

YOUNG CHILDREN (0-8) AND DIGITAL TECHNOLOGY

*What has changed in one year? – National report
BULGARIA*

Name of the author:

Marko Hajdinjak¹

(with contribution from Boyko Tsenkov²)

Name of the Institution:

¹Applied Research and Communications Fund

²Association Parents

Contacts:

Bulgarian Safer Internet Center

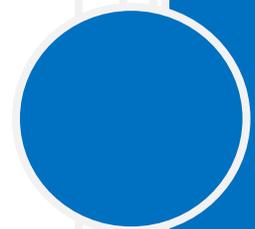
5, Alexandar Zhendov Str.

Sofia, Bulgaria

www.arcfund.net

www.safenet.bg

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WHAT HAS CHANGED IN ONE YEAR?

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Executive summary

This report presents the findings of a fieldwork, conducted between November 2016 and January 2017, as part of a European-wide study, coordinated by European Commission's Joint Research Centre. The current research is a continuation of a 2015 study about how children aged 8 years or less and their families use and manage digital technologies. The result of that study was a valuable new knowledge that partially filled a considerable gap in the existing scholarship, which has previously largely neglected how the youngest children cope in the digital world.

During the first research, we interviewed 10 families with children aged 0-8. During the second stage, taking place roughly one year and a half after the first interviews, five of these same families were visited again. The main objective was to assess how the perceptions of different family members changed over time, what are the differences in children's interests, skills and practices, and what (if any) are modifications in parents' mediation of children's use of online technologies.

The findings presented below were used for elaboration of recommendations for educators and other practitioners working with children, policy-makers and parents regarding the benefits and challenges of young children's use of digital technologies.

Key findings

1. **Online technologies continue to play a very important role in the daily lives of all families** interviewed in the course of the current study. Families own different devices, but most common are laptops or personal computers, tablets and smartphones. Game consoles are rare, and DVD and MP3 players seem obsolete. Smart TVs have largely substituted traditional TVs, but this does not change the fact that TV is losing the battle with other devices, especially among children.
2. **Children start using the online technologies at a very early age** (3 or 4). If they have older siblings, they learn from them and their own digital skills, interests and activities are often quite similar to those of their older brothers and sisters.
3. **Smartphones are children's favourite devices, followed by tablets.** Laptops and PCs are also popular, especially for watching films or videos, but when it comes to playing games, they cannot compete with the smaller devices, which are easier to handle and – most importantly – have a touchscreen. Another important reason for children's attachment to smartphones and tablets is that often they are perceived as their ownership, while computers and TV belong to the entire family.
4. As children grow older, the **peer pressure to own a particular device and do certain things is becoming stronger.** Parents fear that children might be isolated or excluded if they do not have the same devices or share similar activities and interests as other children. Over the past year and a half, new tablets or smartphones were purchased in almost all families.
5. **Children continue to use the devices predominantly for entertainment** (playing games, watching movies and video clips, listening to music, making pictures and videos, social networks), but other activities are becoming popular as well – especially **online communication** (Viber, Skype and Messenger) with family members and friends. A modest beginning in **the use of digital technologies for education and school-related work** has also been observed.
6. **Three of interviewed children have their own Facebook profile**, which is the same share as during the 2015 research. Their parents consider this a necessity, caused by the peer pressure, as most of the children's friends have Facebook accounts as well. Other parents, however, disagree with this view, saying that Facebook use carries too many risks for such young children. "The Facebook parents"

actually share these apprehensions and try to keep strict control over their children's Facebook activities.

7. In the time since the previous research, most children have **noticeably improved their online skills and learned different new ones**. They all know how to find, install and uninstall games, they can take pictures and make videos (some can also edit the content they create and send it to their parents or friends). They use different communication tools with ease. Since they have learned to read and write **children have become considerably more efficient in independent use of Google and other search engines**.
8. The increased ability to use online technologies independently is partially responsible for **noticeable decrease in time and diversity of joint online activities of parents and children**.
9. Although some children already understand that digital technologies are associated with certain costs, most continue to **perceive Internet as a free-of-charge unrestricted source of entertainment**. Slowly, some children have started to discover and **recognise it also as a source of knowledge and information**.
10. The majority of **parents continue to have a positive opinion about the online technologies** (they encourage children's curiosity, imagination and desire for learning, and help them to master reading and writing). At the same time, they **are increasingly concerned with different risk factors** (excessive use and long screen time, influence of commercial ads and consumerism, inappropriate online content, online bullying and abuse among peers).
11. Of the five interviewed families, **four have a very permissive attitude** regarding children's access and use of digital technologies, while one family prefers a modestly restrictive approach. A typical view is that **children should not be restricted and deprived**, because the digital devices are good for their development and have numerous benefits. Parents prefer an open and honest dialogue to prohibitions.
12. In all families, **the parent who talks with the children on safety issues is the father**. However, usually these talks focus on technical aspects of security. It seems that most parents are quite unsecure and ill-prepared for an open conversation with their children about the variety of risks associated with harmful and inappropriate online content and conduct.
13. Since parental guidance and support on online safety is lacking or is insufficient, it is not surprising that **in case of an online problem, children would prefer to find a solution on their own**, or with the help of their friends, rather than telling their parents. On the other hand, **children are quick to alert their parents about unwanted (attempted) communication with unknown persons**.
14. This does not mean that the children are left alone to sail the digital waters. In all families, **parents rather strictly and regularly monitor children's online activities**. **In three families, parental control software is installed** on devices children use. These developments were partially influenced by the first wave interviews, which alerted the parents to issues of online safety and security.
15. **All parents support restrictive school policies**, which prohibit the bringing of digital devices to classroom. Parents believe that otherwise children would not pay attention in class and that peer pressure to own a particular device would be too large. At the same time, **parents are in favour of creative and meaningful inclusion of online technologies in the process of education**.

Challenges and recommendations

Recommendations to Parents and carers

- As the children grow, they become more curious and eager to experiment and explore. Parents must not assume that improved technical skills and abilities of the children are sufficient to protect them from potentially dangerous situations online. Instead, they need to take special care to support the early digital and media literacy of their children, focusing on critical thinking, creative activities and responsible online behaviour.
- Numerous parents feel powerless, lacking information, skills and/or time to help their children in the digital world. They must not use this as an excuse to leave their children alone at the time when they need the parental guidance the most. Parents should be proactive and continuously improve their knowledge and skills regarding the devices, apps and websites their children are using/visiting. They should consult other parents, teachers and relevant experts such as the Bulgarian Safer Internet Centre. Popular online platforms are also increasingly responsive towards mediating children's online experiences (Facebook's Parent Portal is available in 55 languages).
- Many parents are postponing or avoiding talking with their children about a multitude of potential online risks and dangers. The time for this conversation is now! Tomorrow it might be too late.
- Parents should regularly monitor their children's online activities, especially those that involve possibility for communication with strangers (such as social networks or use of a web camera). They are strongly encouraged to check the security settings of the devices used by children and install parental control software on these devices.
- Parents must encourage children to develop independent critical thinking and to learn more about safety, but they must also encourage the children to share with them their online experiences. Children must be confident that they can always turn to their parents for help and advice.
- Our study indicates that fathers often appear more self-assured in dealing with online technologies than mothers do. Their active contribution to development of children's digital skills is therefore essential.
- Parents should spend more time doing things online together with their children. This would contribute to development of children's skills and give the parents more control of children's online activity in a delicate way.
- Parents must never forget that their children might be "digital natives," but this does not mean they are also "digitally literate." Whether they ask for it or not, children need their parents support, guidance and help.

Recommendations to Schools

- By the time they start going to school, most children are already active digital users. Despite that, many schools ignore this fact and in the first grades simply prohibit the bringing and using of online technologies rather than introducing elements of early digital literacy at the very start of the education process. The need to build and enhance children's digital and media literacy as early as possible is an increasingly urgent task of schools and teachers.
- Online technologies have a great potential for making the educational process more attractive, interesting and meaningful for the children. There is plenty of room for improvement in the way technologies have been used in the classroom to date. Even children's own devices can be creatively used to engage children in educational activities and encourage early digital literacy.

- Rather than limiting the use of online technologies, schools should introduce clear and effective rules for their use, with foremost being the safety and benefit of the children.
- Children always learn from their peers. The learning can include positive and useful skills, but also unsafe and risky practices. Schools should provide appropriate environment and facilitate peer-to-peer training programmes. Training of young trainers should be undertaken in a partnership between NGOs, schools, state institutions and corporate actors to achieve best and lasting results.
- Children are rarely using technologies for homework and other school-related work. Teachers should be creative in stimulating children to use online technologies for learning and preparing for the class.

Recommendations to Policy-makers

- The national strategies and plans for safeguarding children and for promoting and protecting their rights must take into account the reality that children start using digital technologies very early. This should be addressed in a proper way by championing early digital literacy, encouraging high quality positive online content, preventing potential online crimes against children and prosecuting them efficiently when they occur.
- Regular and systematic assessment of children's use of digital technologies, risks, opportunities and skills should be carried out in order to inform the policy making to implement measures that are up-to-date and adequate to the needs of the children at different ages and from different backgrounds.
- Services and campaigns should be supported that inform parents and professionals on the children's use of technologies, the importance of digital literacy and approaches to increase the benefit of digital devices while decreasing the potential harm.

