The Digital Practices of Portuguese Children (6-18) during Covid-19 Lockdown

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Abstract

The Covid-19 pandemic was addressed, in most European countries, with a mandatory lockdown period, during which the use of digital technologies was intensified, for remote working, communication, entertainment, consumption and learning. Our research aims to map the digital practices of Portuguese children (6-18) during lockdown (between March 19th and May 2nd, 2020), focusing on their experience of formal Education and on their wellbeing.
In Portugal, our empirical work follows a mixed method, combining an online survey to a representative sample of 509 dyads of parents and children (10-18) and in-depth interviews to families with younger children (6-12).
Our findings confirm a significant intensification of the use of digital technologies by children, partly required by school, partly due to the lack of alternatives for entertainment and socialization. Most children find using digital technologies for long periods due to remote schooling tiresome, and feel anxious due to recurrent news about Covid-19.

Keywords: Children (6-18), digital practices, online learning, Covid-19, lockdown.

Introduction

Children are starting to use digital technologies at increasingly younger ages, and this use tends to become more frequent and diversified with age (Chassiakos et al., 2016). They use digital media "naturally", as they are familiar with such media, particularly touch-screen devices. They early become part of the children's routine for play and entertainment (Chaudron, di Gioia & Gemmo, 2018), and later for communication and studying (Livingstone, Mascheroni, Ólaffson & Haddon, 2014).

The Covid-19 pandemic changed drastically our daily lives, and digital technologies became an indispensable tool for working, studying, communicating, and shopping, and the main option when it comes to entertainment and escapism. The use of digital media and the time spent online increased significantly during the mandatory lockdown periods that were implemented in several countries during the first trimester of 2020 (De, Pandey & Pal, 2020). The research project "Kids' Digital Lives in Covid-19 Times (KiDiCoTi)" (Lobe et al., 2020; Vuorikari et al., 2020), coordinated by the Joint Research Center of the European Commission, set out to explore the role played by digital technologies in the lives of children during the lockdown period, across 15 countries. The project focuses on diversified dimensions - such as digital

practices, parental mediation, perceptions about opportunities and risks, family dynamics, the experience of formal Education, communication and socialization, and wellbeing.

This article, reporting solely the Portuguese context, describes briefly the changes in the digital practices of children, and focuses on two main aspects - their experience of formal Education during lockdown, and their wellbeing. The forced transition to online learning has been described as an accelerator of changes that have long been foreseen and desired in formal Education (Goldsmith, 2020). Also, the toll that protecting ourselves from Covid-19 takes on our mental health has been one of the most addressed topics within the literature about the impact of Covid-19 (Masonbrink and Hurley, 2020). Our goal is to hear the voices of children on these matters, understanding the advantages and disadvantages that they recognized in this new way of learning, and their assessment of their own wellbeing. We intend to arrive at relevant insights for a much-needed reflection about what a "post-pandemic" school can (and should) be, and also for the promotion of children's mental health.

Overview of pre-pandemic digital practices of children

In the last few years, research has been able to map, in depth, the evolution of the digital practices of children and adolescents. Research by entities such as Common Sense (USA context) and OfCom (UK context) present us regularly an overview of how children are using digital technologies. The EU Kids online project, currently expanded globally, is a reference regarding this topic.

As this article focuses on the Portuguese context, the EU Kids online Portugal latest report (Ponte & Batista, 2018) portrays how the use of digital technologies by children and adolescents between 9 and 17 years old has been evolving, comparing data from 2010, 2014 and 2018. The report confirms that the use of digital media has been increasing, and is starting at a younger age, as other projects focusing on 0–8-year-olds corroborate (Dias & Brito, 2016; Brito & Dias, 2017; Ponte, Simões, Batista & Jorge, 2017). The smartphone is currently the most used device. The use of the smartphone and the computer increases with age, while the use of the tablet decreases. The most common activities are entertainment and communication: about 80% of the Portuguese children and adolescents watch videos online daily and about 75% use instant messaging or social media daily to communicate with friends and family, and also for entertainment. Almost 50% play games online, and they are predominantly boys. Only about 25% claim using the internet daily to read news or for schoolwork. Activities related to creating content and civic participation are not frequent (Ponte & Batista, 2018). The scenario is similar among the 0–8-year-olds: their favorite online activities are watching videos on YouTube and playing games using apps, and the choices of content tend to be strongly gendered. The use of social media is more common among girls, and the use of multi-player online games is more frequent among boys (Dias & Brito, 2016; Brito & Dias, 2017).

