



# KIDS DIGITAL LIVES IN COVID- 19 TIMES –

*DIGITAL PRACTICES, SAFETY AND WELL-BEING OF  
THE 6-12 YEARS OLD  
A qualitative study - National report -  
SPAIN*

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## Executive summary

The study is a part of a larger qualitative study carried out across 16 European countries aimed at exploring experiences with digital technologies during the COVID-19 lockdown, e.g. smartphones, tablets, computers, TVs, video-games, etc. of children aged between 6 and 12 years and their parents' perceptions of these. The overall research questions are: How did children engage with digital technologies during the lockdown and how did this impact their well-being? and What were the parents' attitudes and behaviors towards the use of technology and how did the lockdown change these? These were addressed in five areas: uses, perceptions, changes and impact for the future.

This national report of Spain is written based on data generated interviewing 10 families who have at least one child between 6 and 12 years of age, and the fieldwork was conducted in the Autonomous Communities of Madrid, Castilla-La Mancha, Galicia and Catalonia between June and December 2020. Although literature regarding technology in the life of children 6-12 is emerging in the Spanish context as a key focus as such, it is still very scarce, and the unforeseen nature of the lockdown provides a new area of research regarding the digital practices of children. We hope, therefore, that the presented results from the study will serve as a basis for larger EU studies on related topics and policy recommendations in Spain and beyond.

## Key findings

1. **Most homes were equipped with multiple digital devices** that already existed before the lockdown. Regarding the few devices that were acquired during the lockdown, these were either personal devices for the children, such as smartphones or devices to facilitate school work, as tablets or printers.
2. The ratio device/person varied among the families, being **the dimension of the family a relevant factor in the distributed usage of the devices** and also in the need to share these and to establish explicit rules to avoid a conflict in the use. Although larger families tend to have more devices overall, the ratio of device/person was lower.
3. Among the digital devices available in the home context, children expressed a **preference towards individual digital devices**, such as smartphones, tablets or computers. For most children, their favourite devices were the tablet and the smartphone.
4. There is a **difference between the preference of devices in children based on their age**. While older children (10 to 12 years old) displayed an interest in a socialized use of the devices, and as such the preferences were on devices as laptops or smartphones, younger users (6 to 9 years old) expressed

- a preference for using the devices to watch creative content or play games, and as such the preferred device was mainly the tablet.
5. In general terms, **the children saw technology as a tool for entertainment, enjoyment and social contact**, being an essential aspect of their daily lives during the lockdown. However, both children and their parents **differentiated between a ludic and academic use of the technological devices**. To attend online classes and do the homework, the children used the tablet and the laptop, while for entertainment the main devices were smartphones, tablets and game consoles. Tablets were the only device for overlapping ludic/learning uses.
  6. The conceptual difference between academic and leisure practices shaped children's attitudes to technology. The **attitudes of children towards technology were globally positive**, as they expressed eagerness to use digital devices for their enjoyment and they associated the use of the devices with the idea of having fun. In contrast to this, however, most of the children lacked enthusiasm and had less involvement with the school during the lockdown.
  7. During the lockdown, **the children displayed an improvement in their digital competence**, as they became more autonomous in the use of the digital devices, reinforced their previously acquired knowledge and learned new uses of the devices. To learn how to use the devices or specific software, the children asked for help from their parents, siblings and peers, or watched online tutorials.
  8. **The time they used the devices during the lockdown increased remarkably** due to the amount of time that children spent at home, which led to a need for the parents to set up more strict time limitations and other mechanisms such as firewalls. However, restrictive rules were usually broken through the idea of "making exceptions".
  9. In general, children **showed an awareness of the risks of overusing technology** and they understood the need of setting time limitations and parental control on the devices. They also developed sophisticated reasons to bypass these limitations.
  10. The attitudes of the parents were mostly flexible, but there were also restrictive and lenient behaviors. **Mainly, the parents encouraged a responsible and limited use of the devices**, maintaining mostly a positive attitude towards these uses except in specific families that were especially reluctant or vigilant towards technology. **The parents tended to perceive technology as an important tool and competence for the future** of the children.
  11. The positioning of the family towards technology, either flexible, restrictive or relaxed, set the mediation strategies and rules for the children's use of the devices. However, **most of the children showed an interest in using**

- technology regardless of their parents' positioning**, a divergence based on the attractiveness and engagement potential of technology.
12. **Most families** showed a similar positioning at the end of the lockdown since all of them **moved towards a more moderate use and positioning**. However, the intensity of being closer during the lockdown does not seem to have made parents and children more aware of the risks entailed in technology. It seems that they have all become a bit more aware of the benefits of technology for social interaction and learning.
  13. **The parents expressed concern about several risks that could arise from using technology**. Mostly, parents mention the dangers of overusing technology, such as a hostile reaction when they tried using the devices, and of socializing online and using social media, such as being exposed online or contacted by an unknown person.
  14. **The families mainly reported a controlled use of the devices for the children**. The devices that were perceived as harmless by the parents were less controlled, such as smartwatches, digital cameras or TV. The devices that the children used more, which were tablets, laptops and smartphones, and that were perceived as harmful, had parental control software and more strict time limitations on their use.
  15. Although most of the families intensified the use of digital devices, many **did not take advantage of it to reflect with the children on the risks** of such usage beyond comments on the negative effects of the excess on exposure.
  16. Generally, **parents displayed a reticent and disenchanted attitude towards online schooling**, as they expressed a lack of educational support, learning materials and video calls with the school, and stressed their desire for children to be able to go back to attend school physically. However, they understand the shock that the lockdown involved for the school.
  17. About the technological future of the children, **the parents generally showed an agreement on the relevance of technology for their social and professional future**. They also reflected that, in the future, they would establish a clear schedule and limits on the use of the devices to prioritize outside activities.

## Recommendations

The study and immersion in the digital worlds of the ten families involved make us, as researchers, think of a series of suggestions to parents since they are the ones who set the rules for the uses of devices and are responsible, as the first educators, for involving children in the possible risks and opportunities of technology. Based on the conclusions and highlights of the report we would like to make the following suggestions for parents:

### **On regulating use**

- Enable ways for children to self-regulate their use of digital devices: Making children aware of how much time they spend in front of digital devices helps them understand how and when to stop. If regulation is external, such as with an automatic turn-off set up by parents, this does not empower them to control themselves or to understand the risks of excessive screen time. Talk to children about this and make the decisions on scheduling together, with tools such as a timetable or a list for organizing the activities of the day.
- Modeling is essential: Children learn from observing others around us. If parents have a desire for children to set time away from digital devices to do other activities, parents should do the same. Parents are role models for their children. Try reading together, going for a walk, or scheduling a time to play together away from screens.

### **On new conceptions of play and socialization**

- The digital experience is also a way of playing for children: It is hard to understand the shift in play from being on the street with friends to sitting in front of a screen, watching others on a video call. But all these actions respond to the realm of play and, from play, children learn, develop skills and perform activities that are essential for their development. It is important not to devalue play in times of digital socialization, especially because the socialization in this realm is expected to constantly increase with the advancement of new technologies and globalization. It is better to give space for play to happen in all its forms and versions, controlling the time wisely together with the children, without judging it as something negative just because it happens on a digital device.
- The digital experience is also an opportunity to connect with others: Technology helps children to connect with family and friends, which has been vital during these moments when it has been impossible to go to school or play outside. In this study we have seen the extent to which digital devices have helped children to feel better and fight against isolation by playing online with friends, talking with classmates and even organizing online parties. Under these special situations, technology also helps connect people who live in remote areas. As this study highlights, children use the technology mainly in collaborative manners and for socialisation (online classes, meetings, group games, chats, tutorials).

### **About the risks of technology**

- Talk to your children about the risks: Just as it is important to give them autonomy in the control of time, children must know the risks they are exposed to. Simply explain to them the terms of use, cookies, hackers, strangers in online games, viruses and whatever you deem convenient so that children are aware of them and can use devices more safely themselves.

Children learn most effectively through conversations that emerge from natural social interaction: don't plan a day to talk about it, make the best of real conversations, news, etc. to talk naturally about all these complex issues.

- Avoid negativizing risks: Overemphasizing the risks by talking all the time about them without mentioning the opportunities that come with technologies can generate fear, contradiction, confusion and frustration in children. It is good to promote a balanced view and help them construct their own opinion about what technologies imply in their lives, especially in times when it has become a necessity due to the lockdown and isolation.
- Promote critical skills in real time: Make the best of moments when children are searching for information on the internet (i.e. on their favourite music, idols...) to guide and reflect on procedures to deal with information critically (keywords for orientating the search, assessing the credibility of the information taking into account the author, the place where the information is published, etc.).

### **About the content**

- Look together for content that is interesting: Some families reported that children read less as a result of overexposure to digital devices. However, there is a lot of quality digital literature that can be downloaded and read from screens. Play with your children to find out what they are doing and offer a variety of content during screen time (music, movies, literature, entertainment, painting, documentaries, tutorials).
- Avoid judging the content chosen by children: Belittling what a child chooses to watch, create or play can make them feel frustrated. It is better to ask them why they like what they are doing or playing. Share it with them and suggest similar content that is of better quality.

We hope these recommendations will contribute to a more harmonious and balanced coexistence of family lives with technology in times when we could not avoid an increase in the use by both children and adults. Regular conversations and adjustments agreed mutually about how to organize the time and modeling are the keys to live in a world in which we use more and more technologies in all areas of life.



# 1. Introduction to the KiDiCoTi coordinated study

## 1.1 Background as a European study

In collaboration with a group of academic partners in different European countries, the project “Kids Digital lives during COVID-19 times - DIGITAL PRACTICES, SAFETY AND WELL-BEING OF THE 6-12 YEARS OLD (KIDICOTI)” aimed to explore the children’s and their families’ experiences with digital technologies during the worldwide lockdown provoked by the COVID-19 in 2020. The project has quantitative and qualitative components. On one side, large surveys were conducted in selected European countries targeted at families that had children between ages 11 and 18 years old to get a broader understanding of the experiences. On the other hand, we conducted interviews (using virtual platforms or in-person) in each country with families with young children (between 6-12 years old) to deepen understanding of the related issues, and to understand the experiences of the younger children which would be difficult to be captured by the form of surveys. The present study reports the findings from the latter, qualitative component in Spain: 10 interviews with families with children aged between 6 and 12. It delves into children’s technology usage during the particular situation and examines disruption in the usage, practices, rules, values and viewpoints. It also looks at changes in parental perspective on the role of technology in children’s lives, taking into account especially the impact of this experience in their understanding of the benefits and risks associated with technology and online interactions.

In response to an increase in the usage of technology of young children and teenagers, research on it has grown during the last decade, focusing on the benefits and challenges associated with children’s use of the Internet and technology devices. First, the spotlight was put on understanding the digital practices of teenagers, with a focus on social networks, and then the “spotlight” moved to target 9-16 years old (see, for example, the EU Kids Online research carried out since 2006, such as Livingstone et al., 2011). Later, a third spotlight emerged to understand very young children (0-6 years old)’s experiences and understanding of technology and the worlds it affords. The disruptive lockdown imposed by the Covid pandemic has pushed the emergence of a new line of research that tries to understand the effects of the lockdown on the uses and practices of children and its transformation on practices, representations and usage.

This research aims to generate data to address the overall research question: how was the kids' engagement with digital technology during the lockdown (in terms of usage, attitudes, perception and mediation in the family context), and what impact does it have on the future? In other words, it investigates how the lock-down disrupted or changed children’s and family’s behaviour and attitudes toward technology. The study is conducted by the coordination of the Joint Research Centre’s Cyber & Digital Citizens’ Security Unit (JRC.E.3) – Directorate E – Space,

Security and Migration (Project n. 000). The mission of the Joint Research Centre is to provide evidence-based scientific support to EU policies. Specifically, the JRC.E.3 focuses on issues of cyber and digital citizen’s security, with a special emphasis on risks and benefits of technology in children’s lives. Recently, children’s rights in relation to ICT have been at the heart of their studies; since 2014, the JRC coordinated a series of qualitative studies on the role of technology in the life of 6 and 7 years old at individual and family context, starting with a pilot study conducted in seven countries in Europe (see Chaudron, 2015). In 2015, 16 countries participated in the study, from which another study was developed as a follow up to see the changes in one year. Spain has participated in the second and third phases of the study (see Matsumoto et al, 2016; Aliagas et al., 2017).

Focusing on the experience during the lock-down and its impact on children’s digital practices and attitudes at their personal and family context, the qualitative component of the KiDiCoTi project focused on exploring the following **five research questions**:

- RQ 1: How do children age 6-12 years old engage with digital technologies during this specific time in the interviewed families?
- RQ2: How did the lock-down disrupt or change the children's' and family's behaviour and activities related to technologies?
- RQ3: What are the children and parent's attitudes towards digital technology use and online activities during the lock-down?
- RQ4: How did the lock-down disrupt or change the children's' and family's attitudes towards digital technology and online activities?
- RQ5. What impact for the future?

**TABLE 1: Research questions for 2020-21 study KIDICOTI**

	<b>During Lockdown</b>	<b>Disruption to lockdown conditions</b>
<b>KIDS ENGAGEMENT</b> with digital technology	RQ1. How do children age 6-12 years old engage with digital technologies during this specific time in the interviewed families?	RQ2. How did the lock-down disrupt or change the children's' and family's behaviour and activities related to technologies?
<b>ATTITUDES</b> towards digital technology and online activities	RQ3. What are the children and parent's attitudes towards digital technology use and online activities during the lock-down?	RQ4. How did the lock-down disrupt or change the children's' and family's attitudes towards digital technology and online activities?
	How do parents perceive the associated risks and opportunities?	How did parents perceptions of the associated risks and opportunities evolved due to the lockdown conditions?

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	RQ5. What impact for the future?	
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## 1.2 Young children and digital technologies in Spain during the lockdown.

### Context of the Spanish study

The Spanish educational system is defined by the 2013 LOMCE Educational Law (Ley Orgánica Mejora de la Calidad Educativa de Educación - Organic Law for the Improvement of Education) and is framed in the Spanish Constitution of 1978 (article number 27). Education is free, secular and compulsory from 6 to 16 years old and is considered a constitutional right for all citizens. The central national government defines the general structure of the education system, which articulates five stages: early childhood education (0-6 years of age), primary education (6-12), compulsory secondary education (12-16), pre-university baccalaureate (16-18) or various tracks of technical and vocational training (+16) and University higher education (+18). Spain has 17 autonomous communities, and these regional governments manage and oversee the educational system within their region and have responsibility for the curriculum and organization of educational related programs. In particular, regions with more than one official language (Basque Country, Galicia, Catalonia, Balearic Islands and Valencia) define the bilingual policies and practices of the school system they govern.

The age range of this national report (from 6 to 12) embraces the full primary education, which is considered compulsory and free, although private and semi private school coexist with public school. It includes 6 courses from 1st to 6th grade and in autonomous communities such as in Catalonia it is organized in three two-year cycles: initial cycle, medium cycle and superior cycle. According to the web of the Spanish Ministry<sup>1</sup>:

The purpose of Primary Education facilitates the learning of oral comprehension and expression, reading, writing, calculation, acquisition of basic notions of culture, social harmony and the habit of study and work skills, the artistic sense, the creativity and the affectivity, to guarantee a comprehensive training that contributes to the full development of the personalities of the students and of preparing them to advance into the Compulsory Secondary Education.

The educational action at this stage will seek the integration of the different experiences and learning of the students and will adapt to their needs and rhythms.

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<sup>1</sup> <http://www.educacionyfp.gob.es/en/contenidos/estudiantes/educacion-primaria.html>

Original:

*La finalidad de la Educación Primaria es facilitar a los alumnos y las alumnas los aprendizajes de la expresión y comprensión oral, la lectura, la escritura, el cálculo, la adquisición de nociones básicas de la cultura, y el hábito de convivencia así como los de estudio y trabajo, el sentido artístico, la creatividad y la afectividad, con el fin de garantizar una formación integral que contribuya al pleno desarrollo de la personalidad de los alumnos y las alumnas y de prepararlos para cursar con aprovechamiento la Educación Secundaria Obligatoria.*

*La acción educativa en esta etapa procurará la integración de las distintas experiencias y aprendizajes del alumnado y se adaptará a sus ritmos de trabajo.*

This national report is based on fieldwork carried out with families in three Autonomous Communities, of which two of them are among the three most densely populated regions in Spain: Catalonia, with almost 7.4 million inhabitants, and the Community of Madrid, with close to 6.4 million inhabitants. In contrast, the community of Galicia, with almost 3 million inhabitants it has less density in terms of demography and also has lost the number of inhabitants during the last decades. Furthermore, these areas confront distinct linguistic realities. On one hand, the Community of Madrid has Spanish as an official language and has been implementing an extensive Spanish-English bilingual education program in the pre-university school system. On the other hand, Catalonia has three co-official languages (Spanish, Catalan and Aranese, the last one since the reform of the Estatut d'Autonomia in 2006). It has a multilingual educational policy in which Catalan is the vehicular language of education in the regional education system, Spanish is taught as a second language and English has been fostered since 1999 through the CLIL (Content and Language Integrated Learning) approach. In Galicia Spanish also coexist with Galician, with many commonalities with Portuguese.

Research on digital literacy in Spain is nowadays a major area of academic research, mainly driven by studies in the fields of Psychology, Education and Sociology. Although the focus of this area of research was initially focused on youth (13-18), it has expanded during the last decade to include children in primary schools and also the digital practices in their leisure and family time not only as part of education or learning process. Qualitative, empirical research with children has been complementary to the psychological and quantitative-based research. The push in the digital usages by children provoked by the covid pandemic has considerably stimulated the research in this area both at the international and at the national level. Although the literature regarding technology in the life of children during the covid pandemic is still very scarce we make a current state of the art of it in the next

section. It will give a sense of the issues that are “being looked at” in terms of research and what issues and questions keep unanswered.