Proposal for implementations

- Regular larger scale national quantitative and qualitative studies should be carried out, producing comparable data across Europe. This would make it possible to follow the trends, generate predictions and provide background for timely implementation of effective policies and practices both at a national and European level.
- A national policy addressing the positive and safe use of digital technologies should be devised and implemented. It should engage all key stakeholders such as parents, educational institutions, social services, NGOs, industry representatives and decision makers in order to develop and implement evidence-based measures to protect and empower children in the digital age.
- Digital literacy should become part of the school curriculum from pre-school on. Teachers should be trained to work with parents and children on issues concerning digital literacy and be able to facilitate the use of digital devices in the classroom to support children's learning.
- Educational institutions should adopt policies and practices that encourage the digital literacy of the children and safeguard them from online as well as offline harm. Preferably, this should be done in partnership with the children and their parents to increase ownership and adherence to the rules.
- Parents should be informed about the potential harm associated with different aspects of online use and measures to mitigate it. They should also be able to access up-to-date information concerning how to develop their children's digital literacy, where to look for help or how to report inappropriate content (for example through the national Safer Internet Centres).

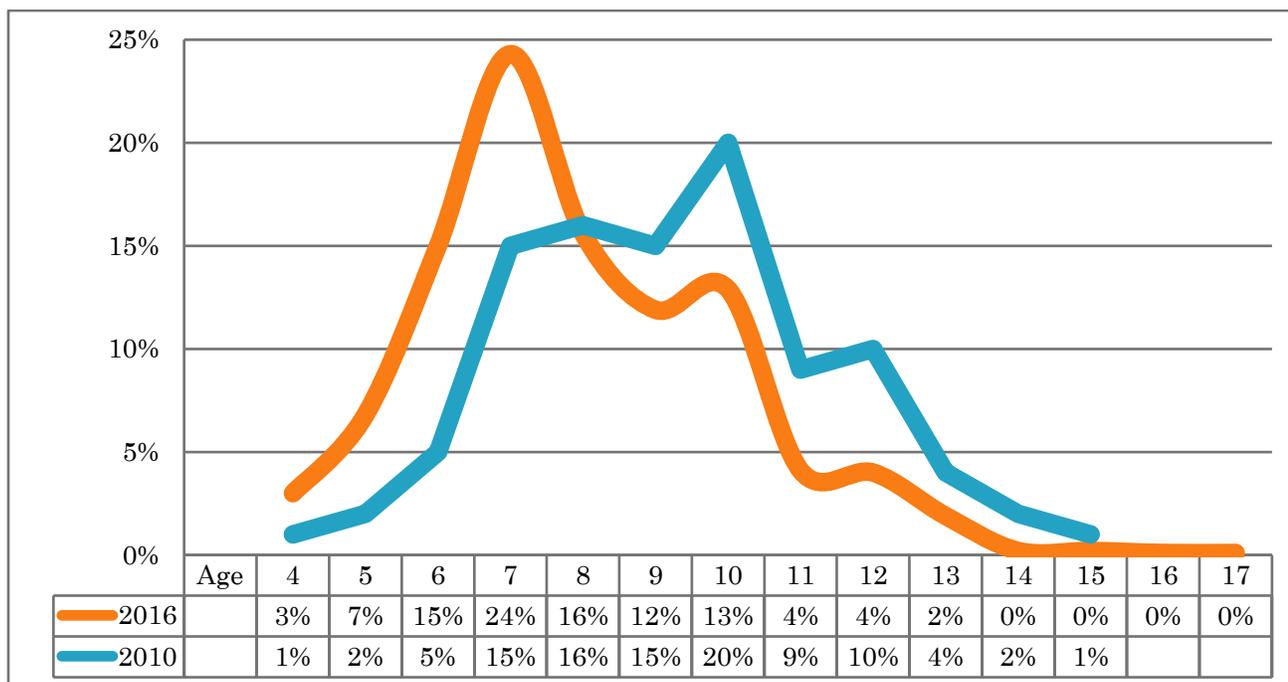
1. Introduction

This report is based on a fieldwork, which was conducted as part of a European-wide study, coordinated by European Commission's Joint Research Centre. It represents a continuation of a 2015 research, which has produced a cross-national picture of how children aged 8 years or less and their families use and manage digital technologies. The study allowed the researchers to obtain valuable new knowledge of this topic and better understand how the youngest children and their families exploit the opportunities provided by the digital world, as well as how they handle the associated risks.

In the first research, 10 families with children aged 0-8 were interviewed. During the second stage, five of these same families were visited again, roughly one year and a half after the first interviews. The purpose of the second visit was to assess how perceptions, usage and skills with digital technology have changed over time among the family members (parents and children).

Information and knowledge obtained from the families was analysed and the most important findings are presented in the central section of this report. The conclusions were used to bring forth several recommendations for educators and other practitioners working with children, policy-makers and parents regarding the benefits and challenges of young children's use of digital technologies.

Figure 1: Age at which Bulgarian children start using digital technologies



Source: Hajdinjak et al, 2016, p. 4.

The age at which Bulgarian children go online has been steadily decreasing over the years. In September 2016, the Bulgarian Safer Internet Centre in cooperation with the MarketLinks agency conducted a national representative survey titled "Online Conduct of Children in Bulgaria" (in the frame of a European-wide research "EU Kids Online 2016-2017"). The results showed that 3% of children enter the digital world

when they are only 4 years old, and additional 7% start using digital technologies at the age of five. Two thirds (65%) of Bulgarian children younger than nine are digital users. As the Figure 1 shows, the age of the first encounter with digital technologies has dropped significantly compared to 2010 – a trend which will almost certainly continue in the coming years.

Many Bulgarian parents, teachers and policy-makers believe that at this age, children are too young to be active users of digital technologies and therefore their access should be discouraged, if not prevented. All schools visited by children interviewed in this study prohibit the use of digital devices in the class – at least in the lower grades. It appears that parents support this policy. This means that little is being done to empower the youngest children to work with Internet and digital technologies in a positive, safe and constructive way, especially in the light of the fact that their technical, critical and social skills have not been properly developed yet.

The main objective of the current study is to examine how the engagement of children younger than eight with online technologies evolved since the previous interviews (a period of one year / year and a half). Study looks into how the perceptions of different family members changed over time, what are the differences in children's interests, skills and practices, and what (if any) are modifications in parents' mediation of children's use of online technologies.

2. Method

The fieldwork was conducted between November 2016 and January 2017. It involved five families from Sofia. Three families are from the lower end of the social-economic scale, one family is with medium income, and one enjoys slightly higher than average standard of living. In one family, the interviewed child is a single child, two families are with two children, and two families have three children. The ethnicity of three families is Bulgarian, while the remaining two are Roma. In all five families, the interviewed parent was a mother. All interviewed children are between 7 and 9 years old and are active users of digital technologies.

The initial plan was to approach all ten families from the previous research stage, which took place in 2015. As two of these families could not be contacted (researchers did not have their telephone number, and they did not reply to emails), invitation to participate in the second stage was sent to eight families. Three preferred not to partake, and the remaining five families replied positively. Before the actual interview, the researchers sent a preliminary questionnaire to these five families. The questionnaires contained 23 questions, relating to different digital devices used by family members, influence of digital technologies on family life, digital competencies and skills, parents' mediation routines, and basic demographic information about the family members. Families filled in the questionnaires and returned them to researchers via email. Information from questionnaires was very important for preparation of the interviews, as it helped the researchers to obtain a good insight into the digital life of each family. The questionnaires were used for fine-tuning of the interview guides, which were modified and tailored to the specific situation in each family.

All families were visited by a team of two researchers, who conducted the interviews with the family members in their homes. An experienced child psychologist (Boyko Tsenkov from Association Parents) interviewed the children, while a social anthropologist (Marko Hajdinjak from Applied Research and Communications Fund) talked with the parents. The visits varied in length – the shortest one lasted about one hour and a half, and the longest one a bit over two hours and a half. At the beginning, researchers presented the project, reassured the families that all names and other private data will be protected and kept confidential, and that all information shared by the families will be used only for research purposes and scientific publications. The parent and the children were reminded that they could refuse to answer

any question and interrupt or break the interview at any point. A particular care was taken to explain the meaning of the consent form to the children. After this was done, the interviewed parent and the interviewed child filled in and signed the relevant informed consent forms for participation in research (for children and for adults), and the parent's permission for participation of a child.

The researchers then engaged the family in the ice-breaking exercise "My digital family." The child, with the help from the parent and researchers, used colourful stickers to fill in a large table featuring different digital devices. At the end of the exercise, the table showed who in the family owns and who uses a particular device, how are devices shared, and which is the favourite device of each family member.

After the icebreaker, one researcher conducted a semi-structured interview with the parent (mother in all cases), while the other researcher talked with the child (in most cases in presence of other siblings) and observed his/her use of the digital devices. The interviews with children included different games and playful activities to attract and retain child's attention.