Considering the framework that has been suggested for promoting Children's Rights in a digital society, based on the pillars of Protection, Provision and Participation (Livingstone & Bulgar, 2014; Livingstone & Third, 2017), EU Kids Online Portugal (Ponte & Batista, 2018) reveals that digital competences have been improving, particularly those related with privacy protection: 80% report knowing what information to share and how to remove people from the contact list; 66% say they know how to choose keywords for their searches and how to control expenditure on applications; 52% reported on how to verify if the information they found online is true. The development of these skills is related to a less optimistic perception about the

internet, when compared to the previous editions of the study. Nowadays, children and adolescents are acknowledging opportunities online, but also more aware of risks - 23% declared having been exposed to online situations that bothered or disturbed them, a percentage that doubled since 2014. Cyberbullying stands out as the main problem, particularly for the younger children (9-10) and for girls. Thus, data shows that children are being provided with digital and media literacy, and they are developing competencies to act autonomously, critically and responsibly in the online world. They are not protected in the sense that they are exposed to online risks, but they are in the sense that they are more equipped to cope with them. Participation seems to be a dimension that needs further development: although 62% know how to create and publish videos or music online (Ponte & Batista, 2018), most of them are users instead of creators. The younger children are even less active when it comes to creating content and exploring dimensions such as identity and civic participation (Dias & Brito, 2016; Brito & Dias, 2017).

The addictive nature of digital media is revealed by the fact that 60% of 9–17-year-olds feel annoyed when they cannot be online, 46% find themselves using the internet without a clear purpose, and 11% often neglect study or spend less time with family and friends to use the internet.

The impact of Covid-19 lockdown on children

Although the Covid-19 pandemic is a fairly recent phenomenon, there is already a significant amount of literature addressing its multiple aspects. Within the Social Sciences, two topics stand out - education and mental health.

Challenges of learning from home

Due to the declaration of lockdown and confinement in several countries, schools closed, and transitioned to some form of distance learning solution. This is closely connected with mental health, as school plays a very important role in the safe and healthy development of children.

UNESCO (2020) suggested 10 key recommendations to ensure that learning remains uninterrupted during the Covid-19 pandemic, among which ensuring inclusivity in distance learning plans, prioritizing psychosocial support before teaching, and supporting teachers and parents in the use of digital tools. Research by Drane, Vernon and O'Shea (2020) in Australia concluded that vulnerable children are affected more negatively by the closure of schools and identified four main challenges: dealing with long-term educational disengagement, ensuring digital inclusion, ensuring that students are proficient in technology use and promoting wellbeing by coping with anxiety. Goldsmith (2020) stresses how quickly teachers and students had to adapt to a new - and technological - reality. According to Guernsey, Ishmael & Prescott (2020), most have adapted rapidly and well. The biggest challenge was not the lack of skills, but the lack of devices, as families had to share and coordinate. Plus, parents played a very important role in accompanying their children in studying. Carretero-Gomez et al. (2020) studied the experience of distance learning in five European countries - Belgium, Estonia, Greece, Italy and Poland - concluding that it aggravated existing inequalities, particularly for children without access to online classes, and also stressing the important role played by parents, particularly of younger children. In addition, online learning is a good solution to complement presential learning, and not as a replacement. In addition, teachers need additional training, not only in the use of technology, but also in digital pedagogy, so that they can harvest the full potential of

digital technology in teaching. Vuorikari, Velicu, Chaudron and Di Gioia (2020) studied the remote learning solutions adopted in Austria, France, Germany, Ireland, Italy, Portugal, Romania, Slovenia and Spain, finding large variations in terms of how children were able to interact with their teachers in learning activities and how often children were in contact with their teachers through online means. Both children and parents were worried about the pandemic's negative impact on education and voiced the need for psychologically during the confinement. Garbe, Ogurlu, Logan and Cook (2020), in the European context, explored the perceptions of parents, concluding that they agreed that closing schools was necessary, and were generally satisfied with the solution found by schools and with the support given to students and parents. However, they expressed difficulties in balancing responsibilities (remote work, house chores, helping children with schoolwork) and concern about learning outcomes. Consistently, Lee, Ward, Chang and Downing (2020), in the US context, found that two out of five parents in their sample met criteria for depression or anxiety disorder, and that this condition was associated with home education, and with child anxiety. Concerning positive aspects of this experience, Gómez-Gerdel (2020) refers that students developed more autonomy and that family relations improved.

