Year 2 Kindergarten	Finn Finn Finn Finn
7	F7	high	F7m F7f F7ob19 F7og17 F7ob9 F7g7	female male male female male female	42 42 19 17 9 7	Completed Bachelor's Completed university Unknown Unknown Year 4 Year 2	Finn Finn Finn Finn Finn Finn
8	F8	high	F8m F8sf	female male	 	Completed university of applied sciences	Finn Finn

			F8og19	female	19	Unknown	Finn
			F8og18	female	18	Unknown	Finn
			F8og15	female	15	Unknown	Finn
			F8og12	female	12	Unknown	Finn
			F8ob11	male	11	Year 7	Finn
			F8g7	female	7	Year 5	Finn
						Year 2	
9	F9	not reported	F9m	female	38	Completed university	Finn
			F9ob9	male	9	Year 3	Finn
			F9b7	male	7	Year 1	Finn
10	F10	low	F10f	male		Completed university	Finn
			F10g8	female	8	Year 2	Finn
			F10g5	female	5	Kindergarten	Finn

German Families	Family code	Low – medium-high family income	Alpha Family Member Code	Year school/ max level of education	Migration background
Alfa Family	G01MDCS	Medium	M, 5YB (01), 5YB (02)	High- and formally mid-level	no
Bravo Family	G02MDCS	Medium	M, 7YB (03), 7YG (04)	High- and formally mid-level	mother
Charlie Family	G03CS	Medium	M, F, 4YB (05)	Formally mid-level	no
Delta Family	G04MDCS	Medium	M, 3YG (06), 1YG (07)	High- and formally mid-level	no
Echo Family	G05MDCS	Above Medium	M, 6YG (08), 4YB (09), 1YG (10)	High-level	mother
Foxtrot Family	G06MDCS	Medium	M, F, 6YB (11), 4YG (12)	High- and formally mid-level	no
Golf Family	G07MDCS	Above medium	M, F, 6YG (13), 8YB (14)	High-level	no
Hotel Family	G08MDNS	Above medium	M, 5YG (15), 6OG (16)	Formally mid-level	mother & father
India Family	G09MD	Medium	M, 4YG (17)	Formally mid-level	no
Juliett Family	G10MDBT	Above medium	M, 7OB (18)	High-level	no

Italian families	Family code	Low – medium-high family income	Alpha Family Member Code	Sex	Age	Year school/ max level of education	Ethnicity
Family 1	I1	High	I1f	m	42	Tertiary	Italian
Family 1	I1	High	I1m	f	38	Tertiary	Italian
Family 1	I1	High	I1og	f	7	2 nd Primary	Italian
Family 1	I1	High	I1yg	f	3	Kindergarten	Italian
Family 2	I2	Low	I1f	m	41	Secondary	Italian
Family 2	I2	Low	I2m	m	38	Secondary	Italian
Family 2	I2	Low	I2og	f	6	2 nd Primary	Italian
Family 2	I2	Low	I2yg	f	5	Kindergarten	Italian
Family 3	I3	High	I3m	m	39	Tertiary	Italian

Family 3	I3	High	I3f	f	38	Tertiary	Italian
Family 3	I3	High	I3og	f	7	2 nd Primary	Italian
Family 3	I3	High	I3yg	f	4	Kindergarten	Italian
Family 4	I4	Medium	I4m	m	44	Tertiary	Italian
Family 4	I4	Medium	I4f	f	41	Tertiary	Italian
Family 4	I4	Medium	I4ob	m	7	2 nd Primary	Italian
Family 4	I4	Medium	I4yb	m	5	Kindergarten	Italian
Family 4	I4	Medium	I4yg	f	2	Nursery	Italian
Family 5	I5	Medium	I5f	m	41	Secondary	Italian
Family 5	I5	Medium	I5m	f	41	Secondary	Italian
Family 5	I5	Medium	I5og	f	7	2 nd Primary	Italian
Family 5	I5	Medium	I5yg	f	4	Kindergarten	Italian
Family 6	I6	Medium	I6f	m	39	Tertiary	Italian
Family 6	I6	Medium	I6m	f	41	Secondary	Italian
Family 6	I6	Medium	I6ob	m	7	2 nd Primary	Italian
Family 6	I6	Medium	I6yg	f	5	Kindergarten	Italian
Family 7	I7	High	I7f	m	42	Tertiary	Italian
Family 7	I7	High	I7m	f	48	Tertiary	Italian
Family 7	I7	High	I7ob	m	7	2 nd Primary	Italian
Family 7	I7	High	I7yb	m	2	baby sitter at home	Italian
Family 7	I7	High	I7yg	f	2	baby sitter at home	
Family 8	I8	Medium	I8f	m	53	Secondary	Italian
Family 8	I8	Medium	I8m	f	35	Secondary	Brazilian
Family 8	I8	Medium	I8ob	m	12	2 nd Lower Secondary	Italian
Family 8	I8	Medium	I8yg	f	7	2 nd Primary	Italian
Family 9	I9	High	I9f	m	50	Tertiary	Italian
Family 9	I9	High	I9m	f	48	Tertiary	Italian
Family 9	I9	High	I9ob	m	10	5 Primary	Italian
Family 9	I9	High	I9yb	m	7	2 nd Primary	Italian
Family 9	I9	High	I9yg	f	7	2 nd Primary	Italian
Family 10	I10	High	I10f	m	46	Tertiary	Italian
Family 10	I10	High	I10m	f	41	Tertiary	Italian
Family 10	I10	High	I10g	f	7	2 nd Primary	Italian