The two interviews were conducted in two separate rooms – usually the parent and one researcher stayed in the living room or a kitchen, while the child(ren) and the other researcher went to the child's room. In most cases, the presence of other siblings was helpful. In the sole family, where they were older than the interviewed child, they provided important additional information. In one family, where younger sibling was present, the interactions and conversation between the two children gave the researcher a good insight into how the older child influences and guides the younger one in the digital space. In another family, however, the presence of the younger sibling was exceptionally disruptive and the researcher found it very challenging to keep the process under control.

In the end, the whole family and the two researchers gathered again for the conclusive part to sum up the conversation. Families were given a small compensation for their participation in the interviews. Parents received a voucher for a supermarket chain, and the children obtained a bag with presents (informational and educational materials of the Bulgarian Safer Internet Centre, toys, flashlight, T-shirt, outdoor plastic bottle). Most parents expressed interest in the findings of the study and said that they would appreciate receiving a copy of the report and other relevant information, especially practical advice about safety settings of the devices.

The audio recordings were encrypted and stored on the secured server of ARC Fund. All photographs made during the family visits were edited to ensure they contain no revealing information about the identity and location of the families, and especially children. During the interviews, researchers took additional notes in their notebooks, highlighting specific behavioural patterns, describing the home of the family, its set-up and especially presence of items used by children (toys, books, devices). Taking notes was especially important during interviews with children, as the researcher assessed child's skills, emotional responses and nonverbal reactions. The researcher also wrote down all observations regarding child's actions during the games and when using different devices. After the interviews, the two researchers exchanged their preliminary observations, discussed the interviews and compared the information they obtained from the parents and children.

All parent interviews were fully transcribed. Interviews with children contained a significant amount of less relevant information, as children were often distracted and strayed from the topic. Therefore, instead of a full transcription, detailed interview summaries were made. All transcriptions and summaries were coded to conceal the identity of the families.

The interviews were examined according to the JRC's protocol of analysis, which defined four main research questions:

1. Individual use of digital technologies by children and parents
2. Children's and parents' awareness to risks and opportunities
3. Family use, dynamics and practices
4. Types of parental mediation

These four research questions were investigated from the perspective of six main dimensions:

1. Devices: what has changed in the families regarding the use and ownership of digital devices – which ones are new, which have been discarded, what are the expectations of different family members about them?
2. Activities, interests and opportunities: which are the new ones and which were abandoned?
3. Skills: what are the changes regarding children's skills – have they acquired any new ones or lost any of the old?
4. Mediation/rules: how did these change with time?
5. Perceptions: do parents and children see the digital technology in the same way as before, or different?
6. Effect of the first interview: has anything changed as a result of the first interview?

The entire fieldwork was based on the guidelines and ethical norms defined in the agreements with JRC and the project coordinator. The procedure also followed the internal rules and policies of the implementing organisations (Applied Research and Communications Fund and Association Parents), especially the codes for working with children and minors.

3. Changes through a Family Portrait Gallery

Family BG04

Sofia, Bulgaria

Family members

- Stela, BG04m41 [mother]
- Nayden, BG04f48 [father]
- **Elena, BG04g8, first grade** [interviewed child – twin]
- **Daniel, BG04b8, first grade** [interviewed child – twin]
- Stanislav, BG04b4, kindergarten [sibling child]



Narrative

The family lives in a medium-sized penthouse apartment in a relatively new apartment bloc, located in a residential area close to the city centre. The twins and their younger brother share a room on apartment's second floor, while parents' bedroom, living room and kitchen are below. Parents both run their own businesses. Stela (BG04m41) is organizing social events for children (birthdays and other parties, playdays and similar).

Family has three TV sets, one of which is located in children's room. Each of the twins has a tablet, but one of them has been broken for well over a year. For the time being, parents are reluctant to buy a new one. Instead, twins were given their parents' old telephones, after parents bought newer models. Children can play games and use camera on their phones, but cannot browse Internet. Nayden (BG04f48) has a tablet, but uses it for work and children are not allowed to touch it. Family has one laptop, which is considered to be in Stela's ownership, but is used by the children as well – mostly for watching films, although Daniel (BG04b8) also plays games on it. Laptop is a new device, bought within the past year. The same is true for Nayden's tablet and smartphones of both parents.

["Using devices as babysitters is inevitable. Kudos to any mother that manages without TV or smartphone. This is the only way in which I can steal some time – to prepare dinner, to do the washing."], Stela, 41 (BG04m41).

For Daniel (BG04b8), the favourite device is laptop. Elena's (BG04g8) favourite device used to be smart wristwatch with camera, but some time ago, parents have taken it away and now her mother's smartphone is her favourite. At the time of the previous interview, Elena (BG04g8) loved taking her smartwatch to kindergarten and take pictures and videos of other children in her group. She tried to continue with this hobby when she started visiting the first grade, but the teacher quickly noticed her and forbade her to bring it to class. Stela (BG04m41) decided that the most effective measure is to take the device and store it somewhere out of Elena's reach. Elena (BG04g8) still enjoys making video clips, but now she uses the

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smartphone. Daniel (BG04b8) also knows how to make video clips, but none of the twins can edit the images they record.

Both twins use their phones independently. They can look for and install games from Google Play. During the past year, they learned how to delete a game they are no longer interested in. At first, they only deleted the desktop icons, but parents explained them that this is not enough and now they know how to uninstall properly games or other apps. By watching his older siblings, Stanislav (BG04b4) also learned how to use a smartphone and play games on it. He can also open YouTube and select a video to watch among the ones that the app proposes based on previous viewings.

Parental mediation and rules have not changed significantly. Kids are still not allowed to use the devices during meals, their screen time is limited to one hour at most on condition that they have finished their



homework. Father talked with the children about safety, but the main focus was on protecting the devices from viruses, and not on keeping the children safe from potentially harmful online content and conduct. Children say that if they encounter a problem while using digital technologies, they try to deal with it on their own, rather than sharing it with an adult. Stela (BG04m41) confirms that in most cases children manage on their own, but if in doubt what do to, they turn to her for help.

Stela's (BG04m41) main concerns are associated with inappropriate online content. She has noticed on several occasions that twins started watching a children programme on YouTube and soon ended up viewing utterly unsuitable videos with extreme violence. She told them that such videos are viruses and that they must close them immediately.

During the summer break, the twins played on their grandfather's phone, downloading apps and games, and significantly inflating his monthly bill. They perceive Internet and digital technologies as natural and limitless source of entertainment and cannot comprehend that there are risks and dangers associated with them. They only know that "*a virus can block their phone*" and that in this case, they would no longer be able to play.

Both parents are very cautious, and try to control and delay the expansion of children's online activities – especially platforms like Facebook and Skype. They worry that too much screen time is detrimental to children's health, and can seriously damage their eyesight.

In their school, smartphones and tablets are not allowed. However, digital technologies are used. Parents collected money and purchased a smart TV, laptop and printer for the class, and the teacher uses the devices to show children different educational programmes, presentations and similar.

Family BG05

Sofia, Bulgaria

Family members

- Raina, BG05m40 [mother]
- **Lia, BG05g8, second grade** [interviewed child]



Narrative

Raina (BG05m40) and Lia (BG05g8) live in a small one-bedroom apartment in an old building in the centre of Sofia. Lia's parents divorced several years ago. She lives with her mother, but sees her father regularly. Raina (BG05m40) is a freelancer, working on projects related to the movie industry. She is a very active digital user and is online most of the day, using her laptop for work and communication, but also for leisure, including shared activities with Lia (BG05g8).

Raina (BG05m40) has a smartphone (an older model). The family used to have a TV, but only Lia (BG05g8) was watching it. Several months ago, it broke down and they have neither repaired it nor bought a new one. Lia says she does not miss it at all. They used to have a PlayStation, but have sold it.

Lia (BG05g8) started using her father's iPhone for playing games at the age of three, and today her skills with the smartphone are very advanced. Just like the last year, smartphone is still her favourite device, but

["I noticed a considerable change in my daughter's behavior after the first interview. She became more careful, she started asking questions like 'is it OK if I do this?' "], Raina, 40 (BG05m40)

now she has a new one, which she likes much more than the previous one because it has larger memory, bigger screen and better features. A year ago, she loved drawing with Paint, but she is not interested in it anymore and now prefers taking photographs with her new phone, after which she edits them and makes collages. This is something she likes doing also offline – by cutting photographs from magazines and compiling and rearranging them. She uses phone for listening to music – she downloaded apps for storing songs without anyone helping her. The new phone also made it possible to play games like Piano Tiles, Pretty Ballerina and Subway Surfers, for which her previous phone was not fast enough.

Lia (BG05g8) has numerous offline hobbies and activities. She visits singing and guitar lessons, drama classes, and ecology club, and occasionally rides a horse. Her artistic aspirations can be also noted in her online interests. Apart from photography, she likes making short films together with her friend. Afterwards, they use different apps for editing the footage, they add musical background, and post the videos on YouTube. Lia (BG05g8) has her own YouTube channel. She is also posting her videos on Musical.ly platform, where children "perform" popular tunes on playback. She still has her Facebook profile, made by Raina (BG05m40) two years ago, but does not use it often and has only a few friends. Recently, she has installed WhatsApp after seeing it on her father's phone, but she is linked with only three friends. Lia also uses Messenger to communicate with her friends.