Wellbeing and mental health

The mandatory confinement, although necessary to protect us from Covid-19 and to prevent the collapse of National Health Systems, took a toll on mental health. Masonbrink and Hurley (2020) stress that collective trauma events such as the Covid-19 pandemic have short- and long-term consequences, among which the most frequent are posttraumatic stress, anxiety and behavioral disorders. The authors also point out that this impact is stronger on children with previous vulnerabilities, such as poverty, disability, and mental illness. They are particularly concerned with families with lower socioeconomic status, as social distancing and increased economic stress are leading to an increase of domestic violence, child neglect and child abuse. Patrick et al. (2020) conducted a nationwide survey in the US, concluding 27% of parents declare a deterioration of their mental health, and 14% report behavioral problems in their children. In addition, these cases were usually connected with unemployment and poverty. Wang, Zhang Y., Zao, Zhang J. & Jian (2020) observed, in the Chinese context, that prolonged school closure and home confinement during a disease outbreak might have negative effects on children's physical and mental health. Their research shows that quarantined children are physically less active, have much longer screen time, irregular sleep patterns, and less favorable diets, resulting in weight gain and a loss of cardiorespiratory fitness. Tso et al. (2020) arrived at similar conclusions in Hong Kong, after surveying around 30 000 families with 2–12-year-olds. Harmful practices for the children's wellbeing were delayed bedtime, inadequate sleep time, inadequate exercise time, and extended use of digital devices. These practices were more common in children with special educational needs or with chronic disease and also in single-parent families, low-income families, and if one of the parents suffered from mental illness. Jiao et al. (2020) conducted a preliminary study on the impact of the Covid-19 pandemic on the mental health of children in China. The study concluded that 36% of 3–6-year-olds are "clingier" to parents. The 6–18-year-olds manifested inattention (32%), irritability (31%), worry (29%), obsessive request for updates (28%), fear of relatives becoming ill (21%) and sleeping disorders (21%). Using digital tools for seeking entertainment was the most common strategy to relieve children's stress, which the authors considered successful. Goldsmith (2020) agrees that technology became essential during this time of social distancing and confinement to leverage and maintain the wellbeing of

children on five important levels: social, physical, emotional, intellectual and spiritual. For example, the American Association of Pediatrics encouraged video and phone calls between children to promote their social wellbeing, and also online learning to promote intellectual wellbeing. In addition, Jiao et al. (2020) advise the importance of developing resilience through the support of family, school and health professionals to help children stabilize emotionally and physiologically. Tso et al. (2020) reinforce the importance of strengthening of family bonds as key for building resilience and promoting psychosocial wellbeing in the family. Lee, Ward, Chang and Downing (2020) observed in their research that parents showed affection towards their children more often during lockdown.

Liu, Bao, Huang, Shi & Lu (2020) have studied, in the Chinese context, the particular case of children isolated from parents due to Covid-19, or who experienced parental loss, concluding that these experiences have long-term adverse effects on their mental health, increasing the likelihood of mood disorders, psychosis and suicidal tendencies. The connection to parents is, therefore, essential to mitigate the adverse effects of quarantine on the mental health of children.

Phelps and Sperry (2020), in the US context, point out that school is the only support for many children with behavioral and mental health conditions, who stopped receiving adequate treatment or accompaniment when schools closed. The authors advocate the preparation of an holistic plan based on school intervention, in cooperation with governments, families and the community, to intervene on socioemotional and behavioral problems and promote the wellbeing of children and their caretakers.

Methodology

Research questions

Our empirical work is integrated in a broader project that aims to map the digital practices of European families with children, during and after lockdown, focusing on several topics such as online practices, online opportunities, online risks, parental mediation, online learning and family wellbeing. This article reports solely on the Portuguese data concerning the lockdown period. Thus, we address the following research questions:

RQ1: What were the digital practices of Portuguese children during the Covid-19 lockdown?

RQ2: How was their experience of formal Education from home?

RQ3: How do Portuguese children perceive the lockdown experience (positive and negative aspects)?

RQ4: How do Portuguese children assess their wellbeing during that period?

Research design

The research design follows the mixed method and is sequential exploratory (Creswell, 2003). The first stage applies a quantitative data collection technique, the online survey. As the Covid-19 pandemic and the lockdown are new situations, this stage is exploratory and aims to collect data about the digital practices of children from a broader sample. Next, the second stage intends to explore in more depth the perceptions of the children about the lockdown experience, and for that purpose uses a qualitative data collection technique, the interview. This stage allowed us to deepen aspects already addressed in the survey and also

find explanations for certain facts. However, the application of this data collection technique was only viable with a significantly smaller sample. On the other hand, the younger children have difficulties in answering an online survey, so the interviews were a more suitable method for including them in our research. Figure 1 depicts our research design.