### 1.3 A brief review of the literature on COVID-19 studies

The COVID-19 virus has affected society in many ways, including children and their families. In particular, the intensity of the experience of the lockdown has implied significant changes in the function and meanings of digital practices in the children’s lives. The closure of schools has led to a significant drop in formal learning experiences but also in outdoor learning (i.e. visits to museums, field trips, language trips, sleep-away camps) and after-school programs (i.e. sports, languages, arts, etc.), to make room for online teaching that has failed to find a balance between practical and theoretical learning (Siskind, et al. 2020). It has been shown that children, even under the age of 8, in normal circumstances spend more than two hours a day on digital devices (Rideout, 2017). This figure during the COVID-19 pandemic has increased on a large scale as reported by families throughout the world, especially during periods of lockdown. In the United States in a study of 260 families, 92.3% of parents report that children over the age of 5 have increased exposure to digital devices (Drouin, McDaniel, Pater, & Toscos, 2020), while in Turkey, in a study of 1500 families with children aged 6-13 years, 71.7% of parents report increased use of technologies by their children, reaching an exposure of almost 7 hours per day (Ozturk & Yalçin, 2020).

It is recognized from studies that, during the pandemic, children used the technology to relate to their world; through the devices, they play, talk to others, see their friends, learn new things and interact with their culture (Hantrais, et al. 2020). Although many families considered themselves digital by default before the pandemic (Hantrais, et.al. 2020), the lockdown and the overuse of digital devices have brought several risks, especially related to health. In a study conducted in the United States of 597 families with children aged 7 to 13 years a 63% of the participant families reported an increase in the use of the Internet, which has resulted in sedentary lifestyles and sleep problems (Adibelli & Sümen, 2020). Of this sample, 41.5% of parents believe that their children have gained weight during the pandemic and 34.2% have seen difficulties sleeping (Adibelli & Sümen, 2020).

There are also anxiety issues and feelings of loneliness associated with the pandemic and the use of technologies. Drouin, McDaniel, Pater, & Toscos (2020) found that children's anxiety increases parental anxiety and that the latter at its turn increases the use of technology by children, specifically connecting to social networks and video calls with other family members or friends. In the case of adolescents, this situation becomes more potent. Anxiety is directly related to constant checking of social media (Cauberghe, Wesenbeek, De Jans, Hudders, & Ponnet, 2020). Although social media contribute to relieving anxiety through humour and connection with others, they are not related to the feeling of happiness; in fact, it has the opposite

effect because the feeling of happiness decreases with their use when there is also a law restriction of direct social encounters (Cauberghe, Wesenbeek, De Jans, Hudders, & Ponnet, 2020). Neuroscience explains that there are brain circuits associated with play, which is a characteristic of mammals, but they get blocked in young children when they cannot share, socialize or play with others (Montag & Elhai, 2020). In Spain and Italy, this situation was observed in a particularly worrisome way as children were many weeks without being able to go out, which activated channels of sadness and fear and even the feeling of anger, in children of families who spent less time with them, and exposure to screens increased in both children and adults (Montag & Elhai, 2020).

After the sudden increase in the use of technologies, many families felt the need to decrease exposure to them. A study conducted with 3275 families in China shows parents' dissatisfaction with the current situation, especially with online learning, as they feel that it does not replace face-to-face attendance at school, especially when it comes to younger children (Dong, Cao & Li, 2020). But today seems like internet use and online experiences are not an option, but a necessity for learning and socialization. That is why more optimistic studies suggest centering the attention on the opportunities that technologies can bring such as well-being activities and maintaining a relationship with others (Goldschmit, 2020).

Specifically, in Spain studies have shown that the digital gap is significant in terms of access and preparation of children, teachers and parents for remote education. In a study of 252 children from kindergarten to ESO (Educación Secundaria Obligatoria, meaning compulsory education up to 16 years old), it was found that higher SES is linked to greater use of technologies, which results in higher school performance (Montenegro, Raya & Navaridas, 2020). On the contrary, in educational centers of “high complexity” (which are composed of a large majority of children of low socioeconomic status and immigrants), very little access to technology is observed. It also has observed a high risk of developing mental health problems and, therefore, significantly low performance in school (Fernández-Rodrigo, 2020). Other studies have shown that there is a relationship between the age of the children and the families' perception of their readiness for online learning. The younger they are, the less prepared families perceive they are, due to a lower sense of autonomy over digital devices (Suberviola, 2020).

In country-level studies in Spain, the main focus of the research on covid, children and technology has been on distance education. It has been detected that 30% of students have not been able to follow this type of remote education due to connectivity problems or low family support (Luengo & Manso, 2020). Families report much difficulty in coordinating telework with support for their children's schoolwork, and teachers recognized their low or null level of preparation in ICTs and online education (Luengo & Manso, 2020).

The main lines of research that have been conducted in Spain have focused on secondary school children or adults (Rodicio-García, et al., 2020), on the risks associated with the use of technologies and mental health in poorly informed or low-income families (Orte, Ballester & Nevot, 2020; Álvarez, 2020), on the digital and preparation gap between families (Fernández, Moreno & Guerra, 2020) and on the problems of teacher training and challenges in the new normality of remote education (Montenegro, Raya & Navarida, 2020; Rodicio-García, 2020). The panorama shows that there is very little preparation on the part of all the actors to face this new form of education that, it is expected, will continue over a long time. The resources of the Spanish government are not enough to cover the digital needs of all children; even though measures have been implemented such as the delivery of smartphones for children to carry out their classes, this has not been seen as a sufficient measure (Luengo & Manso, 2020).

We need more studies on the impact of the lockdown at the family level, and in particular, research focusing on the point of view of parents and children is scarce. Documenting their perspectives and experiences is important to complement existing literature with qualitative approaches to such a disrupting experience.

In addition, the literature reviewed gives few accounts of the detailed uses of digital devices by young children and preadolescents and, in the case of Spain, no studies have been found in the attitudes and uses of children and their families concerning technology in times of pandemic. What children learn from digital devices, how they connect with others, what restrictions they have and whether or how their use has increased are interesting questions that emerge from the studies already carried out, and answers to these questions will allow us to deepen our understanding of the digital uses of children and their families at times when face-to-face socialization has not been allowed.

In short, the literature regarding technology in the life of children during the covid pandemic is still very scarce. We hope, therefore, that the presented results from the study will serve as a basis for larger EU studies on related topics and policy recommendations in Spain and beyond.

## 2 Methodology

Kids' Digital Lives During COVID-19 Times (KiDiCoTi) is a research project that examines how children and parents have engaged with digital technologies during the lockdown period in Europe. A qualitative interview study and a quantitative survey were conducted to investigate how children and their parents used digital media in the context of remote schooling, leisure time and management of (distant) social contacts. The project also aimed to understand whether and how these experiences have impacted family well-being and online safety for children. The European Commission's Joint Research Centre (JRC) coordinated this research project conducted in 13 countries (Austria, Croatia, Denmark, France, Germany, Ireland, Italy, Norway, Portugal, Romania, Slovenia, Spain and Switzerland) and with the additional support of researchers in Belgium and Lithuania.

In this report, we present the results from the qualitative study conducted in Spain, where 10 families with children aged between 6 and 12 were interviewed online via video conferencing platforms from the middle of June to the end of 2020.

### Spanish research team

In this qualitative part of the study, the Spanish national team comprised of three researchers: Cristina Aliagas-Marin (Universitat Autònoma de Barcelona); Cristina Correro (Universitat Autònoma de Barcelona); and Mitsuko Matsumoto (Universidad Internacional de la Rioja). The team also included two assistants, Loreto Espallargas (Universitat Autònoma de Barcelona/Glasgow University) and Clara Vilaboa (Universitat Autònoma de Barcelona) who played indispensable roles in the transcription and analysis of data and the elaboration of the report. In planning and carrying out the research process, the researchers of the team worked closely together to understand and implement the interview and analysis protocols, and then to produce this report.

### 2.1 Procedure

As a principle, we have - much as possible - followed the protocol of interview and analysis that were shared across participating research groups (see JRC, 2020).

### The sampling procedure

We have recruited a sample of families from all over Spain: six families that live in the Community of Catalonia, three families in the Community of Madrid and one in Galicia (see the Table 2 below). Doing the interview online using videoconferencing tools has enabled us to include the participation of families from faraway regions in Spain.

The selection criteria emphasized diversity in terms of children's ages, gender and family composition, as well as parental education background and income. This facilitated an exploration of the heterogeneity of digital experiences during the lockdown. The sample's core comprised families with children aged between 6 and



12, in which at least one parent and one (willing) child participated in an online interview. Some children had older and/or younger siblings. The sample included families with a range of technological devices used at home. The families had one and/or multiple children and single and/or multiple parents. Some families included non-Spanish nationals.

Altogether, 10 families were identified strategically through acquaintances and extended contacts using the snowball strategy. As a first strategy to access and recruit families for the study we have contacted some families who participated in previous related research, namely the studies “Young Children (0-8) and Digital Technologies” and “Young Children (0-8) and Digital Technologies: What Changes in One Year”. These families were already familiar with the researchers and the procedures, and we assumed that this would facilitate the online interviewing. Moreover, we also considered that it would be enriching to follow up on the same families and to have comparable data on their “evolution” regarding how children use digital technologies and how parents adjust the mediation strategies before and during this time of lockdown. From this initial group of families, we were able to recruit four families. The remaining families were recruited through the researchers’ personal and professional networks. The final sample is composed of the first ten families who met the study criteria and accepted to participate in it after receiving comprehensive information and signing the informed consent.

In the process of recruitment, we first contacted the families by email or by phone call and invited them to participate in this new study. In this first contact, we mentioned the general goals of the study, the tools for recording the interviews with the families and how we planned to keep and analyse the visual and audio data and publish the results. Moreover, we carefully explained how participants’ confidentiality would be managed and how data would be anonymized. Involvement in the study did not imply any direct compensation, except some small goodies for children provided by the JRC, e.g. colour pencils, a notebook, stickers, a bag, etc. These have been sent to the participants after the interviews were done. For the interviews held in Catalonia, researchers offered books for some of the participant children.

Once the families agreed and signed the informed consent form for parents and children we sent them by email two documents previous to the interview:

- 1) a pre-interview questionnaire targeted to parents to get basic information about the families and the situation of the family related to technology (the number of devices, applications they use, if children are allowed access to each, etc.) , and
- 2) a time-capsule activity for the children to play on, which we also used as an ice-breaker during the interviews. When the families returned all these documents by email or WhatsApp, we organized the online interview with them.

By the time we conducted the interviews, the lockdown had mostly ended in Spain. Children were in the summer holidays (interviews done during June, July and September) or were going again to school (this is the case of the interviews done

[Pick the date]

after mid-September). While most adults went back to work online or physically social distancing remained active. Thus, all the interviews were held online.

### **The sample**

Table 2 below provides the basic demographic information of the families. ES1<sup>2</sup> is the family from the Galician Community. ES2 to ES4 are the families from around the Autonomous Community of Madrid, while ES5 to ES10 are in the Autonomous Community of Catalonia.

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<sup>2</sup> The family code consists of the country code (for Spain: ES) and a number code for each family (1-10). This coding was provided by JRC.

[Pick the date]

**TABLE 2: Basic demographic information of the families that participated in the study**

Family	Family income <sup>3</sup> & Region	Family member code <sup>4</sup>	Sex	Age	Highest level of education	Ethnicity/ Nationality
ES1	Low- Middle income Galician Community	ES1f45	m	45	University Degree	Spanish (Galician)
		<b>ES1m46</b>	f	46	Master Degree	
		<b>ES1b8</b>	m	8	Third-grade Elementary	
		Es1g6	f	6	First-grade Primary Education	
ES2	High- Middle income Autonomous Community of Madrid	ES2f42	m	42	Formacion Profesional Superior	Spanish
		<b>ES2m39</b>	f	39	PhD	
		<b>ES2g7</b>	f	7	Third grade Primary Education	
		Es2g4	f	4	Last Year Kindergarden	
ES3	Low income Autonomous Community of Madrid	<b>ES3m44</b>	f	44	University Degree	Spanish
		ES3b12	m	12	Sixth grade Primary Education	
		<b>ES3g10</b>	f	10	Fifth grade Primary Education	
ES4	High income Autonomous Community of Madrid	<b>ES4f51</b>	m	51	PhD	Spanish
		ES4m46	f	46	PhD	
		<b>ES4b11</b>	m	11	Six grade Primary Education	
		ES4b14	m	14	2nd grade Secondary	

<sup>3</sup> All the family income levels are measured according to the Eurostat's classification (2015). As mentioned below, we sent out a questionnaire in which each family could choose one of the four ranges of income, which were calculated based on the Eurostat's classification of the levels of family income, taking into account each family composition.

<sup>4</sup> The family member code consists of the country code, the family number, the code for family role, and age. The codes for family role are: f (father), m (mother), g (girl), b (boy), gf (grandfather), gm (grandmother), sm (step-mother), ss (step-sister), sb (step-brother) etc. In case of twins, after the age, alphabet a or b is added to distinguish between the two.

[Pick the date]

		ES4b7	m	7	Education 2nd grade Primary Education	
ES5	Middle- Income Autonomous Community of Catalonia	<b>ES5f48</b> ES5m52 ES5g11 <b>ES5b9</b>	m f f m	48 52 11 9	University degree University degree Six grade Primary Education Third year Primary Education	Catalan
ES6	Middle- Income Autonomous Community of Catalonia	<b>ES6f48</b> <b>ES6g12</b>	m f	48 12	University degree University degree Six grade Primary Education	Catalan
ES7	Middle-Income Autonomous Community of Catalonia	<b>ES7f52</b> ES7m48 <b>ESg11</b>	m f f	52 48 11	University degree University degree Six grade Primary Education	Catalan
ES8	Middle- Income Autonomous Community of Catalonia	ES8f45 <b>ES8m45</b> <b>ES8b11</b> ES8b9	m f m m	45 45 11 9	University degree University degree Fifth grade Primary Education Third grade Primary Education	Spanish
ES9	Middle- Income Autonomous Community of Catalonia	ES9f43 <b>ES9m43</b> <b>ES9g6</b> ES9b10	m f f m	43 43 6 10	PhD PhD First grade Primary Fourth grade Primary Education	Spanish/ Argentinian
ES10	Middle- Income Autonomous Community of Catalonia	ES10f39 <b>ES10m50</b> <b>ES10g7</b> ES10b9	m f f m	39 50 7 9	PhD PhD First grade Primary Education Third grade Primary Education	Spanish/ Russian- Uruguayan

### Implementation of the protocol of interviews

[Pick the date]

All the interviews were conducted online between June 18th and December 23th. The online interviews were conducted using a wide range of videoconferencing tools. Although we always proposed Teams since this is the tool offered by the university that the majority of the research team members belong to, we adapted to Skype, Zoom or WhatsApp Video Call, whichever the participants preferred. Interviews were video recorded using the same application on which we conducted the interview except for one who asked specifically for an audio recording only. In the cases of Galicia and Madrid, two researchers were present, one interviewing while the other took a secondary role (observing, asking complementary questions, and taking notes). In all the cases, the child was interviewed first without or with the presence of the parents - depending on the level of comfort of the interviewed child with the researcher(s) -, after which the parent present was interviewed. The interviews usually lasted 35-90 minutes, out of which the last part of at least 30 minutes were spent with the parent. All conversations about the study and interviews in Madrid and Galicia were conducted in Spanish, while in Catalonia these conversations took place in Catalan (five of six) or Spanish (one of six).

The structure of the interviews was following:

1. Welcome, introduction and a brief description of the aims of the study (about 5-10 minutes). The ethics protocol and informed consent were reminded to families and to the participating child, in this case in a language they could understand and decide about.
2. Interview with the focal child (about 20-30 minutes): We interviewed the focal child, following the interview protocol. We firstly held an Ice-breaker conversation about the time-capsule booklet (about 5 minutes). Then we interview the child covering the use of technology during the lockdown, on-line school, entertainment, parental mediation of digital devices and media and perceptions about the situation (10-20 minutes). Except for families ES05 and ES08, we have video-recorded the whole interview, occasionally taking notes about the interactions that appeared to be important.
3. Interview with a parent (about 30 minutes): We interviewed a parent, concerning the use of technology during the lockdown, on-line school, entertainment, parental mediation of digital devices and media, wellbeing and perceptions concerning this experience. This part of the interview in some cases was conducted in the presence of children while in other cases it was not.
4. Closing (5 to 15 minutes): At the end of the family interview, parents, children and researchers got together again. They were asked if there was anything else they would like to add or if they had any questions and discussed the next steps and thanked families for their collaboration once again.

## **Recording**

In interviews with parents and children from Madrid and Galicia have been digitally video-recorded, while in Catalonia one family has preferred to be audio-recorded. The use of video-recordings, in addition to audio-recordings, was explicitly mentioned in

[Pick the date]

the information sheet and informed consent was given to each participant. Besides, the full procedure and use of audio-visual recordings were supervised and approved by the Research Ethics Committee of the Universitat Autònoma de Barcelona (UAB).

The researchers have also taken ethnographic notes regarding the interactions, etc. during the virtual interview or being typed afterwards.

As soon as each virtual interview was finished, all the raw data from the interview was stored in a secure private folder that was shared only among the members of the research team .