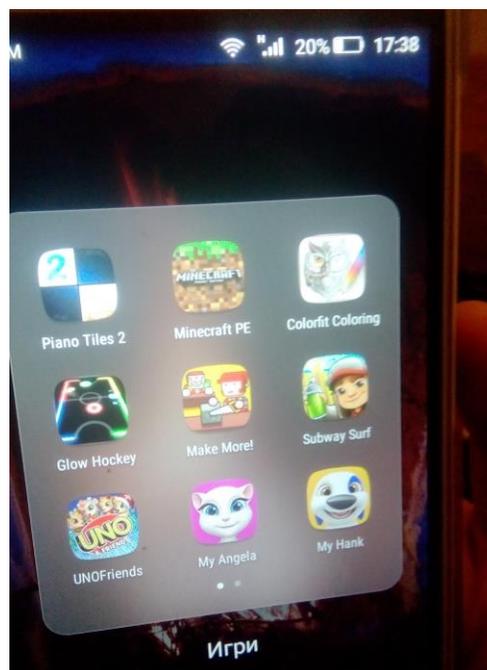
She has two shopping apps on her phone – Olx and Emag. She uses them to select different items, which they later purchase together with Raina (a year ago, Lia and Raina also liked to browse through commercial websites and shop clothes together).

A year ago, Lia (BG05g8) was already able to download and play movies or music on the laptop or phone on her own, but because she still could not read very well, she was able to search in Google or YouTube by recognizing the first letter of the words. Now she can look up the content she is interested in without problem.

Although she uses technologies mostly for entertainment, they also have an educational value for Lia (BG05g8). She writes a diary on her tablet, which has improved her abilities to compose coherent short narratives. She also likes to play a quiz-like game, with questions from history, geography, biology and other subjects. As questions are difficult, she often asks her mother for help.

Raina (BG05m40) is an active and creative person and she tries to teach her daughter the same qualities. It is not surprising then that Lia (BG05g8) learned most of her numerous digital skills on her own or by exchanging experiences with her friends, rather than from her parents. Nevertheless, if she encountered a problem or if something bothered her online, she would ask her mother for help. Raina encourages her independent use of devices and believes that children need to learn at an early age to take responsibility for their actions. To this end, parental mediation and interference should be minimal, but in order to keep her daughter safe, she has access to all her devices and profiles and regularly checks on her online activities.

The family rules regarding the use of digital technologies are similar as they were one year ago – no devices during meals, and screen time limited to two hours per day, although this is not strictly monitored. There is a rule that Raina (BG05m40) has a priority over using laptop, although when she is working on it, Lia (BG05g8) can still use it to watch a film stored on the laptop on an attached monitor. Both parents have access to her social network profiles and regularly check her posts and communication. Parental control software is installed on her smartphone.



Outside the home, Lia's father introduced an important change in mediation. He is a very active gamer, and when spending time with him, she also plays games on his tablet. Some time ago, she played Angry Birds and without realising it, she purchased several "golden birds," each costing about 40-45 EUR. After this incident, her father locked the tablet with a fingerprint and she can no longer use it on her own. Through this incident, Lia also learned that every time an application asks for the number of the credit card or other payment, she must close it or tell her parents.

Raina (BG05m40) admits to being addicted to Facebook and that she spends online a better part of the day. Like in the previous interview, she again underlined that she worries most about Lia's (BG05g8) excessive use of digital devices. She therefore tries to keep her busy and interested in a range of offline hobbies. Another concern is contact with strangers. Raina told Lia never to talk with people she does not know. If she receives a call from an unknown number, she does not answer and tells her mother, who later returns the call. Usually it turns out that Lia was dialled up by mistake.

When Lia (BG05g8) was in the first grade, children were not permitted to bring devices to school. This is allowed now in the second grade. Children mostly use devices to play games, but occasionally they look up information in Google to resolve a dispute.

Family BG07

Sofia, Bulgaria

Family members

- Aneta, BG07m43 [mother]
- Momchil, BG07b12, sixth grade [sibling child]
- Krum, BG07b10, fourth grade[sibling child]
- **Nadia, BG07g7, first grade** [interviewed child]



Narrative

Family lives in an apartment building, located in a peripheral Sofia neighbourhood. Mother and father have been separated for three years, and all three children live with Aneta, seeing their father two-three times a month. The apartment is relatively large and there are two bedrooms for the children (the girl has her own and the two boys share a room). Father is a computer engineer and both boys are very motivated to follow his example. They are attending a software academy at one of the leading Bulgarian IT companies. Last year, only Momchil (BG07b12) was a student there, but now his younger brother (BG07b10) joined him as well.

Family owns three laptops (one more compared to the time of the first interview), four smart phones (two are new) and three TV sets (one of them is a recently purchased smart TV). Another new device is a PlayStation, which is used only by two boys. Nadia (BG07g7) also has a desire to play with it, but brothers rarely allow her because she is too slow and inept for their skill level. The same attitude was observed during the previous interview, when boys did not want Nadia to use their laptop. Now both brothers have their own laptops. Aneta (BG07m42) bought a newer model for herself and gave her old laptop to Krum (BG07b10).

["This 7-years old hacker broke into my laptop without knowing my password. I told the sysadmin at my work, and all he could say was that he could not comprehend what was happening with these kids. "], Aneta, 42 (BG07m42) speaking about her daughter.

A year and a half ago, boys were temporarily without smartphones, because they have broken them through careless handling. Now all three children have new smartphones and all say that this is their favourite device.

Nadia (BG07g7) has been using digital devices since she was three. She learned by watching and imitating her brothers. She uses laptop for drawing, phone for playing games and watching YouTube, and knows how to install and remove applications without assistance. There is a TV in her room – children programmes are her favourite. She uses Internet mostly for entertainment, but she also visits an educational website "Letters." Since she learned how to read and write (both Cyrillic and Latin alphabets), it has been very easy for her to work with Google and YouTube. Her brothers use their laptops to write homework, presentations and projects for school and software academy (programming).

Aneta's (BG07m42) laptop is locked with a password, so that children cannot access it while she is at work. Despite that, Nadia (BG07g7) discovered on her own how to activate it and bypass the password. A Viber

call from her smartphone to Aneta's profile on the laptop turned on the device and granted her full access. Aneta was quite shocked to discover that Nadia has "hacked" her computer.

Nadia (BG07g7) uses Viber a lot – she loves making and sending video clips and video messages (mostly to Aneta and several friends). She does not have a Facebook profile, but often scrolls Aneta's Facebook and looks at the photos and videos.



Family rules regarding screen time continue to be rather loose and not strictly enforced, but in general, Aneta (BG07m43) tries to limit it to 1.5 hours per day. During the school break, when Aneta was at work and children stayed at home, they spent 5-6 hours per day playing on different devices. Devices cannot be used during meals, when family has guests and before homework is finished.

When children spend time with their father, they are not permitted to play games on phones or tablets before 8PM.

Two most important guidelines Aneta (BG07m43) asks Nadia (BG07g7) to follow are never to send any personal information, pictures or videos to anyone, and never to communicate with strangers.

Nadia (BG07g7) knows what a password is and has one to lock her phone. Her brother installed an antivirus programme on it. Aneta is concerned that she is not doing enough to control their children's online activities and thus to keep them safe – this is especially the case with the boys. She tries to monitor what Nadia is doing online and instruct her on safe use.

Nadia (BG07g7) and her brothers rarely do something online together with Aneta (BG07m43). In contrast, they often play different games with their father. If Nadia has a problem related with games, she asks her brothers for help. For other issues, she turns to her mother.

In Nadia's school, policies on devices vary from class to class. In Nadia's class, devices are not permitted, with the exception of the big (30 minutes) break, when children can use them to call parents or play games. In classes of both brothers, Internet use is encouraged and kids look up information, post presentations and solve problems using a closed email group.

Family BG09

Sofia, Bulgaria

Family members

- Teodor, BG09f28 [father]
- Silvia, BG09m26 [mother]
- **Spas, BG09b9, third grade** [interviewed child]
- Lilia, BG09g4, kindergarten [sibling child]



Narrative

The family lives in a small bungalow with two rooms in a village-like neighbourhood on the edge of Sofia. Both children sleep in the living room, where the TV set is located. Teodor (BG09f28), who was unemployed at the time of the first interview, now works as a taxi driver, but had to take a considerable loan to acquire a car, and most of his earnings are spent for servicing the debt. He works long hours and does not spend much time at home. Silvia (BG09m26) works part-time as a cleaner. She is very uncomfortable with digital technologies.

In 2015, the family owned a TV set, a desktop computer, laptop and tablet. They no longer have a laptop, because it broke down. The same happened with the old TV set – instead they have a new smart TV now. Tablet that used to belong to Spas was also destroyed. They bought a new one, but most of the time, Teodor (BG09f28) is using it because he needs it for his work. The family plans to buy one more tablet for Lilia (BG09g4). They have two smartphones as well – one is Teodor’s and the other belongs to Spas (BG09b9).

Spas (BG09b9) says that smartphone is his favourite device, because he can play games on it, take photos and because it has a touchscreen. His favourite games are Subway Surfers, Grand Auto Theft and Minecraft, as well as various games available on www.friv.com. He plays games on desktop computer as well, but uses it also for schoolwork, especially math problems. Spas works with Google, mostly to look for pictures and videos of favourite football players and action movie stars. His sister Lilia (BG09g4) uses YouTube independently and also plays games on www.friv.com. She knows how to select videos and films on her phone and then use screen mirroring to watch them on TV. She also likes to make pictures and clips with her phone. Lilia learns mostly from her brother Spas, and a bit less from father Teodor.