Russian Family code	Low – medium-high family income	Alpha Family Member Code	Sex	Age	Year school/ max level of education	Ethnicity
1	Medium	1.1	Female	26	Higher education	Russia
1	Medium	1.2	Male	6	Nursery school	Russia
2	Medium	2.1	Male	31	Higher education	Russia
2	Medium	2.2	Female	31	Higher education	Russia
2	Medium	2.3	Male	7	1-st year (primary school)	Russia
2	Medium	2.4	Male	4	Nursery school	Russia
3	High	3.1	Male	34	Higher	Russia
3	High	3.2	Female	30	Higher	Russia
3	High	3.3	Male	4	Nursery school	Russia
4	Medium	4.1	Male	42	Higher	Russia
4	Medium	4.2	Female	36	Higher	Russia
4	Medium	4.3	Female	10	5-th year (secondary school)	Russia
4	Medium	4.4	Female	7	1-st year (primary school)	Russia
5	Medium	5.1	Male	25	Higher	Russia
5	Medium	5.2	Female	28	College	Russia
5	Medium	5.3	Female	4	Nursery school	Russia
6	Medium	6.1	Male	37	Higher	Russia
6	Medium	6.2	Female	35	Higher	Russia
6	Medium	6.3	Male	8	2-nd year (primary school)	Russia
6	Medium	6.4	Female	7	1-st year (primary school)	Russia
7	Medium	7.1	Male	38	College	Russia
7	Medium	7.2	Female	38	Higher	Russia
7	Medium	7.3	Male	7	1-st year (primary school)	Russia
8	Medium	8.1	Male	31	College	Russia
8	Medium	8.2	Female	39	Higher	Russia
8	Medium	8.3	Male	14	8-th year (secondary school)	Russia
8	Medium	8.4	Male	7	1-st year (primary school)	Russia
9	Medium	9.1	Male	42	Higher	Russia
9	Medium	9.2	Female	43	College	Russia
9	Medium	9.3	Female	23	Higher, Post-graduate student	Russia
9	Medium	9.4	Male	7	1-st year (primary school)	Russia
10	Medium	10.1	Male	47	College	Russia
10	Medium	10.2	Female	43	College	Russia

10	Medium	10.3	Male	6	1-st year (primary school)	Russia

Family code	Family income	Family Member Code	Sex	Age	Year school/ max level of education	Ethnicity (using categories from the UK Census)
1	Medium	UK1m	female	41	Completed college	White British
		UK1f	male	51	Completed college	Other mixed background
		UK1b3	male	3	Kindergarten	Other mixed background
		UK1b6	male	6	Year 2	Other mixed background
		UK1b8	male	8	Year 4	Other mixed background
2	High	UK2m	female	39	Completed college	White and Asian
		UK2f	male	40	Completed college	Other White European
		UK2b5	male	5	Year 1	Other mixed background
		UK2g6	female	6	Year 2	Other mixed background
3	High	UK3m	female	47	Completed college	White British
		UK3f	male	51	Completed college	White British
		UK3g6	female	6	Year 2	White British
		UK3b13	male	13	Year 9	White British
		UK3b16	male	16	Year 12	White British
4	High (but clearly not well off)	UK4m	female	40s	Completed college	Latina
		UK4f	male	40s	Completed college	Other White European
		UK4b6	male	6	Year 2	Other mixed background
5	Medium	UK5m	female	40s	Completed college	White British
		UK5b12	male	12	Y12	White British
		UK5g10	female	10	Y11	White British
		UK5gi6	female	6	Y2	White British
		UK5gii6	female	6	Y2	White British
6	Medium	UK6m	female	30s	Completed college	Black British
		UK6f	male	40s	Completed college	Black British
		UK6b16	male	16	Completed secondary	Black British
		UK6g6	female	6	Y2	Black British
		UK6g5	female	5	Y2	Black British
7	Medium	UK7m	female	40s	Completed college	White British
		UK7f	male	40s	Completed college	White British
		UK7g7	female	7	Y2	White British
		UK7g5	female	5	Y2	White British
8	Medium	UK8m	female	40	Completed college	White British
		UK8f	male	40	Completed college	White British

		UK8g7	female	7	P3 (Eng Y2)	White British
		UK8b4	male	4	Kindergarten	White British
9	High	UK9m	female	46	Completed secondary	White British
		UK9f	male	51	Attended college	White British
		UK9g6	female	6	P3 (Eng Y2)	White British
10	High	UK10m	female	49	Completed college	White British
		UK10f	male	50	Completed college	White British
		UK10b9	male	9	P5 (Eng Y4)	White British
		UK10b7	male	7	P3 (Eng Y2)	White British

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