### **Implementation of the protocol of analysis**

For each virtual interview, a full transcription- with time-codes was written out in the original language of the interview (i.e. Spanish or Catalan). Relevant quotes were also inserted in the summary. All family members were given a code using the coding scheme that was developed by the European team of researchers in previous national reports, consisting of the following information: ES (Spain) and the number of the family “g” or “b” (girl or boy) years. E.g. ES6g10

The researchers’ notes, the summary of each interview, and videos have been thematically analyzed, following the protocol of analysis developed by the European team of researchers. We have first attempted to create a narrative for each research question by family, and then we approached the research questions synthesizing the data from all the families. Then, to produce family portraits consistently, we all attempted to touch on the following points provided in the template of the report designed by JRC:

1. How do children age 6-12 years old engage with digital technologies during this specific time in the interviewed families?
2. How did the lock-down disrupt or change the children's' and family's behavior and activities related to technologies?
3. What are the children and parent's attitudes towards digital technology use and online activities during the lock-down?
4. How did the lock-down disrupt or change the children's' and family's attitudes towards digital technology and online activities? How do parents perceive the associated risks and opportunities?
5. What impact for the future?

## **3 Spanish family portrait in COVID-19 times**

The first national lockdown in Spain became effective on the 15th of March, 2020. Some days before that, the Autonomous Community of Madrid had inplaced some restrictions in mobility, such as shifting to online teaching at universities and

[Pick the date]

schools. The full lockdown was initially set for 15 days and renewed for months until the deconfinement plan (“plan de desconfiamento”) began on the 28th of April. On the 21st of July, with the official end of the “State of Alarm” (“Estado de alarma”) the country entered into “a new normality”.

During the first main lockdown since mid-March 2020, schools all over Spain were closed and remote education was arranged. The type of remote education varied considerably depending on the school (if public or private). Overall, each school did what they considered appropriate and were able to do in these unforeseen circumstances, sending activities or videos to the children to do at home (some through the teachers who send emails to the families, others through platforms or the open-access web of the school).

In the following, we present “family portraits” of each family we have interviewed, describing the family members and the characteristics of their focal child’s digital activities, parents’ mediation strategies and views regarding the role that the technologies played in the family lives during the time of lock-down.



[Pick the date]

## Family ES1

Galicia Region, Spain, small town

Online interview using Skype

18 June, 2020

### Family members

- Father 45, ES1f45
- **Mother 46, ES1m46**
- **Boy 8, ES1b8, Third-grade Elementary Education**
- Girl 6, ES1g6, First-grade Elementary Education



### Narrative

ES1b8 is 8 years old and comes from a four-member family. This family, which was drawn in the family portrait, includes his parents and his 6-year-old sister. In the interview participated he and the mother, who spent a lot of time with him during the COVID-19 lockdown, since she works from home. They live in a single-family house with a garden in a small town of Galicia. Including during the lockdown period, they used 4G data to connect through the smartphone, and they don't have any high-speed broadband.

ES1b8: “I used the phone and learned why the sky is blue!” / “¡Usé el teléfono y aprendí por qué el cielo es azul!”

*(About what he has learned by using technological devices)*

In terms of technology, at home they have a TV, a game console, three computers (two desktop computers and a laptop), and two smartphones. They also have two new devices, a tablet, which they bought to make digital music, and a game console that was a gift from a relative.

During the lockdown, the mother (ES1m46), who works as a freelance audiobook reader, worked remotely as she usually works from home. The father (ES1f45), who is a currently unemployed artist, worked with her in their home workshop, in which they prepare and rehearse a theatrical show. The mother had a good experience during this lockdown because she was already used to work remotely and because of all the space they had in their house and garden. During this period, they had a clear time organization made to match the schedule between all the members of the



[Pick the date]

family and to preserve their sleeping schedule to avoid sleeping issues. However, it was difficult to maintain the same sleep schedule, as it was affected by the amount of time spent at home. The mother took care of their children, helping them with their homework with an average of 2 to 3 hours per day and doing exercise or going for walks together as often as possible (when allowed by the authorities). During this time, the whole family usually did crafts and cooking activities together, and sometimes watched TV shows or movies.

Regarding parental mediation, ES1b8 was allowed to use the technological devices with supervision, since he needed a password to access the devices and had a usage limit. ES1b8 mainly used the smartphone, to take pictures, to make videos, to play games (as Brawl Stars) and to use Whatsapp, and the tablet to do the school homework. ES1b8 sometimes used the devices to learn new things, as he said that he used the phone “to learn why the sky is blue!” (*¡Para aprender por qué el cielo es azul!*). However, to use these devices he needed to ask for permission and help from his parents to connect and use them. He only had autonomous access to the TV, which he can use by himself to watch TV shows (in channels like Clan and Disney) but for a limited time. The use of any digital device was limited to the weekend or to be used in the parents’ workshop, where the children could look up tutorials to make crafts, while the TV usage was allowed every day for a short period after doing homework and physical activities.

During the lockdown, ES1b8 felt satisfied and happy to spend time with his family, which he said was the best part, but he was also worried about the situation. His favourite activities were playing videogames on the smartphone, reading, and creating origami figures. As he reflected on his drawing, he missed seeing his friends, going to school, and going to play in the park. During the lockdown, he learned educational content, like how to multiply, by using the games of a game console (Lexibook), while he also improved skills like drawing or making rap music, by watching video tutorials and making his own videos. ES1b8 also said that he learned how to be patient during the lockdown. Although he missed face to face learning, he did not like to do video calls for school activities since he preferred to do his homework autonomously.

The parent’s attitudes toward digital technology use and online activities were positive before and during the lockdown because they had very limited use of the devices and never experienced any major issue. Throughout this period, the family did not use technology a lot and this usage remained the same the whole time, except for the TV time that increased. When the mother was asked if she would change any technological practice of ES1b8, she answered “no, because it didn’t change so much and taking away from them something that they like and controlling the use doesn’t seem fair to me” (*No, porque no cambió tanto y quitarle algo que les gusta y que nosotros tenemos todavía el control tampoco me parece justo*). They value all the opportunities that technology offers to the children since it allows them to be more independent and to keep in contact with family and friends. They

[Pick the date]

also believe that technology is a valuable tool for their future. Nevertheless, they are still aware of the risks and dangers that can appear in the use of technology, like playing online games with strangers, although they are not concerned about this right now due to the age and limited use made by the children.

ES1b8 expressed that, when he goes back to school, he will be excited to see his friends and that he would like to have a party.

## Family ES2

Madrid Region, Spain small town

Online interview using Skype

25 June, 2020

### Family members

- **Father 42, ES2f42**
- Mother 39, ES7m39
- **Girl 7, ES2g8, Third-grade Elementary Education**
- Girl 4, ES2g4, Last year Kindergarten



### Narrative

At the time of the interview, ES2g8 was 7 years old and is the oldest sister of a family of four members. In the interview participated she and the father, who spent more time with her during the lockdown because he works for the military and his functions were stopped during this time. The mother is a doctor, as such she kept working at the hospital. They live in a flat with no terrace in a city 15 kilometers away from Madrid.

They had technology at home, such as high-speed broadband, 4G in their 2 smartphones, 2 tablets, 2 computers, one Xbox, 3 smartwatches, one TV and one

ES2g7: “One of the happiest moments was her mother’s birthday because the lockdown was over and she was able to see her friends (...) The happiness of this moment was impressive” / “Uno de los momentos más felices fue cuando fue el cumpleaños de su madre, que se había acabado el confinamiento y pudo ver a sus amigos. (...) La felicidad ese día, impresionante)”

[Pick the date]

digital camera. No new device was purchased during the lockdown.

The father (ES2f42) told in the interview that he uses all the devices with ES2g8 except the computer and the smartphones. The child was not allowed to use them. The child has free access to her smartwatch and digital camera, but the way they use tablets and TV are supervised by the parents. In the interview, the father told the team that he let his daughter manage her time and conversations using Google Hangouts with her friends, but he supervises the use as he can see and read the conversations because they use his e-mail account. Also, ES2f42 supervises how the girl uses Netflix to watch the programs with her. Through these mechanisms, he feels secure about how the child is using technology. The parents' strategy of giving her freedom to manage her time and use of the devices appears to be making ES2g8 aware of the risks associated with technology and online connection even at this young age. At the interview, she expresses that she is always watching out for hackers and new strangers who connect to play online.

The father had a good experience combining remote working and taking care of his daughters, especially ES2g8 because he sees her as more independent than her sister. The organization of time has been made by the child, even in the interview, the father talks about how much the smartwatch has served this purpose. She set her alarms to wake up, go to bed and do her activities during the day. Also, the smartwatch supervises how much exercise she is doing. As the routine, they spent time together as a family very often, especially going for walks, playing with Legos and doing exercise several times a week. Exercise and physical health are very important for this family.

The father spent 2 to 3 hours a day helping his daughters doing school homework. For these tasks, ES2g8 uses the tablet and she received the instructions via the father's email account. She also told in the interview to use videoconferencing platforms to connect with her teachers and classmates and do exercises as instructed.

Neither in the interview nor the questionnaire, the father expresses a specific time the children spent using the digital devices, but he considers the screen time has increased. On the contrary, the girl states that she can't be more than an hour with the tablet. Even though the father finds it difficult to control the use of technology, he recognized that it is easy to put ES2g8 away from the tablet because she listens to him and looks for another activity to do. Despite this situation, he doesn't think the family routine has changed in a significant way because they already used digital devices before the pandemic started. During the lockdown, ES2g8 discovered two new ways of entertainment. One of them is to play an online game called "Roblox" from which she can connect with her friends on her tablet and make constructions. Another important activity she mentioned is calling her friends using Google Hangouts to talk and share what she is doing. The last is considered one of the most important activities for her because she missed her friends. She said that

[Pick the date]

sometimes she feels bored and talking with them cheers her up, but she preferred to see them in person: “Yes, because as I don’t see them [the friends] now, I really like it[to have video calls]” (*Sí, porque como ahora no las veo, pues sí que me gusta*). After the lockdown, she wants to go to the beach, see her friends and go to school. Her father highlighted in the interview how much she liked to attend face to face classes and see her friends:

“One of the happiest moments was her mother’s birthday because the lockdown was over and she was able to see her friends (...) The happiness of this moment was impressive” (*Uno de los momentos más felices fue cuando fue el cumpleaños de su madre, que se había acabado el confinamiento y pudo ver a sus amigos. (...) La felicidad ese día, impresionante*).

The parent’s attitudes toward digital technology use and online activities were positive even before the lockdown because digital devices had been a significant part of their lives. The father is very proud that his daughter uses technology to manage her time and learning. If there is something she doesn’t know, she looks into Youtube videos and learns (ie. she learned how to tight her shoes on Youtube). He trusts the management skills of ES2g8 because she has demonstrated to him that she is aware of the risks as well as the benefits of technology.

ES2g8 expresses that she is happy that her time on screen is decreasing because this means that the lockdown is over and she can see her friends face to face more often.

### Family ES3<sup>5</sup>

South of Madrid, Spain, small town

Online interview using Teams

12 June, 2020



#### Family members

- **Mother 44, ES3m44**
- **Boy 12, ES3b12, Sixth-grade Elementary Education**
- **Girl 10, ES3g10, Fifth-grade Elementary Education**

#### Narrative

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<sup>5</sup> This family has participated in the related study as ES3 (see Matsumoto et al., 2016, Aliagas et al., 2017, also the introduction of this report).

[Pick the date]

ES3g10 is 10 years old and is the younger daughter of a family with a single mother. In the interview participated she and her mother who is a teacher and the only worker at home. They live in a big house with 7 people (her parents, brothers, children and partner) but each household lives independently. So, when ES3g10 is asked to draw her family, she only considered her mother, brother and herself. ES3m44 explains that she was spending more time with her children as she was working from home, but as the work as a teacher was very demanding, the girl claims that she didn't have enough time to play with her mother.

The family lives in a big house with a backyard. This allowed ES3g10 to play basketball with her brother during lock-down and comply with the limitations of technology uses that her mother imposed. They have high-speed broadband to use the 2 computers and a tablet they have. The only one who has a mobile phone is the mother. They also have one TV, a video game console and a virtual assistant (Alexa). During the lockdown, a new tablet was added to the household's devices as the mother borrowed one from her work.

The mother (ES3m44) told in the interview that she uses all the digital devices with her children except for the computer which use was prohibited for the children. In the questionnaire, the mother indicated that the child has limited access to all the devices in the household, except for the virtual assistant. In the interview, the mother explains that the TV has a PIN code, that is why the children don't have

ES3g10: “I was angry sometimes with someone, sometimes with myself. Sad, I was sad with myself. Sad because I couldn't be with my family, worried for grandparents and tired about all that was happening. I didn't feel like doing anything (...) before I used to go out, to play music, to see my friends, to go to school” / “Estaba enfadada a veces con alguien, a veces conmigo misma. Triste, estaba triste conmigo misma. Triste porque no podía estar con la familia, preocupada por los abuelos y cansada por todo lo que estaba pasando, no tenía ganas de hacer nada. Pues es que antes salía a la calle, hacía música, iba

free access; they need to get permission from the mother to watch TV. ES3g10 can only watch TV in the presence of her mother, or with her brother if the shows or programs were previously approved by ES3m44. Also, the mother had set up a clear time limit for the use of the tablet: outside school duties, only two hours per day. The only device the girl can use as much time as she wants is the smartphone but just to make video calls to her friends and family members because her mother considers it as a social activity.

In general, the mother does not like to see her children using technology, especially watching “silly” videos:

[Pick the date]

“I don’t like technology, so I don’t have the option but to control them so that they weren’t watching silly videos” (*A mi no me gustan las tecnologías y no me ha quedado otra que intentar controlarlos para que no estuvieran mirando videos tontos*).

The girl loves to cook with her uncle, who is a professional cooker, and together they create videos with recipes that the uncle uploads on his Youtube channel. The mother allows this because it’s a family activity, but ES3g10 says she would love to be a YouTuber and upload makeup and skincare videos. Her mother doesn’t agree with this, and so the girl plays in front of a mirror pretending that she is a YouTuber. While she is doing skincare treatments she talks with her invisible audience: “Well, let’s see today’s video” (*Bueno, vamos a ver el vídeo de hoy*).

The mother stated in the interview that she did not have a very good experience with technologies during confinement. She recognized that technologies are important, but she wants to reduce the children’s use of digital devices as soon as the lockdown is over because she perceives them as something very difficult to control. Nevertheless, she has done some reflective exercises with her children to promote their self-control of digital uses. She showed them a schedule of a normal day and the children should mark what percentage of the day would mean by spending 2 hours playing on the tablet or with the console. Concerning this activity or not, ES3g10 demonstrated in the interview some degree of self-control regarding what she likes to do with technology and how she would manage her time. She said, for example, that she feels confused when she plays Xbox because she likes it, but she knows this is something very bad for her because she knows she loses control of the time she spends on it. Also, she states that she would spend a maximum of one hour per day with technology if it was her decision.

The mother stated that she spent 3 to 4 hours a day helping her children during school homework. For these tasks, ES3g10 uses the tablet but she says that this is something harmful to her because she suffers strong migraines after the use. Also, they use Zoom and school platforms to connect with teachers, but the mother recognizes that the girl needs help from her older brother to show her how the platforms work. Although the mother stated that the children didn’t use technology before the lockdown, ES3g10 demonstrates some awareness of security risks related to digital devices, for instance, she knows about cookies and she doesn’t accept them, closing all the windows when they appear.

The lockdown has been very difficult for ES3g10 emotionally, feeling sadness and anger:

“I was angry sometimes with someone, sometimes with myself. Sad, I was sad with myself. Sad because I couldn’t be with my family, worried for grandparents, and tired about all that was happening. I didn’t feel like doing anything (...) before, I used to go out, to play music, to see my friends, to go to

[Pick the date]

school” (*Estaba enfadada a veces con alguien, a veces conmigo misma. Triste, estaba triste conmigo misma. Triste porque no podía estar con la familia, preocupada por los abuelos y cansada por todo lo que estaba pasando, no tenía ganas de hacer nada. Pues es que antes salía a la calle, hacía música, iba a la calle a estar con los amigos, ir al colegio*).

The mother’s attitudes toward digital technology use and online activities were negative before and maintained so during the lockdown. She states that if her daughter sees Youtube videos she will lose her creativity. But at the same time, she wants her children to be more independent in terms of technology usage to do school homework. The whole family is waiting for this situation to be over to be able to go back to their old routine with fewer uses of technology and digital devices.

#### Family ES4<sup>6</sup>

Madrid Region, Spain, large town

Online interview using Skype

17 June, 2020

#### Family members

- **Father 51, ES4f51**
- Mother 46, ES4m46
- **Boy 11, ES4b11, Sixth-grade Elementary Education**
- Boy 14, ES4b14, Second-grade Secondary Education
- Boy 7, ES4b7, Second-grade Elementary Education



#### Narrative

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<sup>6</sup> This family has participated in the related study as ES4 (see Matsumoto et al., 2015 as well as the introduction of the report).

[Pick the date]

ES4b11 is 11 years old and is part of a five-member family. This family includes his parents and his two brothers. In the interview participated he and the father, who spent a lot of time with him during the COVID-19 lockdown since he works from home. They live in an apartment with a balcony in a city near Madrid. Before and during the lockdown, they had high-speed broadband.

In terms of technology, at home they have five tablets (one for each member of the family), four laptops, three TVs, and three smartphones. Additionally, they have four game consoles (Play Station and Nintendo), three smartwatches, three digital cameras, and two smart toys (programmable robots). All of these devices and technological items were already acquired and used before the lockdown.

During the lockdown, the father (ES4f51), who works as a researcher, continued working remotely as he was already working from home to analyze the data collected in his research. The mother (ES4m46) was also working remotely since she is a researcher as well. They had a clear schedule that organized and coordinated their activities to spend time together, and the sleeping schedule of all the family members was not affected. The father had a good experience working remotely since he enjoys staying at home and usually works on the laptop. Both the father and the mother took care of their children, helping them with their homework with an average of 4 to 5 hours per day and going on walks together as often as possible (when allowed by the authorities). During this time, the whole family often watched TV together, and they usually did other activities such as playing board games, doing sports, doing crafts and cooking. The father helped ES4b11 to solve certain issues that appeared during his use of the laptop, mostly due to the parental block of certain functions and websites, but ES4b11 could fix most of the issues that appeared.