Spas (BG09b9) still has a Facebook profile, which he made on his own. During the interview, he demonstrated his skills and in a matter of minutes, he set up another Facebook profile and an email account. He said that his Facebook was hacked a few months ago and he

was not able to access it for some time. Rather than telling his father, he asked an older friend for help. In general, he prefers to deal with problematic situations on his own and does not look for help.

Spas (BG09b9) is popular with his digital skills among his friends and they often ask him to download games, movies and music for them, which he burns on discs or saves on their USBs. He also finds and downloads Bulgarian subtitles for the movies.

["If I tell him – ‘common, enough of this computer,’ he simply moves from there and sits in front of the TV, with a smartphone in his hand. I just can’t deal with him.”], Silvia, 26, (BG09m26) speaking about her son

Spas (BG09b9) has a notebook with Wi-Fi passwords of family's neighbours. When their own Internet connection is slow, or if the family did not pay the monthly fee, he uses the passwords to connect with neighbour's Wi-Fi signal. Family rules restrict the use of digital devices during meals and late in the evening, but permitted screen-time is quite long. The information provided by the child and the mother differs. According to Spas (BG09b9), it is up to 4 hours on weekdays and 6 hours on weekends. His mother says children are allowed 2 hours of TV per day, but there are no limitations for using the computer. A year



and a half ago, Spas was not allowed to use devices before finishing his school homework, but this rule is not applied anymore, as he uses the computer (also) for schoolwork.

Silvia (BG09m26) has a bad opinion about parents, who have a computer at home and do not allow children to use it. She and Teodor (BG09f28) believe that children should not be deprived from things they really want, especially digital technologies, as they are very useful for them.

Teodor (BG09f28) regularly monitors what Spas (BG09b9) is doing online. Some time ago, one of his friends sent him pictures of naked women. Teodor talked with him and told him not to accept and open files with similar inappropriate content. Spas was also told never to use other people's smartphones, after he played games on his grandfather's phone and caused a significantly increased phone bill.

At the time of the previous interview, Silvia (BG09m26) was happy that Spas (BG09b9) preferred to stay indoors and play on computer, because in this way she did not worry where he was. She has a different opinion now, and is concerned that he is staying inside far too long. Instead of playing outside with his friends, he returns from school and sits at the PC for the rest of the day.

Like in other schools, the one that Spas (BG09b9) is visiting has a policy against bringing devices to class. Nevertheless, Spas (and many other children) often brings his phone to school. A few times, teacher has confiscated it and parents were required to come to school to pick it up. Teodor (BG09f28) and Silvia (BG09m26) approve of this policy. They believe that devices distract children, because they chat with their friends instead of paying attention to the teacher.

Family BG10

Sofia, Bulgaria

Family members

- Asen, BG10f30 [father]
- Leda, BG10m26 [mother]
- **Kamen, BG10b8, second grade** [interviewed child]
- Filip, BG10b6, pre-school [sibling child]



Narrative

The family lives in a small bungalow with two rooms in a village-like neighbourhood on the outskirts of Sofia. Both parents have primary education. Asen (BG10f30) is a manual labourer, while Leda (BG10m26) is unemployed.

The family has a desktop computer, tablet and one TV set. Tablet is a new device. At the time of the interview, PC was out of order, so Kamen (BG10b8) every day visited his aunt, who lives nearby, to play his favourite games (Super Mario, Counterstrike, Grand Auto Theft) on her laptop. Kamen would love to have a smartphone, because almost all of his friends have one, but parents do not want to buy it yet (main reason seems to be the lack of money, but they also think that the boy is still too young to have a smartphone).

["I'm very pleased with the tablet. Filip sits with it here on the sofa and hardly moves. He only calls me when he gets hungry. But even then he does not put it aside – he wants to eat with tablet in his hand."], Leda, 26, (BG10m26), about her 6-year old

Kamen's favourite device is computer – he prefers it to tablet, which has insufficient memory for the games he likes to play. His younger brother Filip (BG10b6), on the other hand, loves the tablet. Leda (BG10m26) is very happy that tablet keeps Filip occupied for hours, as she can attend to housekeeping during this time.

Compared to the previous interview, when Kamen (BG10b8) used PC only to play games, listen to music and watch films father has downloaded, his online activities are now considerably more varied and advanced. He uses it for schoolwork, especially maths. He can produce and edit digital content, he uses search engines (mostly to look for films and music), and he has a Facebook account, where he

communicates with his friends and posts pictures and videos he records.

A year and a half ago, his parents were strongly against Kamen (BG10b8) having a Facebook profile. Since then, they have changed their opinion and Kamen now has a Facebook, but parents told him that he could befriend only boys from his school and neighbourhood, and not girls.

Recently, he was a victim of online mocking – a boy from the neighbourhood used Kamen's photo, edited it to make him look like a girl with make-up and long hair, and posted it on Facebook. Kamen was mad and got in a fight with the boy. On the other hand, Kamen himself posted a picture of his cousin (a girl) with added moustaches.

Sometimes his friends come to their house and they use the computer together with Kamen (BG10b8), mostly to play games or browse through Facebook. Leda (BG10m26) is not very happy with this, because

she is convinced that other boys might instigate Kamen to do something online which he would normally not do (e.g. view pornographic materials).

Kamen (BG10b8) usually learns new digital skills from his friends and his cousin Daniela – she is few years older than he is. When he has difficulties with some of the devices, he turns to them for help. Parents rarely show him purposefully how to work with digital technologies, but when they use the computer, Kamen often observes them and asks questions. However, on many occasions parents answer that he is too young for this or that activity, and that he will learn it when the time comes.

The family continues not to have any regulation regarding the screen time. Children are only restricted from using the devices during meals and after 10PM, when they have to be in bed. Kamen (BG10b8) and his brother (BG10b6) are rarely left alone at the computer – one of the parents (usually mother) is always nearby. Parents also check the browsing history.

Kamen (BG10b8) says that digital technologies are bad for children's eyesight and he recalls that when he plays on the computer for too long, his eyes hurt. Leda



(BG10m26) is also concerned that Kamen spends too much time in front of the devices and often urges him to play outside with other children. It seems that compared to year and a half ago, Kamen is becoming much less interested in outdoor activities and is showing signs of excessive use.

Parents approve of school policy, which prohibits bringing of devices into school. Leda (BG10m26) says children go to school to learn, and should not play games on their phones or tablets there.

Family data overview

Family code	Member Code	Low – medium-high family income		Ethnicity		Sex	Age	Year school/ max level of education		Profession parents
BG04	BG04m41	somewhat above medium	(*)	Bulgarian	(*)	F	41	Tertiary	(*)	Own business (children's parties & events)
BG04	BG04f48	somewhat above medium	(*)	Bulgarian	(*)	M	48	Tertiary	(*)	Own business
BG04	BG04g8	somewhat above medium	(*)	Bulgarian	(*)	F	8	Primary school – first grade	(*)	
BG04	BG04b8	somewhat above medium	(*)	Bulgarian	(*)	M	8	Primary school – first grade	(*)	
BG04	BG04b4	somewhat above medium	(*)	Bulgarian	(*)	M	4	Kindergarten	(*)	
BG05	BG05m40	somewhat below medium	(*)	Bulgarian	(*)	F	40	Tertiary	(*)	Office employee
BG05	BG05g8	somewhat below medium	(*)	Bulgarian	(*)	F	8	Primary school – second grade	(*)	
BG07	BG07m43	medium	(*)	Bulgarian	(*)	F	43	Tertiary	(*)	Accountant
BG07	BG07b12	medium	(*)	Bulgarian	(*)	M	12	Primary school – sixth grade	(*)	
BG07	BG07b10	medium	(*)	Bulgarian	(*)	M	10	Primary school – fourth grade	(*)	
BG07	BG07g7	medium	(*)	Bulgarian	(*)	F	7	Primary school – first grade	(*)	
BG09	BG09m26	medium / low	(*) / (**)	Roma	(*)	F	26	Primary	(*)	Cleaning lady
BG09	BG09f28	medium / low	(*) / (**)	Roma	(*)	M	28	Primary	(*)	Taxi driver
BG09	BG09b8	medium / low	(*) / (**)	Roma	(*)	M	9	Primary school – second grade	(*)	
BG09	BG09g4	medium / low	(*) / (**)	Roma	(*)	F	4	Kindergarten	(*)	
BG10	BG4m26	medium / low	(*) / (**)	Roma	(*)	F	26	Primary	(*)	Unemployed
BG10	BG4f29	medium / low	(*) / (**)	Roma	(*)	M	29	Primary	(*)	Manual worker
BG10	BG4b8	medium / low	(*) / (**)	Roma	(*)	M	9	Primary school – second grade	(*)	
BG10	BG4b6	medium / low	(*) / (**)	Roma	(*)	M	6	Preschool	(*)	

In the pre-interview questionnaire, families BG09 and BG10 evaluated their family income as medium, probably comparing it to the situation in the neighbourhood in which they live and where extreme poverty is widespread. Researchers evaluated their family income as low, compared to the national social-economic context.

4. Findings

4.1 How did the engagement of children under the age of 8 with new (online) technologies evolve in one year time?

In the year and a half since the first wave of the interviews, **smartphones have conquered the digital territory populated by children aged 0-8 and they now reign supreme**. Four interviewed children named a smartphone as their favourite device. The fifth child said that he loved most the PC, this being the only device he has access to. He added that he wanted very much to get a smartphone and that in such case this would be his dearest device. These interviews correspond with the findings of the survey “Online Conduct of Children in Bulgaria” in which 1,000 children aged 9-17 were interviewed. The survey showed that smartphones were the most popular digital devices, used by 81% of children to access Internet. In 2010, only 45% used smartphones, while the personal computer was the most widely used device (Kanchev et al, 2016, p. 4).

During the previous interviews, children’s answers to the question about their most loved gadget were much more diverse and included personal computers, laptops, tablets, smart watches and smartphones. Typically, **the first device children have access to is a PC or laptop**. These usually belong to parents or the whole family. In most of our cases, **tablets were the first technologies that were considered to be owned by the children**. At the same time, many children started to use smartphones belonging to their parents.

In 2015, most parents considered that at the age 5-7, children had no need for a smartphone, and added that the devices were too expensive and fragile to be given to children, who were likely to break or lose them. Apparently, these views have changed. One factor that influenced such development is that the children have already demonstrated some basic knowledge and skill in handling digital devices, reassuring the parents that they are capable of handling less robust devices like tablets or smartphones. A second important factor is the social pressure – **most parents are afraid their children might be isolated or excluded if they do not have the same devices or share similar activities and interests as other children**. *“They feel unheeded, unappreciated, if they do not have a phone on which to play games and communicate with. There is such pressure. (BG07m43)”* *“Do you play this, have you seen that – this is the main topic of their conversations, and if some child does not know what the others are talking about, it is completely ignored by the others. Children can be a bit cruel. (BG05m40)”*

In four of the families, new tablets were purchased. In BG04, children no longer have access to it. They broke their own tablets, and the new one belongs to father, who uses it for work and does not allow the children to touch it. In family BG09, old tablet also suffered a fatal blow and the children can now play with the new one only when father is not using it for work. In families BG05 and BG10, tablets are a new acquisition, as they did not have them in 2015.

Television remains moderately popular, although it **is rapidly losing its importance**. In one family, the TV has broken down and they have decided not to repair it or buy a new one. BG05g8 said that she does not miss it at all and that she only occasionally watches TV when she stays with her grandparents. All children said that they **prefer watching their favourite films or other programmes** (either downloaded or on channels like YouTube and VBox7) **on computers or tablets**, because they can access them whenever they want, they can pause and replay them. Several families have smart TVs, which are interesting for the children, but cannot compete with the smaller portable devices, which are easier to manipulate. The convenience of the touchscreen is another important advantage over the older technologies. Some children

know how to apply screen mirroring and watch the content stored on or accessed through their smartphones on the TV.

One of the families has purchased a PlayStation game console, but it is used only by the two older siblings (boys aged 10 and 12). Their 7-year old sister has only limited interest in it, mostly because her playing skills cannot compare to the level of her brothers, and they are very reluctant to allow her to play with them.

Table 1: Devices in the families (devices used by a child under 8 are marked with colour)

Type of device	BG04		BG05		BG07		BG09		BG10	
	2015	2017	2015	2017	2015	2017	2015	2017	2015	2017
Tablet	X	X		X			X	X		X
Personal computer							X	X	X	X
Laptop	X	X	X	X	X	X	X			
Television	X	X	X		X	X	X		X	X
Smart TV						X		X		
Smart phone	X	X	X	X	X	X		X		
Game console			X			X				
Smart watch	X	X								

In general, **children prefer devices which are interactive** and allow them to easily install and remove programmes and applications, rearrange the interface in a way that best fits their preferences and needs, **and are not fixed to a certain space** (like TVs and PCs). Another important factor why children love tablets and smartphones the most is that these devices are often considered to be owned by them.

Table 2: Devices owned by a child under eight

Type of device	BG04		BG05		BG07		BG09		BG10	
	2015	2017	2015	2017	2015	2017	2015	2017	2015	2017
Tablet	X			X			X			
Personal computer										
Laptop				X						
Television										
Smart TV										
Smart phone			X	X		X		X		
Game console										
Smart watch	X	X								

One of the main conclusions of the 2015 research was that **almost all children use the devices predominantly for entertainment. This is still the case**, although their online activities are now noticeably more varied and their skills more advanced. Asked to describe their favourite digital activities, the first answer of all children was playing games. Other popular pastimes are watching movies and video clips on YouTube or other similar platforms, listening to music, shooting of pictures and videos, and social networks.

Compared to the previous research, **online communication has turned into one of the most popular activities of children**. All kids use Viber extensively to communicate with family members and friends,

and some also use Skype and Messenger for the same purpose. Verbal communication is considerably less popular than texting and sending of pictures and video clips. As written expression among children younger than 8 is still not well developed, most write messages consisting of different symbols and emoticons. At least one of the five interviewed children uses WhatsApp and one has a personal YouTube account.

When the first research was conducted, six out of ten interviewed children had their own Facebook accounts. This situation remained unchanged, with **three out of five children being Facebook users**. In 2015, parents of one of these three children disapproved of Facebook, but have since changed their mind and now allow it, but only under their supervision. *“I always tell him – if you want to go into Facebook, it must be either with me or with your dad. (BG10m26)”* Usually, the children’s Facebook profiles were made by their parents, but one of the kids (BG09b9) has made his own. During the interview, he demonstrated his skill, creating a Facebook account and an email address in a few minutes. The same boy knows how to tap into neighbour’s Wi-Fi when their family’s Internet connection is too slow or interrupted, and he often downloads and burns on discs films and music for his friends.

Children continue to be attracted and influenced by commercial ads (online and on TV). Some love to scroll through the pages and catalogues of different online shops and sites for buying and selling second-hand products, and later try to convince their parents to buy the item they liked. In one family, mother shared that she actually enjoys looking at online catalogues together with her daughter and that they often buy clothes and other things this way. Most other parents, however, complained that the aggressive advertising had a deep impact on the children, leading to their unrealistic expectations and demands, especially regarding expensive electronic devices.

In 2015 a few children still needed help to **search for and install games** (mostly from Google Play) on their devices, or to play online on websites like www.friv.com. Now all interviewed children seemed quite skilful in this respect. They all know how to uninstall games and apps they no longer want from the device. For all of them this is a very important skill, as parents often allow them to install new games only if they remove the old ones not to fill up the device memory. Sometimes children’s zeal to delete unnecessary apps leads to problems, especially if they use their parents’ devices. *“In their enthusiasm to delete games from their father’s phone, they noticed an unfamiliar icon and deleted it. He was furious because it was his Internet banking app. (BG04m41)”*

One of the activities where the change has been really noticeable is **shooting pictures and video clips**. Previously, only a minority of children took modest interest in photography, while now this is something all of them love to do. **Some can edit the content they create as well**. Children who previously loved drawing with apps like Paint are not interested in it anymore and now prefer using different programmes for editing photographs they take with their phones. They also enjoy making different collages with photographs and sending them to their friends. Several kids also love making short films, usually together with their siblings or friends. They take turns as operators/directors and actors. With parental approval, they sometimes upload their videos on YouTube or Facebook.

In most cases, **younger children learn from older siblings** (or other close relatives like cousins) and **their skills are often quite close to those of older brothers and sisters**. There are also some important differences, most pronounced when it comes to playing games. Younger and older siblings sometimes have different tastes and preferences for games, but most importantly, their skill levels are incomparable. This sometimes leads to quarrels. There are also cases when older siblings do not want the younger kids to play with them.

Some children understand that Internet and digital technologies are associated with certain costs and that not all games and applications are free of charge. For others, **Internet is a given – they perceive it as a limitless and unrestricted source of entertainment**. This has led to several incidents with unpleasant financial outcome for the parents or relatives. *“The kids spent two days with their grandfather and used his phone. They downloaded a bunch of games and played, and when they exceeded his free Internet limit, they*

kept on playing, accumulating a 40 EUR bill in two days. (BG04m41)” Another child purchased several “golden birds,” each costing about 45 EUR while playing Angry Birds game on her father’s tablet.

During the first interview wave, most kids still could not read and write well, which limited their ability to use Google or other search engines. They nevertheless managed to find the content they were interested in by recognising the first letters on the list of previous searches from the search bar. This was an obstacle for reaching new content, but now there are no such constraints. Of course, correct English spelling of movie or game names, and the English alphabet remain a challenge, but **children are now considerably more successful in finding what they want without the help from their parents.**

The increased ability to use online technologies independently can be considered partially responsible for **noticeable decrease in time and diversity of joint online activities of parents and children.** “*She has a better phone than I have and plays with it most of the time. She only sometimes asks me to play as well, and then laughs if I cannot reach her level. (BG05m40)*” “*It happens rarely. Recently she asked me to help her with a quiz game she found. Another problem is that I do not have any time because of my work. (BG07m43)*”

A moderate change has been noticed regarding **the use of digital technologies for education and school-related work.** In 2015, there were practically no such examples. Most parents considered that children were still too young to use the online technologies for learning. This is slowly changing, especially among the second graders who are using their devices as calculators when solving math problems. Younger kids also play educational games that help them learn letters. One of the girls (BG05g8) uses her tablet to write a diary, which has improved her writing skills, as she learned to write short coherent texts. Example of family BG07, which includes two children in the upper grades (fourth and sixth), shows that as children grow older, they are more likely to use technologies for school-related work (homework, presentations, papers). Both brothers also visit various educational websites to look for additional material and check their knowledge with different tests.