Regarding the parental mediation, ES4b11 was allowed to use the technology devices autonomously as long as these were his devices (for example, he was not allowed to use his parents' smartphones or laptops), but following the use restrictions and the parental filter. ES4b11 mainly used the tablet to do the homework (using Blink), play videogames (Minecraft, Fortnite and Roblox), and video call his friends (using Meet). Likewise, he sometimes used a laptop, in which

ES4b11: “The video calls that I had with my friends or when we played videogames together, and we were entertained talking about our things” / “Las videollamadas que tenía con mis amigos o cuando nos conectábamos juntos a los videojuegos y nos entreteníamos hablando de nuestras cosas”

*(About what made him happy during lockdown)*



[Pick the date]

he needed to use his mother account, and a Nintendo Switch that he shared with his brothers. He had access to social networks, although he was not interested in these and only used Youtube, mostly to watch tutorials. All the devices had parental control to block inappropriate or dangerous content and the use was restricted to three or four hours per day to play – the rules were different if the use of the devices was to study or do homework, in which case they had no limitation. The rules were the same for the three siblings, they were adapted to the lockdown situation and were more flexible during the weekend when they could play a bit more.

During the lockdown, ES4b11 felt surprised, as he didn't know that it would be so difficult to work from home. He also felt sad when he could not see or talk to his friends, but happy when he could video call his friends, “when we played videogames together, and we were entertained talking about our things” (*Cuando nos conectábamos juntos a los videojuegos y nos entreteníamos hablando de nuestras cosas*). Besides these video calls, his favourite activities were playing videogames online, programming a robot, drawing, and playing board games with his family. What he missed the most was seeing his friends, “the fact that I couldn't hug my friends, be near them or talk with them, only through video calls” (*El hecho de que no podía abrazar a mis amigos ni estar cerca de ellos ni hablar juntos, solo en videollamadas*). During the lockdown, he improved on his use of different devices, like the computer – for example, he learned how to install Minecraft on the laptop with the help of a friend, who explained to him how to do it in a video call. Regarding the school, he had an issue with the platform, since he could not access the worksheets uploaded by the teacher, so he had to contact him to fix it. He also had some video calls with the teachers, but he didn't really enjoy them and he was not especially keen on this type of schooling.

The parent's attitudes towards the use of digital devices and online activities were positive both before and during the lockdown since they encouraged their children to ration their use of technology, to avoid any obsession or problem that they might develop, while also encouraging other activities such as reading or doing sports. The father was happy with the use that ES4b11 made of technology, since he became more proficient in the use, learned how to install programs, and developed skills as creativity or imagination, which can be very important for his future. During this time, the parents gave more access to their children to devices such as the computer, which allowed them to become better at using different technological items. They value the opportunities offered by these devices, but also believe that other activities and family time are very important.

ES4b11 expressed that, during this time, he had to stop his robotic classes at school, which he enjoyed. When he goes back to school, he would like to attend his Elementary School graduation, go on walks and play with his friends, saying that he would like to meet to “play a board game or in the street, to do things that we haven't been able to do together” (“jugar a un juego de mesa o en la calle, cosas que no hayamos podido hacer juntos”).

[Pick the date]

## Family ES5<sup>7</sup>

Catalonia Region (North), Spain , countryside

Online interview using Skype

3 September, 2020

### Family members

- **Father 48, ES5f42**
- **Mother 52, ES5m52**
- **Girl 11, Es5g11, Sixth-grade Elementary Education**
- **Boy 9, ES5b9, Third-grade Elementary Education**



### Narrative

ES5b9 is 9 years old and is the younger brother of a family of four members. In the interview participated he and the father, who was the one who spent more time with him during the COVID lockdown because he runs his own business, therefore he always works from home, even before the lockdown by COVID started. The mother, on the contrary, goes to work. The family lives in the countryside, surrounded by nature in a big house with a backyard. They did not acquire any new digital devices and they possess low-speed broadband, two smartphones, one tablet, four computers, one video game console, one TV and two digital cameras.

ES5b9: “I would play more. I would also play outside with my neighbors, watch the TV, videos or a movie” / “Jugaría más. También jugaría afuera con los vecinos, miraría la tele, vídeos y alguna peli”

The father (ES5f42) states that he does not use these devices very much with ES5b9. In his discourse, he emphasized the importance of children’s autonomy using technology. The father believes that autonomy enhances the learning process involved in the use of technology. This is the reason why he is permissive with the use of devices within the family. However, some regulations were applied to limit time exposure. The use of tablets and computers are controlled by specific rules, but he has free access to the videogame console, which is one of the favourite activities

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<sup>7</sup> This family has participated in the related study as ES7 (see Matsumoto et al., 2016, Aliagas et al., 2017, also the introduction of this report).

[Pick the date]

for ES5b9. ES5b9 likes playing Fortnite with his friends in online mode and he says that one of the main things he learned online during the quarantine is how to do tricks in this videogame.

According to the father, the increase of use during lockdown was “unavoidable” since it is “everywhere” in the public and the private sphere. The role of the parents is to accept this presence and to find ways to optimize its uses. For him, prohibition causes more conflicts and interests than it reduces.

The child states that if he could set the rules of use, there will be no rules on weekends, and he would play more time in the console: “I would play more. I would also play outside with my neighbors, watch the TV, videos or a movie” (*Jugaría más. También jugaría afuera con los vecinos, miraría la tele, vídeos y alguna peli*). The family has a connection to platforms such as Netflix and social media, but they don't talk much about the use of these services. Watching movies on Netflix is a family activity. However, this is not the favorite of ES5b9. The father also mentions that the child started to create music with an application during the pandemic, and he uploads videos to his YouTube channel. However, from the interview, it was clear that the main interests are related to games.

The father believes that one of the most important learning during this pandemic is that ES5b9 learned how to use and administrate his email. Also, he highlights the independence of the child using Moodle from school, because he thinks the professors didn't help very much. He promotes autonomy because he says that, if ES5b9 wants to know something, he immediately sends the child to find it out on YouTube or Google. Due to the autonomy of ES5b9 the father said that he just spent 1 hour a day or less helping him with school homework.

The life of this family didn't change much during the lockdown. The father says that the only problem is they couldn't go to the pool, but as he already worked from home, he believes that the lockdown experience “Was like July, when we worked remotely and the children were home (...) we were used to that situation” (*Era como el mes de Julio, cuando teletrabajamos y tenemos los niños en la casa (...) ya estábamos acostumbrados*). In general, the parent's attitudes toward digital technology use and online activities were positive before the lockdown because they already used digital devices. After the lock-down, the father further enhanced the belief because the lockdown allows his children to be more independent users of technology.

## Family ES6

Catalonia Region, Spain, small town

Online interview using Teams

July, 2020



## Family members

- **Father 48, ES6f48**
- Mother
- **Girl 12, ES6g12, Sixth-grade Elementary Education**

## Narrative

ES6g12 is 12 years old and is the only daughter of a family of three members. In the interview, she participated together with the father, who is an independent photographer. He was with E6g12 all the time during the lockdown because he worked from home. The mother could also work from home sometimes because she is

ES6g12: “I mean, I like to be with devices, but I also understand that I don’t have to spend the whole day with them. Because I have to do other activities also. I mean, I am pretty much in the devices, but not the whole day” / “O sea a mi me gusta estar con los dispositivos, pero también entiendo que no he de pasar todo el día. Porque también tengo que hacer otras cosas. O sea estoy bastante tiempo, pero para pasar todo el día tampoco”

also an independent worker in a family enterprise. The father considers the family as highly technological, especially because his work depends on specialized and sophisticated skills and devices. In the questionnaire prior to the interview, the father indicated that they have high-speed broadband and 4G and possess a variety of devices: 2 tablets, 3 computers, 3 smartphones, 2 smartwatches, 3 drones, 10 cameras, 1 TV and 1 video game console.

E6g12 has a high level of autonomy to use digital devices. She has a computer that the father gave her with which she does her homework. From this device, she connects to the educational platforms used at the school (Classroom for the materials and Meets for videoconferencing). She also looks for information on Google. E6g12 says that the tablet is her favourite device because there she can play and create stories in the Gatcha Club app. Also, she has downloaded some apps specific to edit videos that she later uploads to TikTok and her own Youtube channel. The first thing she does in the morning is to revise these social networks to see if her videos have received more “likes”. The parents do not interfere much in the girl’s digital activities since there are confidence and communication. Yet they have three measures to indirectly supervise the girl’s digital activities: he is subscribed to the girl’s Youtube channel to make sure that she doesn’t show her face there, the mother follows E6g12 on TikTok to see what she is uploading, and they have also installed a parental control in the devices to control how much time the child spends in entertainment apps.

The father (ES2f48) recognized that the time that her daughter spent on screen has increased 5 times since the beginning of lock-down. He recognises that this is worrisome because he knows these apps might cause addiction when children do not know to put their own limits. But the issue that certainly concerns him mostly was that E6g12 was not doing much exercise during the lockdown and was afraid of its health consequences. That is why he started the 3 hours walking to the mountain almost every day during the week. He also would like that his daughter reads more. Even though the child started to read “The Lord of the Rings” as a daily routine, the father believes she doesn't read as intensively as before because her daily reading decreased from more than 1 hour to 15 minutes reading.

The girl knows very much about technology. She installs programs on her own and if there is something she does not know, she immediately searches on Youtube for tutorials that help her to find it out. However, she is not happy having online classes: “Basically you are not even there. You are at home, there are connection problems all the time... it also depends on people's connection and at the end, it is a problem” (*Básicamente no estás ni allí. Estás en tu casa, hay problemas de conexión todo el rato... También depende de la conexión de la persona y al final, acaba siendo un lío*).

The girl seems to have a clear vision about which device to use depending on the purpose. For example, she only uses the smartphone to call her friends via Whatsapp, she uses the computer for school homework because it is easy to manage the windows, and the tablet is to edit videos because she can see the filters and colours in high quality. She is also conscious about the restrictions of technology usage: “I mean, I like to be with devices, but I also understand that I don't have to spend the whole day with them. Because I have to do other activities also. I mean, I am pretty much in the devices, but not the whole day” (*O sea a mi me gusta estar con los dispositivos, pero también entiendo que no he de pasar todo el día. Porque también tengo que hacer otras cosas. O sea estoy bastante tiempo, pero para pasar todo el día tampoco*).

After the lockdown, neither the father nor the child thinks their life will change very much, but the child expresses that she wants to see her friends outside school, go to the pool and go for walks. The parent's attitudes toward digital technology use and online activities were positive since before the lockdown because they already were a tech family possessing many digital devices. Also, they were very open to incorporate new and more technological devices in their lives since they were aware that technology is an essential tool for the present and future of her daughter in her academic, social and further professional life.

[Pick the date]

## Family ES7<sup>8</sup>

Catalonia Region, Spain, large town

Online interview using Teams

September, 2020

### Family members

- **Father 52, ES7f52**
- **Mother 48, ES7m48**
- **Girl 11, ES7g11, Sixth-grade elementary education**



### Narrative

ES7g11 is 11 years old and is a single adopted child of the family. In the interview participated her and the father, who was the one who spent more time with her during the lockdown, together with their cat, who the child also drew in the family portrait. They live in a four-bedroom flat in a city 30 kilometers from Barcelona. Before the lockdown, they already had high-speed broadband and 4G in the smartphones.

In terms of technology, at home they have an iPad, a TV, a Wii and two smartphones. They have 3 computers (2 laptops and a desktop) of which one was acquired during the lockdown to facilitate the child's engagement with the school activity. They also have 3 smartphones of which one was for the child, also acquired for the first time for her during the lockdown.

ES7g11: “At the beginning I was a bit bored, but I stopped feeling bored when I had the smartphone because I talked with my friends”

During the lockdown, the mother (ES7m48), who works as a nursery in a health center, went to work as before. The father (ES7f52) instead, who works as a computer designer in a national enterprise, began to work remotely due to the risk he has for having had strong cases of pneumonia in the past. He had a good experience combining remote working and taking care of his daughter, who is very independent. During the lockdown, they had a clear time organization centering on the children's needs and any of the family members had sleeping problems. The father tried to find time every day for sharing activities with her daughter such as

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<sup>8</sup> This family participated in the first round of the 0-8 study (Matsumoto et al, 2016) as ES11.

watching TV together, playing table games (i.e. Oca, Dixit, Parxís, Totem) and going for a walk (when allowed by the authorities). Less frequently they also engaged in some sport, cooking and handicrafts. The father was who mainly supported the school activity with an average of 2/3 hours per day, which included helping with homework, above all of English contents and maths.

Regarding the parental mediation, ES7g11 was allowed to use the technology devices with some kind of supervision – mainly the TV, the new smartphone and the new laptop (which she uses for the school tasks and video meetings, but she also shares with the mother at times). She had access to a film platform, videoconferencing tools and social networks (mainly Whatsapp, Youtube and Tik Tok). Regarding Tik Tok she is allowed to share videos in private with her school friends and after the permission of the parents:

“I put it [the video] in drafts, what means that nobody can watch it, just you [referring to herself] and then I ask my parents if I am allowed to publish it, and just if they leave me I publish it” (*El fico a borradores [el video], que vol dir que ningú no el pot veure, només tu [referint-se a ella] li després li pregunto als meus pares si el puc publicar i si em deixen, pues el publico. Però només em poden veure uns amics meus*).

All the devices had a firewall for children limiting the daily use of devices to 2 hours, a restriction that when the girl reaches the limit in one device, she jumps to another device. The new smartphone changed completely her mood during the lockdown: “at the beginning I was a bit bored, but I stopped feeling bored when I had the smartphone because I talked with my friends” (*Al principi estava una mica avorrida, però després al cap del temps ja no perquè com que vaig tenir el mòbil, doncs parlava amb amigues i això*). She also states having learnt to make videos for Tik Tok with the help of her friends.

During the lockdown, ES7g11 felt absolutely “surprised” (*Sorpresa*). Her favourite activities were playing the piano, checking Tik Tok, dancing and watching TV. She also read a book by a tik toker. She missed seeing her friends, dancing in the school of dance, and parties with friends. In this regard one of her favorite social activities in which she felt extremely happy was an online birthday party of a friend and an online pajama party, what she called “pijadama”, which is an online reformulation of a sleepover but without a host. During the lockdown, she is aware that she has learnt to use some technology like the computer (i.e. sending an email, downloading an attachment). Regarding the school, she remembers the first video conferencing of a class as chaos:

"At first it was a bit difficult because there were a lot of people and was difficult to understand the teacher (...) initially I felt awkward because I hadn't seen my friends for a long time" (*Al principi era una mica difícil perquè hi havia molta gent i no s'entenia el professor (...) em va fer una mica*

[Pick the date]

*de cosa perquè feia molt de temps que no veia als meus amics*). She said firmly that she prefers face to face learning.

The parent's attitudes toward digital technology use and online activities were positive since before the lockdown started because they feel that her daughter made good use of technology thanks to their mediation strategies (limiting time and promoting non-technology activities). Their confidence in her was the reason they decided to advance the plan of giving a computer and a mobile phone, something that they had planned to do at the end of the academic year. They value all the learning that their daughter did in terms of tech skills and they don't regret the decision. However, although they value the opportunities they are still very aware of the risks and talk about them with their daughter as they had always done. The risks they fear the most are the social networks since they see them as a place, together with chats, where her daughter might encounter some people with bad intentions (pederast and swindler). That is why they are behind her to support and monitor her activities on social networks and they control all her accesses on the net through an app on the mother's phone. They always say to her that they are there to accompany her if something happens, "not to punish or scold her". In the father's words: "We are here to accompany her dealing with it, like it will happen in any other issues in her life" (*Estem aquí per acompanyar-la en això, com en qualsevol altra cosa que pugui passar-li a la vida*).

ES7g11 expresses that during this time she stopped combing dolls, something she used to like to do a lot before the lockdown. And that if a new lockdown arrives she would like to read more. When going back to the school (actually starting secondary school) she will miss being at home where she feels "safe".

### Family ES8<sup>9</sup>

Catalonia region, Spain, large town

Online interview using WhatsApp Video

26 September, 2020

#### Family members

- Father 45, ES8f45
- Mother 45, ES8m45
- Boy 11, ES8b11, Fifth-grade Elementary Education

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<sup>9</sup> This family has participated in the related study as ES10 (see Matsumoto Aliagas et al., 2016, also the introduction of this report).





- Boy 9, ES8b9, Third-grade Elementary Education

### Narrative

ES8b11 is 11 years old and comes from a four-member family. In the interview participated he and the mother, who spent a lot of time with him during the COVID-19 lockdown, since she worked remotely from home. They live in a flat with a balcony in the city of Barcelona. Before the lockdown, they already had high-speed broadband at home.

ES8b11: “My friend and I usually met in Hangouts, shared the screen and played Minecraft, because he had a version and I had another, and we showed each other our things” / “Con mi amigo quedaba en Hangouts, compartíamos pantalla y jugábamos al Minecraft porque él tenía una versión y

In terms of technology, at home they have a tablet, three computers (two laptops and a desktop computer), two smartphones, a game console, a digital camera, and a smartwatch. In the beginning of the lockdown, they acquired a new TV.

During the lockdown, the mother (ES8m45), who works as a Secondary Education teacher, worked remotely from home. The father (ES8f45), who was unemployed during this time, was also staying at home. They had a clear time organization made in agreement with the children to match the schedule between all the members of the family to spend time together. However, this did not avoid the interruption of the sleep schedule, which was affected by the amount of time spent at home. The mother was involved in the education of their children, helping them with the homework on an average of 4 to 5 hours per day, while the father engaged more in playing with them. The mother also indicated that, apart from schoolwork, they did other daily activities such as watching TV together, doing physical activity, and going for walks as often as possible (when allowed by the authorities). Additionally, they often played board games and video games together and sometimes did other activities such as cooking or making crafts.

Regarding parental mediation, ES8b11 was allowed to use most of the technological devices with supervision, since he had a usage limit – except for the TV, that he could use freely and in which he had access to streaming platforms (Netflix and Prime Video). Other devices, such as the smartphone and the smartwatch, were forbidden for him since these were personal devices of the parents. ES8b11 mainly used the desktop computer for school, to attend the classes (Meet) and do homework (using Gmail and PowerPoint), to play games (mostly Minecraft), to talk with his friends (Hangouts) and to watch Youtube videos (tutorials, songs, and fashion tips and trends). He also used the tablet to record videos (such as “types of people in video calls” or “being a mother for 24 hours”) and to talk with his friends – he said

that he enjoyed making video presentations during the lockdown and that what he would change at school is that “when you make a presentation, you could not only bring it in PowerPoint but also as a video” (*Que cuando haces una presentación no solamente se pueda llevar Power Point, que también se puedan hacer más vídeos*). ES8b11 sometimes used the devices to learn new things, watching Youtube tutorials to learn recipes with his mother or to make origami. The parents did not install any firewall or filter to limit the access. However, to use these devices he had to ask for permission since he needed a password to access any device, but he could use them autonomously once these were unlocked. Before lockdown, he was only allowed to use the devices during the weekend, but this changed during the lockdown as he could use these every day without a strict usage limitation.

During the lockdown, ES8b11 felt surprised by the whole situation but also happy because of all the activities he could do, such as playing with the computer and watching movies and TV shows. What he missed the most was seeing his friends, only being able to see them through the screen, and not being able to go to school. Nevertheless, he enjoyed having online classes because he could use Gmail and PowerPoint. He also indicated that he was worried about using the webcam, because “when I was in a class, I had to turn on the camera in the laptop and it could get hacked” (*Cuando estaba en una clase, en el ordenador tenía que enchufar la cámara y me podían hackear*) – to avoid this, he had to turn off the camera after the class, as his mother told him to do. During the lockdown, he improved his technological skills and learned how to access online classes and how to use Google gadgets (as Google Docs, Google Drive, and Google Forms). ES8b11 also gained a lot of autonomy in the use of the computer since he only needed the parents to put the password and to learn how to use it in the beginning – the mother said that ES8b11 “turned on the laptop while having breakfast, entered his Gmail and, if he could, entered Meet to be one of the first ones, even talking with some friends before the teacher entered” (*Mientras desayunaba ya encendía el ordenador, entraba en su Gmail y, si podía, entraba ya en Meet para ser de los primeros, e incluso hablaba con algunos amigos antes de que entrara la profesora*).

The parent’s attitudes towards digital technology use and online activities were positive before and during the lockdown because they had controlled use of the devices and never experienced any major issue, apart from having to limit the time of use. The mother indicated that this increase in the use of technology also reflects the growth of ES8b11, since now he does not only use the computer to play or watch videos, but he also had to learn how to classify and arrange his files and emails. They value all the opportunities that technology offers to the children but they are still aware of the risks and dangers that can appear and are concerned about the future when they have their smartphones and cannot be controlled so easily anymore. The mother indicated that she thinks “we must start to control what they look at but, on the other hand, I also like that he has interest for academic things, even if it’s because this happens through technology, or that he learns because this

[Pick the date]

is his future” (*Es urgente que nos pongamos a controlar qué miran pero, por otro lado, me gusta que él tenga interés por cosas académicas, aunque sea porque es a través de la tecnología, o que aprenda porque al final es el futuro*). She also indicates that there were many good moments in which they used technology, such as when they made videos and challenges together to send to their friends.

ES1b8 expressed that he really enjoyed talking with his friends online while playing video games – “My friend and I usually met in Hangouts, shared the screen and played Minecraft, because he had a version and I had another, and we showed each other our things” (*Con mi amigo quedaba en Hangouts, compartíamos pantalla y jugábamos al Minecraft, porque él tenía una versión y yo otra, y nos enseñábamos cosas*). One of his favourite moments, in which he felt very happy, was when all of his friends connected on a video call together for the first time.

### Family ES9

Catalonia Region, Spain, large town

Online interview using Teams

30 September, 2020

### Family members

- Father 43, ES9f43
- Mother 43, ES9m43
- Girl 6, ES9g6, First-grade Elementary Education
- Boy 10, ES9b10, Fourth-grade Elementary Education



### Narrative

ES9g6 is 6 years old and is part of a four-member family. In the interview participated she and the mother, who spent a lot of time with her during the COVID-19 lockdown, as she was working from home as a postdoctoral researcher at a public university. They live in a single-family house with a backyard in a town near Barcelona. Before the lockdown, they already had high-speed broadband at home.

ES9m43: “When she had a Zoom meeting and it finished, she said that she didn’t want it to end, that she missed it, she missed her teacher and friends” / “Cuando tenía el Zoom y acababa, ella decía que no quería que se acabara, que lo echaba de menos, que echaba de menos a la maestra y a los amigos”

In terms of technology, at home they have two tablets, two laptops, and three smartphones, as well as a digital camera, a children’s drone, and two smart toys (one learning computer and one book with audio). Only one of the smartphones was a new acquisition during the lockdown, which was bought as a working tool.

During the lockdown, the mother (ES9m43), who works as a postdoctoral researcher, was able to work remotely from home. The father (ES9f43), who works in a digital game enterprise, was also able to work remotely, which implies that the whole family was together. During the lockdown, they coordinated the schedules of all the family members in order to have a clear time organization and to spend time together. However, this did not avoid the interruption of the sleep schedule, which was affected by the amount of time spent at home. Both parents had a satisfactory experience combining remote working and taking care of their children. The mother (ES9m43) tried to find time every day to help her daughter with the homework and school activities, spending an average of 2 or 3 hours per day doing these tasks. They also played board games and played with puzzles together several times per week, and they often made crafts, cooked, watched movies, did exercise, and went for a walk (when allowed by the authorities). The mother supported the daughter with the school activities in particular tasks as video calls by Zoom with the teacher and the uploading of the homework to the school digital platform.

Regarding parental mediation, ES9g6 was allowed to use the technology devices with supervision, except the video camera and the smart toys that she could use freely. She mainly used the tablet to play games and learn maths with Smartick, in which she learned things such as the hours or different mathematical operations. Sometimes, she also used the tablet to attend the classes from school (using Zoom), but most times she used the laptop if it was available. ES9g6 enjoyed these video calls with the teacher and the classmates since it connected her to them as she missed school – her mother said that “when she had a Zoom meeting and it finished,

she said that she didn't want it to end, that she missed it, she missed her teacher and friends" (*Cuando tenía el Zoom y acababa, ella decía que no quería que se acabara, que lo echaba de menos, que echaba de menos a la maestra y a los amigos*). To have family video calls, she used her parents' smartphones, and to watch Youtube, movies and listen to music, she used the TV, in which she had access to Amazon Prime, HBO, and Spotify. All the devices were limited by a password set by the parents and a daily usage time – in the beginning, they could use these devices more freely, but the parents decided to limit the time to 15 minutes to play Smartick and around 30 minutes to 1 hour to play a game due to initial excessive use.

During the lockdown, ES9g6 felt happy because her family was fine and together – as she indicated, she enjoyed spending so much time with her family. Her favourite activities were reading, watching movies, and playing with her parents and brother. She also learned many new things, such as how to draw manga or Nordic mythology by reading books and watching Youtube videos, which improved her reading skills as well as her technological skills. Another activity she enjoyed was making videos with her brother using images, clips, audios, emojis, and effects. She missed school and seeing her friends, and so when they made her a video for her birthday it made her very happy.

The parents' attitudes towards digital technology use and online activities were globally positive before the lockdown since the children made good use of the devices. The mother expressed the difficulty of finding a balance between allowing the children certain freedom in using devices such as the laptop, tablet, or game console, and setting the limits to avoid any backlash. That is why they had to establish a time limit for the use. Nonetheless, the parents were happy with the use of the devices that the children made because they used them respecting the time limits and not only to play but also to do other activities such as learning new things or listening to music. Considering that they never had a negative experience with the technological devices, they value all the learning and entertainment that the daughter experienced from their use. Thinking of the future, the mother indicated that "I have a dilemma between not leaving them outside technology, because everything works within that framework, and, on the other hand, not allowing them to be slaves of technology. I believe I would work on finding a balance" (*Yo tengo un dilema interno entre no dejarlos fuera de la tecnología, porque obviamente todo funciona en ese marco, y, por otro lado, que tampoco sean esclavos de la tecnología. Creo que trabajaría en lograr el equilibrio*).

ES9g6 expressed that, during the lockdown, she missed seeing her friends, having parties with them, and traveling. Although she enjoyed being at home with her family, she misses school and would like to see all of her friends.

[Pick the date]

## Family ES10

Catalonia Region, Spain, small town

Online interview using Meet

23 December, 2020

### Family members

- Father 39, ES10f39
- **Mother 50, ES10m50**
- **Girl 7, ES10g7, First-grade Elementary Education**
- Boy 9, ES10b9, Third-grade Elementary Education



### Narrative

ES10g7 is 7 years old and is part of a four-member family. This family, which she has also drawn, includes her, her parents, and her brother. In the interview participated she and the mother, who spent a lot of time with her during the COVID-19 lockdown since she was working remotely. They usually live in a flat in Barcelona but, during the lockdown, they moved to a single-family house with a garden in a coastal town near Barcelona, where they had high-speed broadband and 4G data in their smartphones.

ES10g7: “Before, my brother used to do it, so I didn’t know how to do it. Now I can do it by myself” / “Antes lo hacía mi hermano, entonces no me enteraba de cómo se hacía. Ahora lo hago yo sola”

(About gaining autonomy in the use

In terms of technology, at home they have a tablet, a TV, two laptops, two smartphones, a digital camera, two smartwatches, and a videogame console (Playstation). During the lockdown, they bought a printer, but all of the other devices were acquired and used before.

During the lockdown, the mother (ES10m50), who works as an IT university senior lecturer, was able to work remotely from home. The father (ES10f39), who works as an IT programmer, was also able to work remotely. The mother had a satisfactory experience combining remote working and taking care of her children, which both parents did. During the lockdown, they had a clear time organization made to combine their schedules, in

[Pick the date]

which they considered the children's needs and that did not affect the sleep schedule of the family members. The time organization was not the same during the whole lockdown, since it was stricter in the beginning and more relaxed in the end. The mother always shared activities with her daughter, such as helping her with her homework for an average of 2 to 3 hours per day and playing board games with the whole family. She helped ES10g7 with her homework in tasks such as downloading the materials, organizing them, or uploading the homework to the system – she recognized that she did not give enough autonomy to the children in this sense. Likewise, sometimes they watched TV together, cooked, made crafts, did sports, and went for a walk (when allowed by the authorities).

Regarding parental mediation, ES10g7 was allowed to use the technology devices with supervision, since all the devices had a firewall for kids and were limited to be used for two hours per day. Except for her smartwatch, which she could use to count steps, see the time or read messages from her mom, she had limited access to all other devices. She could use the TV, the tablet, or the PlayStation, but neither she nor her brother were allowed to use their parents' smartphones or personal laptops, as these were also used for work. ES10g7 used mostly the tablet, in which she had to ask for permission to download games. If she needed to use the laptop for school, the mother had to log into her account, open the school platform (Jitsi Meet) and use it with her most of the time. Since their use of devices such as the tablet and PlayStation increased during the lockdown, the rules had to change – before, only the TV was restricted but later all the devices were limited to these two-hour time limits. On the tablet, ES10g7 watched TV shows (on Netflix), played several games (her favourite was a modeling game), and looked up different items (like music sheets to play on their keyboard).

During the lockdown, ES10g7 felt upset because of the COVID-19 situation and because she was bored sometimes, but she also felt happy when she could play, even feeling excited to do the school work on the tablet in the mornings. Her favourite activities were doing crafts, playing board games, playing with Playmobil, and playing outside with her neighbor. She enjoyed watching TV on the laptop while doing crafts, but she mostly enjoyed these crafts. As mentioned, she also liked playing the modeling tablet game and playing Brawlhalla (a Play Station game) with her brother. She missed seeing her friends, sharing games, going outside the house, and going on walks. During the lockdown, she learned new things and gained autonomy in the use of technology. She learned how to access the tablet and PlayStation on her own, how to use Netflix, how to download things, and how to search on Youtube and Amazon Video. To learn these skills, she got help from her brother (ES10b9), who she said is very good with technology – she said that “before, my brother used to do it, so I didn't know how to do it. Now I can do it by myself” (*Antes lo hacía mi hermano, entonces no me enteraba cómo se hacía. Ahora lo hago yo sola*).

[Pick the date]

The parent's attitudes towards digital technology use and online activities were positive before the lockdown since the daughter (ES10g7) made good use of technology and was not as interested in it as the son (ES10b9), - but who also used the devices responsibly. The mother indicated that, although they are aware of the dangers that can appear by using technology, they are not concerned about them since they can control their use – the only concern they have is towards online games, which they keep control of by limiting the playing time and checking on the playmates of their children. She expressed that she was surprised by the lack of interest of her daughter in playing online and that she would like to see her play, but she believed that she has advanced in her understanding and use of the devices and that she is now getting more interested in them, and she believes that it is important for her future. She also believes that it is necessary to create a balance so the children do not overuse technology, which is why they bought a printer for homework and set a limit for the use of the devices.

ES10g7 expressed that, during this time, she missed school and she would like to go back and see his friends. About sharing what she has learned, she said that she would like to watch a movie with her friends.



### 3. Findings

#### 3.1. How do children age 6-12 years old engage with digital technologies during this specific time in the interviewed families?

The atypical situation caused by COVID-19 generated an intense lockdown in Spain during which the use of technology in children aged 6 to 12 years old has intensified as a general tendency, causing changes in their uses, practices and engagement. The changes about children's engagement are described in this report within three layers of description and analysis: (1) first, we look at the availability of digital devices at home in each of the families and we identify those that were acquired during the lockdown, (2) second, we look at the type of access that children had to the devices available in their house and (3) third, we describe the specific uses children gave to the devices.

As a first step in the description, an overview of the availability of digital devices in the households gives us contextual information about the presence of technology in the family context. As shown in Table 3, in general, every family possesses at least one tablet, two computers and one smartphone and the majority of families already had these devices before the lockdown. The participating families also had, with some exception, 1 TV, and half of the families had 1 console. This overview of the digital devices at home leads to a first observation: the predominance of individual-based digital devices (smartphone, tablet, computer) compared to devices that are typically shared in its uses (TV, console).

**TABLE 3: Main devices acquired by families before and during the lockdown**

Family	Tablet		Computer		TV		Smartphone		Console	
	Acquired before lockdown	Acquired during lockdown	Acquired before lockdown	Acquired during lockdown	Acquired before lockdown	Acquired during lockdown	Acquired before lockdown	Acquired during lockdown	Acquired before lockdown	Acquired during lockdown
ES1	1	1	3	0	1	0	2	0	0	1
ES2	2	0	2	0	1	0	2	0	1	0
ES3	1	1	2	0	1	0	1	0	0	0
ES4	5	0	4	0	3	0	3	0	4	0
ES5	1	0	4	0	1	0	2	0	1	0

[Pick the date]

ES6	2	0	3	0	1	0	3	0	1	0
ES7	1	0	3	1	1	0	3	1	1	0
ES8	1	0	3	0	1	1	2	0	1	0
ES9	2	0	2	0	0	0	3	0	0	0
ES10	1	0	2	0	1	0	2	0	0	0

Regarding the availability of the devices in the home context, the number of devices in relation to the number of members show differences among the participant families. If we look at tablets and computers, two families had one device per person (ie: ES4 and ES5). In the 6 cases highlighted in yellow, the children have their own computer or tablet. In those cases we were able to confirm not only more independence in its uses but also, in most of these cases, an increasing use of the device. For instance, in family ES6 the girl has her tablet, computer and smartphone. The father recognized in the interview that despite the controlled use of technology, the girl spent at least eight hours in front of different screens, using them for school homework and entertainment. The girl stated that she had more free time during the lockdown and this situation increased the number of video calls she had with friends. She also expressed the importance of having her personal laptop, because she started to use it more since the pandemic started.

In the families where the ratio device/person was not 1:1, especially in families with siblings, the shared use was accompanied by explicit regulation of the use and eventually conflicts. As an example, in the ES3 family, the girl should share devices with her brother and they have only two hours to play with the iPad:

“Mom let us download two games on the tablet, and the time, well, we can spend 2 hours but we know... she controls the devices, the time. Then we know that if we are two hours on the tablet we can't be anymore with devices during the day” (*De la tablet mamá nos deja descargar dos juegos y el tiempo pues, desde las 2 horas que nos deja la podemos usar el tiempo que queremos pero sabemos... eso controla los dispositivos, lo del tiempo. Luego sabemos que si estamos 2 horas con la tablet no podemos estar nada más con dispositivos*) (Girl, ES3g10).

In some families, the landscape of technology also included less frequent devices such as a smartwatch, smart toys, digital cameras, virtual assistants and printers or drones. Table 4 shows that the participating families on the whole possessed or acquired much less number of these devices. That already infers to the secondary role that they play in the technological practices of the families and that they are

[Pick the date]

used anecdotally. However, it is interesting to highlight, within the non-main digital devices, more predominance of the smartwatches, now in trend, and the digital cameras. An interesting case about digital cameras is ES6, which has a high number of them (10 in total) due to the profession of the father, who is a photographer.