4.2 How did the perceptions of the new (online) technologies by the different family members evolve in one year time?

The perceptions of children regarding the digital technologies have not changed much, if at all. Devices not only continue to play a very important role in their lives, but are now perceived as even more indispensable.

Just like in 2015, children continue to perceive Internet as an enormous source of easily available free-of-charge entertainment. However, they have started to discover and **recognise it also as a source of knowledge and information.** Some kids are now using the digital technologies for certain school-related work (math problems, homework, looking for information), which rarely, if ever, happened when they were in the first grade or preschool. When they were involved in disputes with their peers, some children used Internet to verify their opinion and thus decide who was right. Understandably, in most cases information searches are still linked to entertainment – written and audio-visual content about popular actors, musicians or athletes.

The majority of **parents continue to have a positive opinion about the online technologies.** In their opinion, technologies encourage children's curiosity, imagination and desire for learning, and help them to master reading and writing (not only of Bulgarian but also English alphabet). They say that children must be allowed and supported to use the technologies actively, otherwise their development could be jeopardised

and they might be isolated by their peers. *“I am fully in favour of technologies, it is inevitable. If I restrict them, life will find another way. So it is better if I direct them. (BG04m41)”*

On the other hand, parents **are becoming increasingly concerned with different risk factors**. One noticeable change compared to the first survey are enhanced fears about the excessive use and long screen time. As time limitations do not always work, they try to direct children towards different offline activities, especially outdoors (playing with other kids, sports, different hobbies). Two mothers, who were previously happy to see their sons behind the computer for most of the day rather than being outdoors and out of their sight, now complain how difficult it is to convince the boys to put their devices aside and go play with other children outside the house. *“Other boys come looking for him to play football, and sometimes he does not want to go. I tell him – the weather is nice, go out, but he does not want to. Instead he says – let’s take something sweet to eat, and watch something together. (BG10m26)”* This is closely related to an **apprehension that exorbitant use of technologies constitutes a health hazard** (impaired eyesight, weariness, improper body position, nervousness and bad temper).

A year and a half ago, parents already noticed that children were easily affected by commercial ads and **consumerism that dominates the society**. The social pressure to own certain items (from shoes and clothes to digital devices) is already starting to mount, although parents fear that the worst is yet to come. *“There are people who are better off than we are and they buy everything to their children. And then he comes home crying that he also wants it, and you just cannot say no. (BG09m26)”*

A related “aggravating” factor is that now, when most children can read and write, they are able to venture into new online territories, which were previously inaccessible to them. In this way, they become easily exposed to misleading advertisements. Children are quick to absorb the online messages, but are largely unable to critically evaluate them, even though they seem confident in their abilities to differentiate between true and false information.

Fears and concerns connected with inappropriate online content children may come across have also become more pronounced as the children grew older. When children were still unable to read and write well, they rarely surfed the Web and usually visited only a limited number of websites they were familiar with. Now they more and more often explore and experiment, which increases the likelihood that they might be exposed to undesired Internet content. Most parents said that they have talked with the children about this and told them to immediately close down any site with content that is not appropriate for them, but it is quite obvious the many parents are not comfortable with the subject and leave it to the children to “evaluate” what is appropriate and what is not. *“We told him – do not go to those websites. If you open them, the computer will be blocked and we will know immediately what you were watching. (BG09m26)”*

Some parents specifically mentioned YouTube, which is among the most popular sites among children. Despite its Community Guidelines, which do not permit posting of videos which contain nudity or sexual content, violence, hateful messages or other harmful content, parents have noticed that quite often, children start with watching their favourite cartoon on the YouTube and just a few clicks later, they are already gazing at something completely inappropriate for their age. *“It happened several times – they were watching something for children and then suddenly some very strange pictures popped up. I told them that when they see something like that, they must not open it and call me immediately, because these are viruses. I scare them in this way and they tell me. (BG04m41)”*

Another important change in risk awareness compared to 2015 study deals with **online bullying and abuse among peers**. Previously, none of the parents considered this a problem at such an early age. Now parents and children alike mentioned several incidents like a hacked Facebook account or posting of photographs, which were deliberately edited in a way to mock and humiliate a child. One girl was insulted by other users of a group chat she likes to read and comment in.

4.3 How did parents' mediation of young children's use of (online) technologies evolve in one year time?

Of the five interviewed families, it can be said that generally **four have a very permissive attitude** regarding children's access and use of digital technologies, while one family prefers a modestly restrictive approach. Sometimes the approaches of mothers and fathers differ, as fathers are usually stricter. *"They accept his rules, but mine – not so much. He is very stern. (BG04m41)"*

A typical view is that **children should not be restricted and deprived**, even more so because the digital devices are good for their development and have numerous benefits. Parents prefer an open and honest dialogue to prohibitions, and try to give the children an example and model of behaviour to follow, leaving them freedom to take their own informed decision. *"I trust her. This is what I teach her – that everyone should take responsibility for their actions. And the only way to achieve this is by giving her freedom to find her own way. (BG05m40)"*

Parental mediation has not changed much compared to the previous survey, although the previous interviews had some impact, especially in the immediate aftermath. A universal rule in all families is that children are not allowed to use devices during meals or other joint family activities. Rules about screen time vary considerably – from rather strictly enforced limit of one hour per day (BG04) to virtually no restrictions whatsoever (BG09). Understandably, the permitted screen time is much shorter during weekdays compared to weekends and school breaks. All parents underline that **children are not permitted to touch the devices before completing their homework.**

The rules are most clearly defined and strict when it comes to the use of the devices, which are ownership of the parents. Sometimes children are strictly prohibited from touching laptops, tablets or smartphones belonging to (one of) the parents, but in most cases they can use them to play games or watch videos if they fulfil certain conditions. These can include the demand that if they install a game, they must remove one of the old ones, or that they use the device only when the parent is nearby.

It appears that in all families, **fathers talk with the children on safety issues**, although in most cases, these **talks focus on how to protect the device** from viruses and other malware. If parental control software is installed on children's devices, this was also usually done by the fathers (also in case of divorced parents). *"Her father bought her the phone and he installed these programmes. I'm not sure how it is called, but it filters out inappropriate words from the search. (BG05m40)"*

Most parents continue to think (as they did year and a half ago) **that their children are too young to come across inappropriate / harmful Internet content or malevolent conduct.** However, two parents shared that their children have seen pornographic material. One boy received illicit images from another child, and a girl came across a porn TV programme while staying at her grandparents and watching TV alone late at night. Parents talked with both children afterwards, telling them that what they have seen was not suitable for their age and that they should close it or turn it off if they see it unintentionally. They regard what happened as a one-time incident.

A rather worrying finding is that **in case of an online problem, some of the children said that they would prefer to find a solution on their own**, or with the help of their friends, rather than telling their parents. In contrast, all parents are certain that the children would turn to them for help no matter what the problem was.

If the nature of the problem is a technical one, it appears that children would turn to their parents for help only as the last resort, especially in cases when both parents and children think that children's technical digital skills surpass those of the parents. This is a very telling example: *"The other day he told me that his Facebook was hacked. (BG09m26)"* When asked how the parents helped the boy, mother replied that a few

days later, she asked him if he had managed to fix the problem. This implies that BG09b9 was left to deal with the situation on his own, which will undoubtedly consolidate his opinion that it makes no sense turning to his parents.

On the other hand, **children are quick to alert their parents about unwanted (attempted) communication with unknown persons.** “*Several days ago, she received a few calls from an unknown number. She called me immediately and told me. (BG05m40)*” Contact with strangers seems to be the major concern of all parents. When asked about the most important things that they always remind their children about digital technologies, parents highlighted the following rules: never communicate with people you do not know, and never send anyone any personal information, pictures or videos.

Parents are also asked to assist with less “technically advanced” online problems such as checking information or finding something online. “*If it is about games, she would ask her brothers, but if she just wants to find something in Google or YouTube, she turns to me. (BG07m43)*”

Those parents, who at the time of the first interview were most sceptical and reserved regarding children’s use of digital technologies, continue to believe that **excessive screen time could have damaging effects on their kids** – in terms of health, discipline and social behaviour. “*A child next door has ruined his eyes because he was holding his phone too close to his face. His mother let him to play with the phone all the time. (BG04m41)*” Such fears clash with the prevailingly permissive mediation approach and lack of strict rules regarding the screen time.

In all families, **parents monitor children’s online activities.** They check the browsing history on their devices. If children have Facebook or other social profile, they follow their posts and approve (and block/remove, if needed) the friendship requests. Most parents exercised similar control at the time of the previous survey, but now this seems more underlined and strict. This change was partially influenced by the first interviews, which sensitised parents to different aspects of online safety, and partially by the fact that now children have more autonomy and skill in accessing and browsing Internet.