**TABLE 4: Other devices acquired by families before and during lockdown**

Family	Smartwatch		Smart toy		Digital Camera		Virtual Assistant		Printers, drones	
	Acquired before lockdown	Acquired during lockdown	Acquired before lockdown	Acquired during lockdown	Acquired before lockdown	Acquired during lockdown	Acquired before lockdown	Acquired during lockdown	Acquired before lockdown	Acquired during lockdown
ES1	0	0	0	0	0	0	0	0	0	0
ES2	3	0	0	0	1	0	0	0	0	0
ES3	0	0	0	0	0	0	1	0	0	0
ES4	3	0	2	0	3	0	0	0	0	0
ES5	0	0	0	0	2	0	0	0	0	0
ES6	2	0	0	0	10	0	0	0	0	0
ES7	2	0	0	0	1	0	0	0	0	0
ES8	1	0	0	0	1	0	0	0	0	0
ES9	0	0	2	0	1	0	0	0	0	0
ES10	0	0	0	0	1	0	0	0	0	1

The devices that were acquired during the lockdown help understand the technological needs that the families experienced during that period. As shown in Table 3 and Table 4, the new devices acquired were tablets, computers, TV, smartphones and consoles, and its purchase was mainly impulsed by the need to participate in online classes, do homework and have time for leisure. Even a more resistant family (ie: ES3) had a new addition (a tablet) to the household's devices; the mother borrowed one from her work to be able to meet the childrens' needs to do school work as well as her own needs to do her work. There are also cases (ie: ES7) where the smartphone acquired during lockdown changed the child's mood from

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being sad to feeling happy, helping her connect with her friends. In the case of the ES10 family, they acquired a printer during the lockdown to reduce the time children spent in front of the screen doing homework for school. This was a good solution to some health and sleep problems. For example, the girl in ES3 declares to have several migraines after doing her homework on screen.

As a second step in the analysis, we looked at the access that children had to the digital devices available and in particular what was the parental mediation on its use.

**TABLE 5: Type of parental control for each family and device**

Family	Tablet	Computer	TV	Smart phone	Console	Smart watch	Smart Toy	Digital Camera	Virtual Assistant	Printers, drones
ES1	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled				
ES2	Controlled	Restricted	Controlled	Restricted		Free		Free		
ES3	Controlled	Restricted	Controlled	Controlled	Controlled				Free	
ES4	Controlled	Controlled	Controlled		Controlled		Free	Controlled		
ES5	Controlled	Controlled	Free	Controlled		Free		Controlled		
ES6	Controlled	Free	Controlled	Controlled	Free	Free		Free	Controlled	
ES7		Controlled	Controlled	Controlled						
ES8	Controlled	Controlled	Free	Restricted	Controlled	Restricted				
ES9	Controlled	Controlled		Controlled			Free	Free		
ES10	Controlled	Controlled	Controlled	Controlled				Free		

As a general tendency, the controlled use of the devices predominates in almost all families. The free uses appear mostly when they see low risks in technology as the cases of smartwatches, smart toys and digital cameras. Also the TV in most cases is a less restricted device because families used it to watch TV together and children did not demonstrate a high interest in it. The case of tablets is striking because in all families its use was controlled including in families in which the access to the computer and console was free (ie: family E6).

[Pick the date]

As seen in the national report in the related project “Young Children (0-8) and Digital Technology” (Matsumoto et al. 2016), almost all children claim that their favourite device is the tablet because they can see and create YouTube and TikTok videos, they can do their homework and they can download games. It appears as a very versatile device for children’s interests. For example, the girl in the ES10 family says that she did her homework quickly to play on her tablet:

“I woke up and read the mandatory pages to be able to see my tablet” (*Me levantaba y leía las páginas que tenía que leer para poder mirar la tablet*).

In the case of the girl in ES9 family, also the main device for her was the tablet where the girl only could use for educational purposes as a play called Smartick, where she learned to say the time of the day.

### Parental mediation

There are significant differences in the way families perceived about the “control” of children’s uses of technology. For example, in the case of ES6, the father mentions the controlled use, but the girl spent 8 hours on the tablet. Meanwhile, the control in ES3 means that the girl can spend only 2 hours a day playing on the tablet and this time should be shared with her brother.

The main issues that concerned families to explain the control are the time in front of screens because all families think that this can cause problems, and through which children are watching and sharing contents every day. Parents prefer the educational content rather than for pure entertainment, except for the case ES10 whose mother wants the girl to play more with devices because she, as an IT developer, sees the videogames as a medium to develop skills such as coordination, problem-solving and strategizing. All families stated that they filter internet content and encourage their children to create private accounts or groups if they want to share something on the internet.

Finally, as a third step in the analysis, we look at what children did with the digital devices.

TABLE 6: Uses that the children gave to the technological devices

	Tablet	Laptop	TV	Smartphone	Console
ES9	Games	Movies		Videocalls	
	Videocalls				
ES10	Netflix				Games
	Youtube				

[Pick the date]

	(Tutorials)				
	Games				
	Online lessons				
ES2	Netflix	Online lessons	Netflix	Videocalls	
	Online Games				
	Videocalls				
	TikTok				
	Youtube (tutorials)				
ES1	Games	Excercise	Netflix	Videocalls	Games
	Videocalls				
ES5		Games			
		Videocalls			
		Homework	Netflix		Online Games
ES3	Homework			Videocalls	
	Games				
	Youtube (Tutorials)				
ES4	Online Games	Games			Online Games
	Videocalls				
	Homework				
	Online lessons				
	Youtube (Tutorials)				
ES7		Homework		Videocalls	
		Videocalls		Tik Tok	
				Youtube (tutorials)	
				Youtube (videos)	
ES8	Create and edit videos	Games		Games	
		Youtube (videos)			
		Youtube			

[Pick the date]

		(tutorials)			
		Videocalls			
ES6	Create and edit videos	Homework			
	Games	Youtube (videos)			
	TikTok	Youtube (tutorials)			

The uses that children gave to specific devices can be organized in 3 groups: (1) to participate in school activities and do their homework, (2) leisure activities and play (3) communication with family and friends. The main devices from which almost all children did their school homework were the tablet and the laptop. One interesting thing is that older children separate devices to do certain tasks. For example, in ES6 the girl used the tablet for leisure and the computer for homework and learning. The same in ES11, who used more the laptop, and she just used the tablet to create or edit videos. But younger children see the tablet as a very versatile device on which they did everything. This can be explained because only the older children (ie: ES6, 12 years old, ES8, 11 years old and ES5, 9 years old) in the study have their own computer or laptop or can use this device to work.

The main device used for entertainment is also the tablet because children used it to download and play videogames or to navigate and create content on social networks. Almost all children show, independently of the control that parents put, more autonomous and secure uses of tablets, and they also use them to see Netflix content and YouTube videos. Most families have told us that they refer their children to YouTube (available on the tablet) if they want to know something, such as how to tie their shoes (ie: ES2) or how to fix something (ie: ES5). Children learn how to do crafts, create videos and execute tricks in their favorite games by navigating on YouTube. The consoles are used in less quantity to play except a case such as ES5, who spent lots of time playing Fortnite with the console. But an interesting aspect of play during a pandemic is that children connect with others through apps to play online together, as in the case of ES2, ES9 and ES11. These cases show how playing online is not a solitary activity, but a social activity for them.

Finally, the smartphone and the tablet are the main devices from which children communicate with others. When they participate in a video call using the tablet, they use Hangouts or Zoom. They also do online parties and communicate with their friends. On the other hand, they also ask for the mobile phone of their parents if they want to call their friends via Whatsapp. Even in the most restricted families,

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the use of technology for video calls and socialization is highly accepted and they consider this use much more convenient.



### 3.2. How did the lock-down disrupt or change the children's' and family's behaviour and activities related to technologies?

To identify the impact of lockdown in the family's behaviours around technology it is important to identify their initial points of view or attitudes regarding the digital devices. From various discussions held within the research team, we agreed that an interesting way to portrait this situation is to create a continuum where families are positioned in three different categories: resistant, moderate and active (see Table 7). Through this positioning of the families we look at the disruption of family's technological activities and the changes that they have undergone during the lock-down.

TABLE 7: Profile of the families regarding the behaviours and attitudes towards technology

Resistant			Moderate					Active	
ES3	ES1	ES7	ES9	ES10	ES4	ES2	ES8	ES5	ES6

As shown in Table 7 the half of families are categorized in the “moderate” group, 30% in the “resistant” and 20% in the “active”. But there are nuances inside the groups as we see them not as strict categories, but as a continuum. Note that the location of these families in these categories was based on our analysis of parent’s discourse and not based on their own identification. For example, ES2 and ES8 are families that expressed more prohibitions in the uses in the questionnaire. However, when we talked with parents and children, they show themselves having very relaxed attitudes about technology usage, and parents let their children have more independent uses than ES9 and ES10. In the case of ES4 the limit is four hours a day, meanwhile in ES2 and ES8 the limit is more about the content than the time children spent in front of the screen. For example, in ES2 the father states that it is very difficult to control the time his daughters use the devices.

In general, the lockdown has disrupted the children’s and family’s behaviour in particular aspects such as the increased time they spent in front of the screen, changes in family dynamics (for example, many parents declare to have been unemployed (“paro técnico”) and less time doing exercise. These disruptions have led to specific changes in routines because children were not able to see their friends and play outside. As a result, to distract and entertain children, parents have let them use the digital devices.

When we further look into the changes in families' attitudes compared their initial positioning before the lockdown started, the “tech families” are found to be those that report no or minor changes. In ES6 the father states that it is “impossible” to control the time his daughter spent in front of the screen and they recognize at least

eight hours of use every day. Also ES5 family uses technology very much and the father says that using a digital device is very important for learning and he always encourages his son to use YouTube and Google to learn how to solve problems. Parents in tech families don't see many changes before and after the lockdown, because they have always used technology:

“I see that he has gained autonomy in everything. We did Zooms with the whole family together, but the rest of the time he used the devices on his own. I see little impact during the lockdown because he has always been quite autonomous” (*Veo que ha ganado en autonomía en todo. Hacíamos Zooms con toda la familia de manera conjunta, pero el resto se espabilaba solo. Veo poco impacto durante el confinamiento porque ya desde siempre ha sido bastante autónomo*) [ES5-Father]

On the other end of the continuum, resistant families have reported more structural changes, especially in the case of ES3. In this family, the mother considers that technology limits the imagination and the capacity to solve problems, and she sees devices as something negative and dangerous for her children:

“You know, they think they spent 10 minutes but it is an hour. I don't like this. I control them very much, but of course, they go away with the device in their hands. They are all the time with the device, watching videos instead of creating something” (*Sabes, creen que llevan 10 minutos pero es una hora. No me gusta. Yo los controlo mucho, pero claro, como que van a sus partes y se lo llevan en la mano. Está todo el rato con el dispositivo, mirando vídeos en vez de ella estar creando algo*) [ES3-mother]

This discourse also appears in the girl, who likes to play with the tablet but she is “aware” that this is something “bad” for her, so she finally feels frustrated. In ES1 the use of digital devices for leisure is allowed only during weekends and for a limited time. Meanwhile, in the ES7 family, the use is controlled, but they gave the girl a smartphone to talk with her friends. This smartphone is forbidden in some families or can be used under very strict parental control, that is why ES7 is positioned between resistant and moderated.

In the case of ES1, the family does not have a negative opinion on technology but they prefer activities such as reading instead of being connected, and the time in front of screens is very controlled. They don't feel that the time on devices has increased:

“We don't use them more than before (technologies) (...) His father let him use the smartphone to play “Brawl Stars”. Sometimes when we are working we let him half an hour, but they calculate the time themselves. Sometimes we do videocalls but we don't use it very much.” (*Pues ha cambiado muy poco, la verdad. no las utilizamos más que antes (las tecnologías) (...) sí que le deja el*

[Pick the date]

*padre el móvil para el juego, el Brawl Stars. A veces cuando nosotros estamos trabajando se lo dejamos media hora, pero ya ellos mismos calculan el tiempo. Alguna vez hablamos por videollamadas, pero tampoco lo usamos mucho)*  
[ES1-Mother]

It is important to note that this family does not have high-speed internet, but they use the mobile data to use the internet at home. Therefore, there is also a limitation they have regarding the amount of data they could use each month.

Age also plays an important role in the changes or not that the lock-down had on the children's digital practice patterns. In general, younger children had less time in front of screens because parents played more with them and they used to do their homework on paper and play educative games.

The pandemic situation also brought some adjustments to family's discourses, especially those of the extreme ones. All resistant families, despite their strict rules and feelings, they possess and use the technology. Even ES3 acquired a new tablet when the lock-down started. The mother, at the end of the interview, recognizes that technology is important and unavoidable, and she also wants her children to be more independent in the use of tablets and computers, especially for school homework. At the same time, she stated clearly that she wanted to reduce the use during summer because she didn't see the point of children playing with devices. On the other hand, during the lockdown, in the ES6 family, the father recognized that at some point he felt afraid of the extreme use his daughter was having of her tablet. He says that she just sat on the sofa for hours, creating TikTok and YouTube videos. He felt conscious about addiction and low physical activity the devices can provoke. That is why he started to walk at least for an hour to the hills with his daughter, even when it was forbidden by authorities. He wanted his daughter to see nature, do exercise and be apart from her tablet for a while.

The exercise is an important point in the changes that children experienced during the lockdown. Most of the families don't use technology to substitute the activities their children did before the pandemic. They did not state that they take online sportive lessons or play games related to sports or physical activities, except for the ES2 family, for whom sports are very important.

But, "moderate" families believe that they work very well with the control of times and content and they don't feel that they have changed their practices. For example, the father in the ES4 family states:

"Undoubtedly, encyclopedias no longer exist, people consult everything on the computer, so of course, they will continue to use it as I use it, I work many hours in front of the computer, and I don't think it's bad for them to do it either. Nowadays computers are basic for everything, the use of tablets, computers... is already basic, trying to separate kids from this type of

technology is absurd and counterproductive” (*Indudablemente ya no existen enciclopedias, la gente consulta todo por el ordenador, entonces desde luego van a seguir utilizándolo como lo utilizo yo, que trabajo muchas horas delante del ordenador, y que ellos lo tengan que hacer tampoco me parece mal. Ahora la informática es básica para todo, el manejo de tablets, de ordenadores... ya es básico, el intentar separar a los chavales de este tipo de tecnologías es absurdo y es contraproducente*).

### 3.3. What are the children and parent's attitudes towards digital technology use and online activities during the lock-down?

#### 3.3.1. Children’s attitudes

##### **General attitudes towards technology**

The attitudes shown by children towards digital technology and online activities during the lockdown were found to be generally positive from this study. Most of them expressed enthusiasm regarding the use of digital devices, especially the uses of the newly acquired ones. Generally, all of them associated the use of their devices (mostly tablets, laptops, and game consoles) to the idea of having fun or being entertained during the lockdown.

For some cases, the moments in which they could use technology were described as the best time of the day, above all when this technology was used to connect with others in online games or video calls. As an example, ES7, when asked to identify a happy moment during the lockdown, referred to “a pajama party through video call” (*una pijamada por videollamada*).

Nevertheless, it is possible to perceive differences in children's attitudes based on different factors. Firstly, age seems to be a relevant aspect regarding the access and usage of technology, an aspect that also frames their attitudes. Our data shows that older users, as happens in the families ES4, ES6, ES7 and ES8, demonstrate more interest in the use of technological gadgets to play, watch content online and communicate with their friends. This may be based on the fact that these children have less restricted access to the devices (such as being able to play online games and to use social media), as well as having more devices that belong to them, such as smartphones. Nonetheless, this does not imply that they use all of the devices that they can access - for instance, ES4 indicated that he does not have any social media account because he is not interested in it, even though some of his friends use these networks. Younger users, such as in ES9 or ES10, show a certain interest in using technology but are generally more interested in other activities that do not require devices, such as painting or playing with toys. Thus, there is a relationship between the access to technology (something that changes across the ages) and the type of

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digital practices that children engage with, an aspect that also has an impact on their attitudes toward technology.

A second relevant factor that shapes children’s attitudes to technology is the family regulations on children’s access and uses of technology, which in general terms have been either restrictive (with strong norms limiting time and access), flexible or free (with no significant rules). It is interesting to consider that there were differences in childrens’ attitudes to technology among the families that present a restrictive and resistant attitudes for instance, the case of family ES1 the child had a low interest in the use of technology, but in other families such as ES3 or ES7, the children still show a moderate interest in using technology, stating that it is part of their world and it can be fun or useful for them.

**TABLE 8: Children’s attitudes influenced by age and family regulations**

Family	ES1	ES2	ES3	ES4	ES5	ES6	ES7	ES8	ES9	ES10
Age	8	7	10	11	9	12	11	11	6	7
Family regulation	Restrictive	Flexible	Restrictive	Flexible	Relaxed	Relaxed	Restrictive	Flexible	Flexible	Flexible
Children’s attitude	Reluctant	Moderate	Moderate	Moderate	Eager	Eager	Moderate	Mod-Eag	Mod-Rel	Reluctant

### Attitudes towards specific devices

Regarding the attitude towards technology in the use of specific devices, the data gathered in the capsule activity and the interviews show that children have preferences for some specific devices and that age is a factor in this. In the case of older children (between 10 and 12 years of age), there is a trend to prefer the use of devices that allow social interaction, such as smartphones, for video calls and social media, or game consoles for doing online games (like Fortnite or Minecraft) which also allow socialization with other players. They also preferred smartphones based on a sense of autonomy and self-control, since this device allowed them to have more privacy than any other device that could be accessed by the rest of the family. For instance, ES7g11 had access to various devices, such as a tablet or a computer, but she got more engaged with the daily use of technology when she got her smartphone - “in the beginning I was a bit bored, but I stopped feeling bored when I had the smartphone because I talked with my friends” (*Al principi estava una mica avorrida, però després al cap del temps ja no perquè com que vaig tenir el mòbil, doncs parlava amb amigues i això*).

[Pick the date]

In contrast, younger children (between 6 and 10 years of age) preferred to use the tablet, as they liked to watch online TV shows (through platforms such as Netflix) or to play games (such as educational or colouring games) on these devices. These children enjoyed occasional video calls with friends or family members, but not as much as the older users, as they got bored of it more easily or needed the help and support of the parents to set one up. For example, ES10 indicated that she preferred the tablet as she used it to find musical sheets, watch TV series and watch tutorials.