In three families, parental control software is installed on devices children use, which is a change compared to the previous survey, when this was the case in only one family. This development was also influenced by the first wave interviews. Devices are rarely protected with passwords, fingerprints or other means to prevent undesired access.

All parents without exception support restrictive school policies, which prohibit the bringing of digital devices to classroom. If children are permitted to bring a smartphone to school, devices are collected by teachers at the start of the school day and returned at the end (children are only allowed to use them during the big break). Parents approve of this policy, saying that otherwise children would not pay attention in class and that peer pressure to own a particular device would be too large. “*If he takes the tablet to school, what will he do there – learn or browse the Internet? (BG10m26)*”

On the other hand, **parents are in favour of creative and meaningful inclusion of online technologies in the process of education.** Many of them complained about heavy schoolbags and ridiculously large amount of different textbooks, school appliances and other items children have to carry to school and back every day. They say that much of the school material should be digitalised and accessible online, but are very pessimistic and do not believe that this could happen any time soon. In one class, which is far from being a representative example, parents purchased a laptop and a smart TV, which the teacher is sometimes using for playing short films to illustrate or supplement the lectures.

4.4 Has the role that these new (online) technologies play in the children's and parents' lives changed over a year?

Online technologies continue to play a very important role in the lives of children and parents we interviewed. The digital interests and activities of children may have changed, and in some cases, they now use different devices compared to the 2015 survey. But overall, **technologies are an inseparable part of daily routines of children**. They continue to be their primary source of entertainment – there is no toy, book or outdoor game that seems to match the attractiveness of a smartphone. While children continue to use online technologies predominantly for playing games and watching videos, other purposes are gradually becoming important as well – especially communication with family members, relatives and increasingly friends and schoolmates.

The children from the second grade are already starting to use technologies for schoolwork. This trend becomes more pronounced as children grow older. Unfortunately, **the use of online technologies for school and education is neither encouraged nor facilitated in the lower grades** of schools the children from our sample visit. There are some indications that technologies might be meaningfully incorporated in the educational process from the fourth grade upwards, although it seems that such developments depend on the personal initiative and competence of individual teachers, rather than comprehensive educational policies.

When they were younger, children displayed a very strong emotional attachment to their devices. Parents have described strong emotional reactions (shaking with impatience, tears of joy, loud cries) of kids when they were given their first tablet or smartphone. Similarly, the loss or destruction of a device caused deep grief, sadness, crying. A year and a half later, such devotion is considerably less pronounced. **Children no longer view their devices through the aura of perpetuity and uniqueness.** *“No, when they broke the tablet, they switched with absolute ease to using a smartphone. They are so much more adaptable and much quicker than we are. (BG04m41)”*

They compare their devices with the models used by their parents and friends, and some are influenced by commercial ads and online catalogues. As a result, they view their current smartphone as something temporary – to have until they acquire a newer and better model. This however in no way diminishes the importance of digital technologies as such in the everyday life of the children.

One of the conclusions of the previous research was that the digital entertainment was a supplement and not a substitution for the “offline” child play (toys, playing outdoors, drawing and handcrafts, bicycles). The current interviews did not entirely refute this finding, but it appears that the tide is changing, as some **parents complained how difficult it is becoming to convince the kids to put their devices aside** and do something else instead. Even when children are physically removed from their daily routines (a trip in the nature, picnic, ice-skating on a frozen lake, horse riding) and told to leave their devices at home, the digital technologies remain indirectly present and form the backbone of conversation with other present children.

Most parents have a Janus-faced view of digital technologies. On the one hand, **they acknowledge their predominantly positive role**, including the central place of technologies in their own personal and professional life and endless benefits they have for the children. On the other hand, **they speak about their omnipresent fears** that they are not doing enough to protect their children from the darker sides of the digital world and that very soon, kids will venture into online spaces where parents will be unable to follow and protect them. *“My fears and worries are only just beginning, because at the moment, I am her filter. I choose who she can communicate with, but in a few years, her circle will be too large for me to control it. (BG05m40)”*

All parents underlined that they are **eager to obtain more information about how to mediate better their children's use** and successfully tread the thin line between enabling their children to fully benefit from the digital technologies and protecting them from potential harm. Some are quite active in this endeavour, looking for information online, discussing with other parents and children's teachers, and visiting seminars and lectures (organised for example by DigitalKidZ Foundation)

5. Discussion

Critical analysis of the findings

The sampling strategy (interviewing five of the 10 families with children aged 0-8, which participated in the first research conducted in 2015 and which were willing and able to participate again) is not representative of the country and does not allow for making conclusions that could be considered applicable and valid for entire Bulgaria. Despite that, the sample was varied enough to indicate certain trends and show how perceptions, usage and skills with digital technology have changed over time among the family members (parents and children).

A more diverse sample, including families of different social-economic, ethnic and cultural profiles and residing in different parts of the country would undoubtedly produce findings different from the ones presented in the current report.

How could the study be improved?

The preliminary questionnaire, which was sent to the families prior to the interviews, was very helpful. The researchers obtained a good overview of the digital life of each family. The questionnaires were also used to adapt the interview guides to each family, as questions were made more specific and relevant. This saved time, as unnecessary repetitions were avoided, and focused the conversation on aspects that were important for each family.

Some families had problems with filling in the questionnaire. The numerical coding in the tables was confusing and we recommend that no such coding is used in cases when respondents are expected to fill in the questionnaire on their own (without assistance of researcher). Sometimes parents mixed the information about which child is using or own a particular device, and sometimes they listed devices, which were used/owned in the past.

For this reason, the ice-breaking exercise "My Digital Family" was a very appropriate introduction to the interview. It engaged both child(ren) and parent, but most importantly it helped the researchers to verify the information provided by the parent in the pre-interview questionnaire. Quite a few mistakes or misunderstandings from the preliminary questionnaire were corrected during the ice-breaker. Compared to the "daily time-table" opening activity from the first study, "My Digital Family" was considerably more interesting and productive in obtaining relevant information.

The interview protocol for children is very long and children loose interest and get tired. The card game was the only activity proposed to engage the child, but at the age of 7-9, small pieces of paper with pictures that are not always easy to identify are not the best way to keep the attention of young digital users. Interviews with children should employ to a much greater extent interactive methods and games, and especially a practical demonstration of children's online skills and activities.

What is the future direction for research on this topic?

Future studies should address in a more systematic way the digital literacy skills that children possess and how these skills relate to age, parental mediation, family context and access to technology. This will be valuable information on which to base any policies and practices to guide educational reforms or other national policies.

6. Conclusions

This report presented the main findings and outcomes from a fieldwork, which was conducted as part of a European-wide study, coordinated by European Commission's Joint Research Centre. It examined how the perceptions, usage and skills with digital technology change over time among the young children and their parents. The fieldwork was conducted between November 2016 and January 2017 and involved five families from Sofia.

The study tried to provide answers to the following research questions:

1. How did the engagement of children under the age of 8 with online technologies evolve in one year time?
2. How did the perceptions of the online technologies by the different family members evolve in one year time?
3. How did parents' mediation of young children's use of online technologies evolve in one year time?
4. Has the role that the online technologies play in the children's and parents' lives changed over a year?

The study also tried to determine which, if any, of these changes occurred as a result of the first interview.

A year and a half after the first study, online technologies not only continue to play a very important role in the lives of children aged between 7 and 9, but have become an even more indispensable part of their daily routines. Children continue to use the devices predominantly for entertainment (games, movies and video clips, music, photography, social networks), but the devices are rapidly becoming an essential tool for children's everyday communication with family members and friends. Since they have learned to read and write children have become considerably more efficient in independent use of Google and other search engines. To a small extent, children are starting to employ digital technologies for education and school-related work.

A year and a half ago, the range of children's activities and interests was much more limited and they appreciated any device that allowed them to pursue them. As they become more skilful, they also become more demanding – they prefer devices, which are faster, have more memory, are mobile, have a touchscreen. Therefore, smartphones and tablets are their favourite devices. The peer pressure to own a particular device and engage in certain activities is also becoming stronger.

The easier it becomes for the children to use the online technologies independently, less time they spend doing something together online with their parents. The busy daily schedule of parents is another reason why children spend most of their online time unaccompanied.

Parents have mixed feelings about the online technologies. On the one hand, they acknowledge their benefits for the children's development, but on the other, they are increasingly concerned with different risk factors. In general, parents continue to favour a permissive approach towards children's access and use of

digital technologies, preferring an open dialogue to prohibitions. However, it appears that most parents are not well prepared to provide guidance and support on the issue of online safety. Parental mediation is therefore in most cases limited to regular checks and control of children's online activities.

Parents are eager to obtain concise and easy to use instructions on how to help their children to stay safe online – this was underlined in all five interviews. They also said that they have become more attentive towards safety issues as a result of the first wave interviews. The interviews also changed the behaviour of some children, who started questioning some of their online practices from the point of views of safety and security.

All parents support restrictive school policies, which prohibit the bringing of digital devices to classroom. At the same time, they are in favour of creative and meaningful inclusion of online technologies in the process of education.

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