A relevant exception to this difference found by age is the combination of playing video games while having a video call with friends, which was not exclusive to any age group. Family E5 is an example of a 9-year-old child that preferred this kind of activity, playing Fortnite was his favourite activity during the lock-down.

As for other devices, most children have indicated a perception of the use of the TV as a whole-family activity. To watch TV series, they usually used their own device, mostly the tablet, but watching movies was usually a collective activity that the whole family shared and that they saw as a way to bond as a family. Some of the children owned other devices as smart toys or smartwatches, but they were not as interested in these as in the tablet, smartphone, laptop, or game console.

### ***Attitudes towards the use of technology for school***

Concerning the use of technology to perform educational activities for school, in most cases, the children indicated clearly that they preferred in-person classes. Generally, the children expressed that they missed face-to-face classes at school - for example, ES2 said that she missed “being at school and seeing the friends” (*Estar en el cole y ver a los amigos*). Likewise, ES6 expressed a strong preference for in-person classes since “you can be more in touch with people, you can talk more, play in the playground... the class is different because you’re there with everyone in the class” (*Puedes tener más contacto con la gente, puedes hablar más, jugar a algo en el patio... es diferente porque estás allí, con todo el mundo en la clase*).

Some have indicated that they enjoyed the online activities and games that the teachers sent to them, as they got to maintain regular contact with the teachers. Additionally, ES8 proposed a wider inclusion of technology in the classroom, suggesting the integration of some tasks that they performed during the lockdown such as video presentations.

However, overall the video calls were not as frequent as they would like them to be and the activities were often too simple or monotonous. ES3 gives an example with the physical education class, in which they received dancing videos to imitate that were not very engaging or entertaining. About technological issues, the children indicated only minor problems either in the platform that school uses or during the connection for video calls. Another common issue was the excess of email messages

that the children received. For instance, ES8 indicated that he was tired of receiving so many Gmail messages from school, as he received many of them that he had to tidy, classify and delete, which he found overwhelming and tedious.

In general, most children saw online remote schooling as a temporary setting and they got used to it easily, but preferred face-to-face learning and missed the contact with their classmates and teacher. Summing up, the school uses of technology were seen by the children as personally important, since they performed the function of keeping in contact with the teachers and the classmates in the school scenario but they noticed a range of dysfunctions related to its didactic/educational function in terms of quantity, engagement and the educational challenge that they posed.

### ***Perspectives about risks and opportunities***

The children overall showed awareness about the benefits and opportunities that technology offered to them both in their social interactions and in the school sphere. They highlighted opportunities as keeping in touch with their families and friends, getting distracted despite being all day at home, or being able to develop their creativity and interests with Youtube tutorials and games. For example, ES4 indicated that his favourite activity during lockdown was “the video calls that I had with my friends or when we played video games together, and we were entertained talking about our things” (*Las videollamadas que tenía con mis amigos o cuando nos conectábamos juntos a los videojuegos y nos entreteníamos hablando de nuestras cosas*).

They all showed a certain consciousness about the necessary limitations in the use of technology, as most of them agreed with the rules that the parents established for the use of the devices. Generally, the children mentioned that, if they had the possibility, they would use their devices a little more, especially to play games or watch videos, but that they still thought a limit was necessary. As an example, ES6 pointed out that “I like to be with the devices, but I also understand that I must not use them all day, I have to do other things too” (*A mi me gusta estar con los dispositivos, pero también entiendo que no he de pasar todo el día, porque también tengo que hacer otras cosas*).

In comparison, they mentioned fewer dangers as they did not consider their digital practices especially risky. Some of the children mentioned that overusing the devices can be bad and that they must be careful with their online activity. Even if they did not mention specific dangers of the use, they acknowledge that overusing the devices could have negative consequences, as ES3 explained by saying “because it’s fun for me but, deep inside, I know it’s not entirely good” (*Porque a mí me divierte pero, en el fondo, sé que no es del todo bueno*). Another example was provided by ES8, who expressed concern about getting his webcam hacked during the school video calls.

It is relevant to mention that there is a difference between the older children and the younger ones. The older children expressed concern about the risks and pointed out several of the specific ones, as it was mentioned before. In contrast, the younger users, who were more oblivious of the dangers and would rather focus on the benefits. Overall, all the children were comfortable with using technology, since they could rely on parental intervention and protection.

### 3.3.2. Adult's attitudes

#### **General attitudes towards technology**

The attitudes of the adults depended, to a great extent, on their positioning of the technological use in the family framework, which at its turn influenced the type of mediation and regulation strategies that they posed to their children. Taking into account the general positioning of the family (see Table 7) and their mediating styles (see Table 8), adults that showed a predisposition to the use of technology mainly had a positive attitude towards the use of the devices by their children. Adults that were part of more moderate families also presented a positive attitude but influenced by a cautious behaviour, having a reluctant opinion towards certain devices or uses that implied more autonomy for the children. Lastly, adults that were already reticent displayed a reserved and vigilant attitude towards technology, being constantly aware of their risks, which they considered to be more influential than the benefits that could arise from it.

The ES4 family is an example of a moderate household that encouraged regular and responsible use of technology. The father indicated that he felt happy about the use made by his child of the technological devices since he became more independent and skilled, and that could be greatly beneficial for him. The father commented that he “liked it because he has been very interested in learning new things about installing programs and when he had a problem with a software, he found the solutions” (*Me ha gustado porque se ha interesado mucho en aprender cosas de instalación de programas y, cuando le surge un problema en un programa, él ha buscado las soluciones*). On the contrary, family ES3 was reluctant towards the use of technology, as the parents set strict limitations on any futile or excessive use of the devices, such as participating in social media or watching non-educative videos. However, the mother did allow the usage of the devices to do school tasks and to keep in touch with friends or family through video calls.

#### **Adults' attitudes towards specific devices**



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Regarding specific devices, most parents were worried about smartphones, mostly the parents that had older children as these children were more independent and interested in these devices. This is illustrated by several families as ES3, ES4 or ES8, who pointed out that they will not give a smartphone to any of their children yet, as they believe they do not need it and that this level of technological autonomy can be detrimental for them making it more difficult to control. For instance, the mother of ES8 reflected that she would be concerned if the smartphone that her child borrows from her was his own, as she would not be able to know what he is doing online.

On the contrary, there are also devices that the parents are less concerned about. Generally, the TV was a device that they recognized as less harmful since it is usually less interactive and, hence, less addictive. Additionally, most families watched TV together, so it was easier to control its time use. Probably the space where the TV usually is (shared spaces in the house) might also be playing a role in building this attitude.

### **Adults' attitudes towards the use of technology for school**

Referring to the school, most families considered the school work insufficient. A few families felt satisfied with the materials and video calls provided by the school, as they managed to keep a routine and a certain level of learning. Nevertheless, generally the parents were not satisfied with the online education arranged by the schools and were disappointed with the lack of help from these institutions. However, they also showed understanding of the challenges that schools faced and lack of preparations for the disruption that the situation implied for the schools and especially for the teachers.

In general, they highlighted a lack of feedback and support from the school, as they would have liked to have had more video calls with the teachers as well as more organized and significant activities. This was especially reflected by family ES10, who was very disenchanted with the school due to the lack of connection with the children and the aimless activities that they received as tasks. Yet, some families also showed a sympathetic and understanding attitude, as the lockdown entailed a difficult situation for everyone. For example, ES4 expressed that his child was not especially excited or engaged with the online classes but that he understood that the enthusiasm or investment of a face-to-face class was very difficult to achieve through an online platform. Overall, the families accepted this online schooling as an exceptional circumstance.

About the future of the educational system, the parents expressed opposed perceptions of what they would prefer. ES4 indicated that he was not fond of the current system used by the school, in which they used online content and textbooks instead of the traditional paper format, as he thought the paper format was a better

way of acquiring the information. In contrast to this, the mother of ES3 expressed a need of receiving technological training from the school to improve the children's usage responsibly - she stated that "if children learnt properly what they have to do at school, they wouldn't need so much help from the parents and would be able to handle it alone if a similar situation was to happen again, or even to do a school related activity" (*Si los niños supieran bien lo que tienen que hacer en el cole, para que no necesitaran tanta ayuda de los padres y se puedan manejar solos si vuelve a pasar algo, o incluso hacer una actividad más en el colegio relacionada con este uso*).

### **Adults' perceptions about risks and opportunities**

Regarding the perception of risks and opportunities in relation to technology, the parents showed awareness of various aspects such as the need for an increase in the digital proficiency of the children.

On one hand, they perceived various risks that could arise from the use of technological devices. A trouble that was mentioned by most families was the addictive character of the devices, which led to the necessity of limiting the use to avoid any backlash or hostile behaviour from the children. As an example, both ES1 and ES4 indicated that their children showed a resistant attitude when they were told to turn off their games. Similarly, ES3 insisted on the addictive nature of the games and tried to encourage their children to understand the amount of time they spend using digital devices instead of doing other things. This disengagement with other activities was another risk mentioned by several families, who also indicated a decrease in the ability to focus on other tasks such as reading. The last risk that the families mentioned was the online exposure of the older children when they played online games, as they indicated that sometimes the children played with unknown users. This also occurred with social media, where the parents felt a need to control more their children's online activity.

On the other hand, the families were also aware of all the benefits that technology implied for their children. One of the most mentioned advantages was the autonomy and problem-solving skills that they acquired in the use of the devices, as well as an increase of their digital competence that will be crucial for their future. During this time, the children developed an interest in learning how to install new programs and how to use different functions on various devices, which led to an improvement of their digital competence and their technological autonomy. Likewise, they were interested in fixing the issues that appeared on their use during activities such as school video calls or playing video games. To do so, in the beginning, they mostly relied on other members of the family as the parents or siblings but also sought help from their friends. When they felt insecure or concerned about their online use, the children always relied on their parents to comfort them or get advice to avoid the dangers.

The devices were also considered important tools to keep in touch with other family members and friends, to share social interaction in that difficult time of the lockdown. In general, most families indicated that this social communication was essential for their children. Furthermore, the parents also indicated the development of creativity and imagination that the use of technological devices involves, with the use of creative apps or video games.

Family ES9 perfectly reflected this dilemma that appeared in the awareness of both the risks and benefits of technology, as the mother pointed out that she has “a dilemma between not leaving them outside technology because everything works within that framework, and, on the other hand, not allowing them to be slaves of technology” (*Un dilema interno entre no dejarlos fuera de la tecnología, porque obviamente todo funciona en ese marco, y, por otro lado, que tampoco sean esclavos de la tecnología*).

### 3.3.3 Contrast between children’s and adults’ attitudes

As it can be perceived in the previous analysis, there are both commonalities and divergences between the perceptions of the parents and the children.

As commonalities, most surveyed individuals, both parents and children, agreed on the need to improve online schooling by improving the activities and increasing the number of school video calls. Likewise, they agreed on the existence of advantages and problems that can appear through the use of technology, which meant that both parts understood the need of setting limits in the use of the devices.

However, children emphasised more the benefits of developing their creativity and being entertained through the engagement with digital devices, and thus, they were interested in increasing their usage time. Parents valued the entertaining function of the devices but were more concerned about the danger of overusing them, which implied a need to limit the use of the devices and to control their use.

Another interesting divergence can be found in the difference in the overall attitudes towards technology. As it can be perceived in Table 8, relaxed or flexible parents’ attitudes often matched their children’s usage and perception of technology; nonetheless, parents who had a restrictive attitude did not necessarily entail a resistant attitude or use by the children. In the case of families such as ES3 or ES7, the context that surrounded them was restrictive but they emerged as moderate users. Here, the influence of the children’s peers might be playing a role in the divergence between parents’ and children’s uses and attitudes in the same families. The peers also use the devices, and as we have seen, the children used the devices engaging with others.

### 3.4. How did the lock-down disrupt or change the children's' and family's attitudes towards digital technology and online activities?

The lockdown had significant repercussions on the attitudes displayed by the children and families regarding technology and its uses. This situation led to several disruptions and challenges in the uses of technology, such as:

- The intensification of technology use; in particular, the time management regarding the amount of time dedicated to technology. Some families manage by setting firewalls of time control or browser extensions as Youtube kids. Interestingly, children bypassed these controls by diversifying use of the devices (i.e. just switching to another device to be able to engage more time). As they had to stay at home, some families struggled with the organization of the children's free time, since the lack of physical exercise and the constant use of technology affected their sleeping schedules.
- The solution of technical issues that arose in the use of the devices, associated both to the use of the devices in their free time or to their use for school. Some families indicated that they struggled with the issues that appeared in the school platforms, as it was the teacher who had to acknowledge and fix the problems.
- The distribution of the devices, as some families had to share the devices that they had at home and, due to an overlap in their schedules, they either had to buy new ones or to rearrange their schedules to avoid this.

Throughout the lockdown, the children's generally positive attitudes towards technology remained constant, as they enjoyed using the devices, especially during this time in which their leisure activities were limited. As for the parent's attitudes, we can observe a more remarkable change. Even though they still maintained their initial positioning, either as reluctant, moderate, or positive, their perception of the dangers was outweighed by the opportunities that technology offered in this context. Hence, those parents that were more hesitant towards the use of technology recognized its importance as a way of entertainment, of maintaining close contact with others, and of accessing educational content. All of them also recognised the relevance of being technologically competent for the future.

### 3.5. What impact for the future?

At the end of the interviews, the participants (adults and children) were asked to reflect on the role that technology might play in the future. Specifically, they were

asked to identify what they would like to maintain or change reflecting on how they used the technology during the lockdown.

Generally, the parents generally hesitated on commenting on the children's future uses since they had not yet perceived remarkable negative or positive consequences from the use during the lockdown. As such, many did not state very firmly about what aspects they would like to maintain or change.

However, they did mention relevant aspects that they would like to improve or consider for the future. In general, the parents highlighted the need of establishing a clear schedule that limits the use of the devices and prioritizes other activities, such as doing sports or spending time outside the house. Families such as ES3, ES5, ES8, and ES9 talk about the importance of setting a routine that limits the activities and sets clear rules for the use of technology. These parents also reflect on the importance of spending more time with their children, playing more with them and investing more time in doing non-technological activities to strengthen the family bond. Overall, the children agree with these ideas of spending more family time together and limiting the use of the devices. Although they like to use technology, they admit that a limit in the use is necessary to regulate their screen time. They all agreed that the use needs to be regulated and controlled to avoid any negative consequences that it may have in the future (i.e. addiction, social problems, etc.).

The parents also recognize the importance of technology for the social and professional future of their children. While they recognise the need to limit use of digital devices to avoid negative consequences on one hand, they mostly acknowledge technology as a basic tool to navigate the world and, hence, a necessary aspect of their lives. For instance, ES4 reflected on the potential of technology by saying the following:

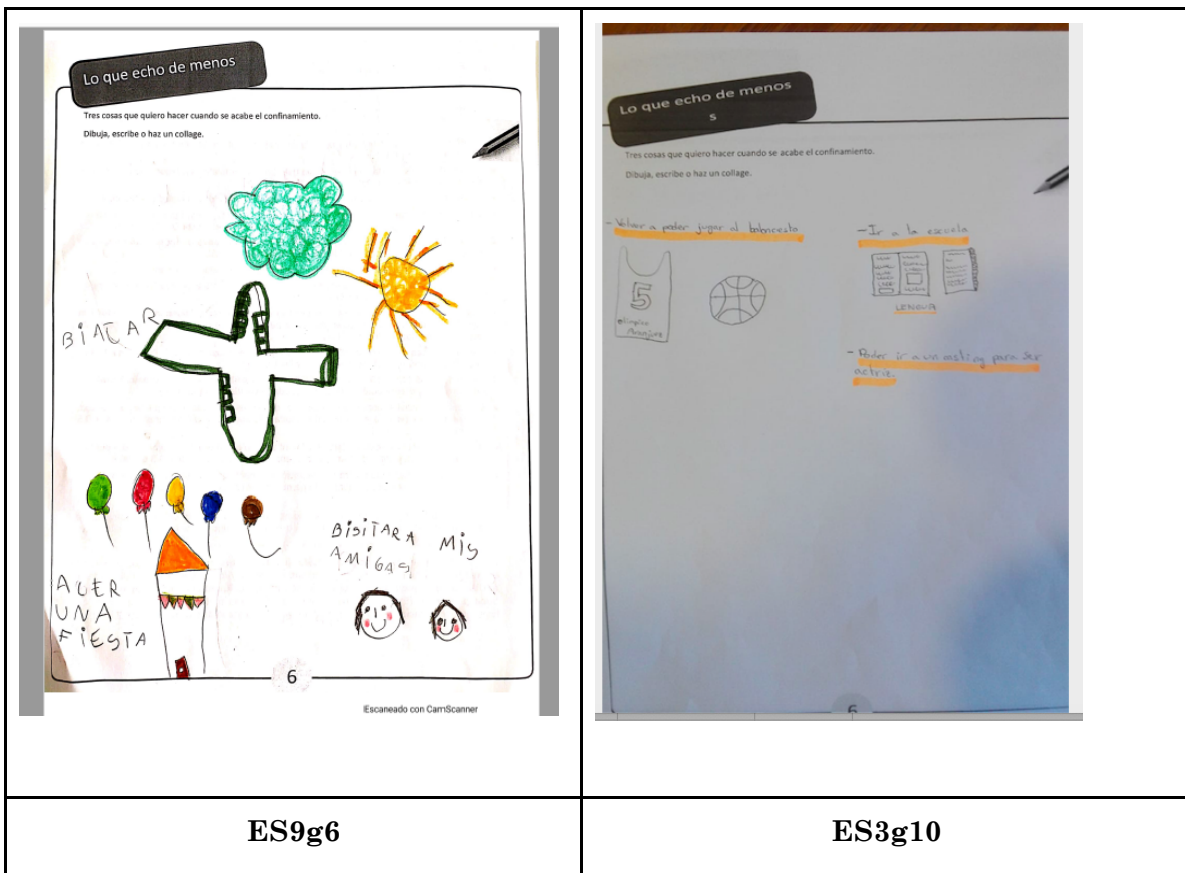
“It's true that their way of playing provides a background that they can apply in their professional career; all the steps that you have to follow to install a game implies a certain knowledge about how a computer works, these are tools that they might have to apply” (*Es cierto que esa forma que ellos tienen de jugar les aporta un background que luego pueden aplicar a su vida profesional; todos los pasos que tienes que seguir para instalarte un juego supone conocimiento sobre cómo funciona un ordenador, son herramientas que a lo mejor van a tener que aplicar*).

Children also had their points of view on the future. The participating children were asked in the interview to reflect on what they would like to share with their friends and peers when they went back to school again. In this case, most of them answered that they would like to do activities outside with their friends, all the things that they could not do during the lockdown, leaving aside technology since they had been using it as a communication tool for so long. All in all, some of the children indicated

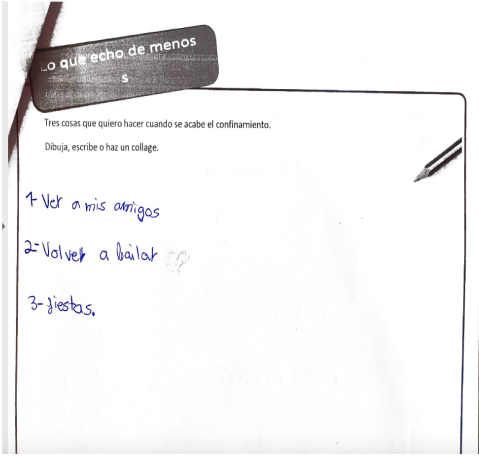
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that they would like to share some of their digital practices with their friends. For example, ES3 would like to take pictures and edit them with her friends, while ES10 would like to watch movies on her tablet with another friend.

This idea of peer socialization is an important aspect for children that were affected during the lockdown. In the Time Capsule activity prior to the interview, the children were asked to indicate (either drawing or writing) the three things that they desired to do after the lockdown. In this regard, both younger and older participant children highlighted social activities with friends as something that they felt as missing during the lockdown. These pieces of evidence reinforce the meanings of technology for them as a connecting, communicative tool to keep their peer relationships. As an example, we show the drawings of a 6-year-old (ES9), a 10-year-old (ES3) and a 12-year-old (ES6), which demonstrate how they all point to the importance of peer-socialization for them.



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As for online schooling, the aforementioned dissatisfaction with the school has led to an unfavorable perception of its future. Here, most parents indicated that, unless the type of remote schooling that they experienced during the lock-down has quickly improved, they would not like it to continue in the future. The children also reflected on the future of their education, indicating that, although some of them enjoyed the school video calls, they preferred face-to-face classes. What they value from face to face classes is the personal bond that they create and strengthen, the routines and ways of doing and learning, and other intangible goods that going to school entails. The intensification of technology uses by the school during the lock-down has also led some children (i.e. ES8) to think that in-school education might enrich keeping the most interesting or creative part of technology uses even after the lockdown, such as the creation of video presentations or video essays.

## 4. Surprising findings

- The lock-down has involved an increase in the awareness of the benefits that technology entails in terms of socialization and learning but has not incremented the reflection on the risks. This should be further explored to understand attitudes, beliefs and other aspects that regulate family conversation on technology.
- During the lock-down technology has performed a key role maintaining peer relationships in the social order of the children. Although they preferred meeting friends face-to-face, they accepted technology as a genuine space for keeping in touch with friends, a viewpoint not as clearly accepted or even questioned by some of the participating adults.
- From the point of view of children their concept of play seems to include digital play without differentiating digital/non-digital play, a contrast to parent's discourse.
- With some exception, non-physical activity during the lock-down has not been a major preoccupation for the parents during the lockdown, perhaps pointing to a tendency to a sedentary culture.



## 5. Discussion of the methodology

### Why might have the results turned out that way?

During the implementation of the interview protocol, several questions emerged related to the methodology. We highlight and discuss them in this section around four aspects that we consider are relevant to possible impacts on the collection/generation of data and the results presented here: (1) the design and the structure of the semi-structured interviews, pre-interview questionnaire and a time-capsule material; (2) the impact of on-line interviews (3) the notion of time; and (4) the language used during the interview and in some materials.

First, the design and the structure of the semi-structured interviews, pre-interview questionnaire and a time-capsule material provided us a good base for answering the research questions and finding a balance between standardization and flexibility. This was central to address the research questions adjusting to the characteristics and dynamics of the interviews with the families. Family context or interview dynamics vary from one family to another. Conducting interviews with young children and their parents on-line during their daily activities unavoidably generates unexpected responses or situations that hinder the exact implementation of a tight interview schedule for all the families in the sample. In this regard, the flexibility enabled us to adjust to the specific demands of each family during the interviews. At the same time, it was also necessary to address several common issues for all families. In this respect, having a clear structure of the interviews and trying to follow it as much as possible has proven to be an effective tool to systematically address the same research questions by researchers located in geographically different contexts (the case of Spain).

Second, the fact that all the interviews were carried out online has affected our data in several ways. On one hand, the time available to each family for conducting the interviews was not always the same. It varied depending on when the interviews were carried out (during the week/weekends or summer vacations or children having to go to school physically or not) and the families' schedules (e.g., work schedules of parents or motivation). This meant that in some cases, the time available for conducting interviews with parents -normally conducted at the end of the interview- was shorter. The available time of the families, especially of the children, was also different when they were visited during the Summer or after; the children who were interviewed during the Summer seemed to be more relaxed regarding time but at the same time, they were more confused about the lockdown and the holidays.

Third, most of the interviews were conducted in the Summer or after. For young children, this meant that they had to rebuild what they did during the lockdown, which was not an easy task, especially when we asked them to tell us their daily routines during that particular time.

Finally, we must also consider some questions about the language of the interview. This issue was more visible in Catalonia and Galicia, a multilingual sociolinguistic

landscape. Within this context, some interviews naturally began in Catalan and others in Spanish. However, in the case of two/three families, the language of the interviews was not the mother tongue (Spanish in the case of ES8, Russian in the case of ES10 and Galician in the case of ES1). The choice of another mother tongue as the interview language might have influenced the results, as the children were asked to talk about family routines and dynamics in 'non-regular' language in that specific context, a language that they associate with schooling and school tasks. In short, working with representative samples of families across Spain necessarily involves taking into account the complex sociolinguistic dynamics that are part of life in Spain.

### **How could the study be improved?**

There are several issues that emerged in the study that suggest areas that could be improved or reconsidered. First, gender issues need to be examined more systematically. Most importantly, the gender differentiation in the use of digital devices could be reconsidered. Gender stereotyping could present itself in a way in which we ask follow-up questions during interviews as well. This might even lead to a paradoxical situation in which researchers activate their own stereotypes to explore a topic of study (i.e. the digital experiences of children) that has not been explored much and by doing so, in fact, create "new" stereotypes. In short, gender issues should be critically taken into account in future studies, especially taking into account that gender identity is developing during early childhood and how digital media and gender intersect in these early years is something undetermined and in transformation.

Second, the study could improve by introducing a larger or more diverse sample including families with special needs, different ethnic backgrounds or lower class. This could enlarge and enrich the scope of our research.

### **What are the methodological recommendations for future research?**

The points we mentioned above to improve in future research could also be considered as recommendations for future research. In addition to these, we recommend the use of face-to-face interviews with the family to observe the routines and the non-verbal communications of the family participants.

Finally, as discussed in the previous section, we also have to add that the video recording of the interactions becomes an even more useful method and record when we research the smaller children (under eight years olds) because of limitation in the verbal accounts (not for all but some) and data from 'observation' weighs more.

We are aware that video-recording the interviews raises several ethical issues and in this study we did take great care in this regard. It is also important to bear in mind

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that these are recordings of elicited conversations and actions within a research interview, rather than recordings of spontaneous daily interactions at home.

## 6. Conclusions

### 6.1. Key findings

Most homes were equipped with multiple digital devices that were already used before the lockdown. The majority of the families had, at least, a tablet, two computers, a smartphone and a TV, and also half of them had a game console. The ratio device/person varied among the families, and in most of them, the members had to share the devices and to establish explicit rules to avoid a conflict in the use, especially in families that had more than one child. Hence, the number of family members was a relevant factor to the use of the devices, as larger families needed more regulations to share the devices. Among these digital devices, there was a preference towards individual digital devices, such as smartphones, tablets or computers, with a decrease in the use of shared devices, especially the TV.

Regarding the children's preference for the devices, they expressed that their favourite digital gadgets were the tablet, the laptop, the smartphone and the game console. Here, there is a difference in the preference based on the children's age. Older children (10 to 12 years old) showed an interest in a socialized use of the devices, using laptops or smartphones to play online games, video call their friends or watch content online. Younger children (6 to 9 years old) expressed a preference towards more creative uses of the devices, using tablets to watch creative tutorials and TV shows or to play games.

Overall, the attitudes of children towards technology were positive, as they expressed enthusiasm to use digital devices for their enjoyment and they associated the use of the devices with the idea of having fun and being entertained. However, they made a differentiation in the use, whether it was an academic or ludic use of the devices. To attend online classes and do the homework, the children mostly used the tablet and the laptop. While they enjoyed doing online homework and tasks, they expressed a lack of sense of engagement with the online schooling as they did not feel they were an active part of it. Contrary to this, they were excited to use their devices for leisure, to play, watch videos or talk with their friends, using mainly devices such as smartphones, game consoles and tablets.

The children saw technology as something important in their daily lives, as a way of entertainment and enjoyment, and a tool for keeping in touch with their families and friends. In general, they showed awareness of the risks of overusing technology and understood the need of setting time limitations and parental control on the devices. Some of the children expressed concern about the online use of the devices, which, however, was not deeply discussed or tackled by the parents.

Generally, the children perceived an improvement in their digital competence. During the lockdown, they gained autonomy in the use of the digital devices, reinforced the knowledge that they already have acquired and learned new uses of

the devices that they have not explored before. To become more proficient in the use of technology, they used online tutorials or asked their parents, peers and siblings for help. This improvement is based on the amount of time that they spent on using digital devices, as the time they engaged with them increased remarkably during the lockdown due to the amount of time they spent at home. This also led to a need of setting more strict time limitations.

Most families reported a controlled use of the devices for the children. The devices that were perceived as harmless by the parents were less controlled, such as smartwatches, digital cameras or the TV. The devices that the children used more, such as tablets, laptops and smartphones, were usually perceived as potentially dangerous and had parental control and more strict time limitations regarding their use. These devices implied a more autonomous use for the children, as they were portable and could be used for many functions, both online and offline. For instance, a TV can only be used to watch a movie or a TV show, but tablets can replace game consoles, TVs and computers, compressing all the uses of these devices in just one device. Hence, the parents considered these devices more dangerous due to all the functions that could be done through them.

During the lockdown, the attitudes of the parents were mostly flexible, but there were two types of families. For one, there were “relaxed” families, who did not set specific rules, and on the other hand, there were “restrictive” families, whose rules were rigid and encouraged other non-technological activities actively. Mainly, the parents encouraged a responsible and limited use of the devices, maintaining a positive attitude towards these uses, with the exceptions of the aforementioned families that were especially reluctant or vigilant towards technology. Here, the data showed three styles of positioning and mediation of technology: relaxed, reluctant and flexible, which influenced the access that the children had to the devices and the uses that they could perform on them. All in all, the parents tended to perceive technology as an important tool and competence for the future of the children, as they live in a highly technological context.

Most families showed a similar positioning at the end of the lockdown and all of them moved towards a more moderate use as they became more aware of the opportunities entailed in technology. The positioning of the family towards technology set the mediation strategies and rules for the children’s use of the devices. However, most of the children showed an interest in using technology regardless of their parents’ positioning, as they saw the devices as an attractive and engaging entertainment that could also allow them to stay in touch with their friends. Thus, while they were aware of the limitations, they liked to use the devices and even found ways and tricks to overcome the time limitations.

In general, parents displayed a reticent and disenchanted attitude towards online schooling, as they expressed a lack of educational support, learning materials and video calls with the school, and stressed their desire for children to be able to go back

to attend school physically. They highlighted a lack of feedback and support from the school and a need of providing more organized and significant activities. They expressed different perceptions about the future of the educational system and indicated a need for the school to be “updated”, but did not mention that they preferred online schooling or online resources.

The parents expressed concern about several risks that could arise from using technology without parental supervision. Mostly, parents mention the dangers of overusing technology, such as causing irregular sleeping schedules or hostile reactions when they try to stop the use of the devices, and of communicating with others online and using social media, such as being exposed online or contacted by an unknown person. They also expressed a fear of developing an “addiction” to technology and of abandoning other activities and hobbies to spend time with the devices. Although they were aware of these risks and set limitations to avoid them, they did not discuss such risks with the children.

About the future of their children concerning technology, the parents generally showed a positive attitude to the technological practices of their children. They expressed hesitation towards the future uses and behaviors, as they did not perceive negative consequences during the lockdown but they did indicate that they would like to establish a clear schedule and limits on the use of the devices to prioritize other activities. All of the parents agreed that technology is an essential tool for the future of the children, although they also think it needs to be controlled to avoid some risks.

## 6.2. Recommendations

The evidence constructed with the families in the present study shows many contradictions at the ideological/practical levels and little clarity about what children's use of technology implies in terms of risks and benefits. As mentioned above, all the children in the study have access to at least two or three technological devices in the home context and some even have personal devices that they use for both homework and leisure. Although this access is given by the families, at least in their discourse, they also express some kind of worries and go to parental control over technology. Families with the most strong positioning against technology became moderate during the lockdown. The natural tendency of the most extreme groups in this study (resistant v/s active) was towards moderation, however, we believe that this decision was not necessarily informed by explicit expert, pedagogical, research or pediatric recommendations.

One of the first recommendations that are woven into the evidence is about self-regulation of use. Letting children estimate and regulate their own time is to give them **agency**. However, agency in relation to technologies is not always welcome because adults desire to have an explicit relationship of control over children's times

in this domain (Livingstone & Dortner, 2011). And this tension is expressed because what is at stake are power relations and conceptions of childhood: can a child reflect by him/herself on excess in front of a screen? Can a child negotiate rules? The answer from this study is **YES**. And this must be so to create childhoods that are more aware of a technological world that is constantly and rapidly advancing (Livingstone & Dortner, 2011).

The subversion of roles is noticeable in the technological world, since it is not necessarily the parents who have the answers but often it is the children or, in other cases, it is the digital devices (Livingstone & Dortner, 2011). In many of the families, the children knew more about games, platforms and technologies than their parents and in many cases, the children learned everything from the internet, even things like how to tie their shoes. This gives rise to the discussion proposed by Livingstone (2020) about shifting the focus of the discussion from the **“how much” to the “what”**: in other words, not to measure simply the time they spend on screen but to pay attention to what they actually do and measure the quality of the digital activities. Looking at the different types of online experiences helps to think about the quality of content that children are experiencing, as it has been observed that this is not a question that parents often ask themselves. One example, as proposed by Navarro (2020) is to look at the socialization, problem-solving and creativity options provided by the game "Fortnite", which is a video game that many of the children in the study used, to reflect on the opportunities of technology especially in times of pandemic.

In the same line of content, we assure from the evidence that the **play** is essential for the development and learning of children, without more, it is a **right** stipulated by UNICEF. Even before the pandemic, the play was in the process of mutation. It had changed and advanced towards digital practices thanks to the emergence and massification of cell phones, tablets and computers (Johansen, 2018). Play should be understood as a fluid space, without a determined form (Mouritsen, 1996, quoted in Johansen, 2018), which is why playing outside is no more play than being on a console or in connection with friends via a video call. However, some studies like the one of Tisseron (2016) and Clément (2017) alert about the importance of restricting first experiences in play to physical experiences in order to make this equation meaningful. In this sense, a key recommendation is to **leave the relevant spaces for children to play in freedom, without “being colonized” by the adult world**. In other words, we should not judge their play based on our own criterias. This includes, of course, play with digital devices, intertwining ideas regarding play above: allowing agency, relying on self-regulation, and thinking about the content that play and socialization bring. In Johansen's words, "play as a phenomenon might have changed its appearance and organization, yet it still has the same purpose as it has always had: as a means towards building good social relations through playful practices" (2018, p. 3).

**Risks**, which are a topic of general concern for the families in the study, appear mainly as apprehensions regarding addiction (this one in the first place), hacks and pedophile networks. Researchers have also described cyberbullying, online stalking and harassment as possible risks that occupy above all parents and educators (Adorjan & Ricadelli, 2019). This topic is controversial because it has long been the main focus of adults regarding the technological use of children and adolescents, however, it has been hard to see, as proposed from academic circles, that the **risks are only a counterpart of the opportunities** (Adorjan & Ricadelli, 2019). As two sides of the same coin, they need to be presented to children jointly and inseparably within cyberspace, not to diminish their importance, but to enhance their understanding. Likewise, it is necessary as a recommendation for researchers to always give voice to children and adolescents about their opinion on risks, since in general only the opinions of adults are heard (Adorjan & Ricadelli, 2019).

Finally, **modeling** has been discussed. This point is of vital relevance as a pedagogical recommendation. From the Social Cognitive Theory, modeling is conceived as one of the most powerful ways of transmitting values, attitudes, knowledge and behaviors (Bandura, 1987). People learn by observing others, which is why the use of digital devices is also learned through modeling. **If parents are in front of a screen all day long, children will hardly do the opposite.** Children cannot be asked to have self-control if adults do not show it as well. This is why it is important to look for ways of joint moderation that allow the psychological processes of imitation to adjust among family members.



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