Figure 1. Research design
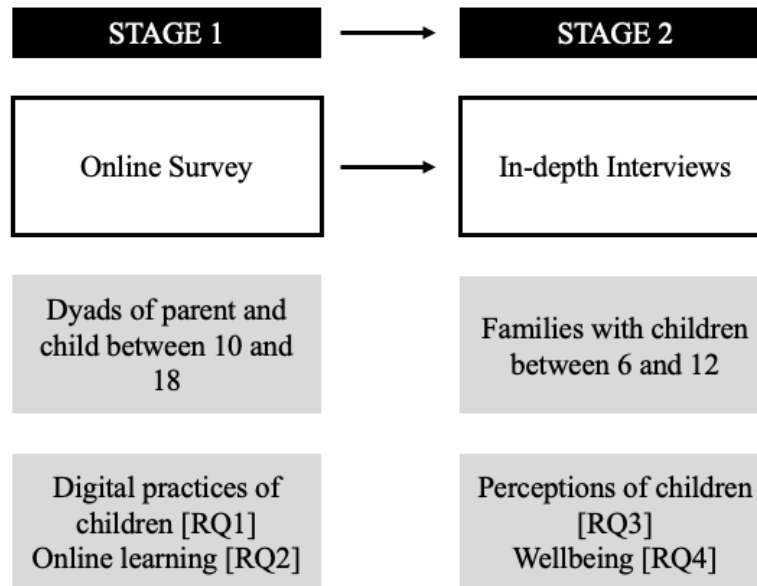
Source: own elabration

Sampling and sample

The online survey was applied to a probabilistic sample of Portuguese families with children between 10 and 18 years old composed of 509 dyads of parent and child. Table 1 presents sociodemographic information about the quantitative sample.

Table 1. Sociodemographic information about the quantitative sample

Age of parents	Average	53,7
Gender of parents	Male	52%
	Female	48%
Professional situation during lockdown	Working at workplace	18,3%
	Remote working from home	45,2%
	Working at workplace and remotely	12,6%

	Unemployed	11,4%
	Lay-off	10%
	Sick leave	2,5%
Age of children	10-12 years old	35,2%
	13-15 years old	37%
	16-18 years old	27,8%
Gender of children	Male	61,3%
	Female	38,7%
Family composition	2	8,4%
	3	35,7%
	4	39,3%
	5 or more	16,6%
Socioeconomic status of the family	Below national average	24,5%
	National average (1266 € in 2020)	53,2%
	Above national average	22,3%
Geography	Rural area	23,8%
	Urban area	76,2%
Housing during lockdown	Apartment	13,8%
	Apartment with balcony or terrace	41,5%
	House	6,9%
	House with garden	37,8%

Source: own elabration

For the interviews, we selected a purposive sample of 10 families with children between 6 and 12 years old. Taking into account that the study was conducted in April and May 2020, thus during lockdown, we chose to contact families that had participated in a previous study - "Children (0-8) and Digital Technologies" (Dias & Brito, 2016; Brito & Dias, 2017). Four families agreed to participate, and we had to recruit six new families. For this purpose, we asked the four initial families for recommendations and also collaborated with a Social Assistance Institution, in order to obtain a diversified sample regarding gender and age of the child, family composition and socioeconomic status. Table 2 presents sociodemographic information about the qualitative sample.

Table 2. Sociodemographic information about the qualitative sample

Family	Family members	Age	Socioeconomic status	Occupation
PT1	Paulo, father	43	Low	Navy sergeant
	Francisca, mother	42		Stay at home mother
	Alexandra, daughter	13		7th grade
	André, son	8		3rd grade
PT2	**José, father**	44	High	Pilot
	Teresa, mother	43		Construction Engineer
	João, son	11		6th grade
	Filipe, son	6		Pre-School
PT3	Rafael, father	28	Low	Uber driver
	Rita, mother	28		Supermarket cashier
	Sara, daughter	10		5th grade
	Isabel, daughter	3		-
PT4	Manuel, father	43	Medium	Mechanical Engineer
	Clara, mother	43		Environment Engineer
	António, son	13		7th grade
	Miguel, son	8		3rd grade
PT5	Artur, father	46	High	Economist
	Iolanda, mother	41		Stay at home mother
	Matilde, daughter	11		5th grade
	Ana, daughter	10		4th grade
	Bernardo, son	6		1st grade
	Mateus, son	1		Pre-School
PT6	**Sílvia, mother**	42	Medium	Early Childhood Educator
	Dinis, son	12		6th grade
PT7	**Mónica, mother**	36	Low	Teacher
	Henrique, son	7		2nd grade
PT8	Duarte, father	42	Average	Bank account manager
	Alice, mother	40		Stay at home mother
	Laura, daughter	11		5th grade
	Rodrigo, son	8		2nd grade
	Margarida, daughter	4		Pre-school
	Joana, daughter	2		-

PT9	**Luísa, mother**	38	Medium	Marketing manager
	Patrícia, daughter	6		Pre-School
	Daniela, daughter	4		Pre-School
PT10	Jorge, father	47	Medium	Chef
	Maria, mother	45		Early Childhood Educator
	Catarina, daughter	21		Student
	Diogo, son	19		Student
	Madalena, daughter	10		4th grade

Note: The interviewees are marked in bold

Source: own elabration

Data collection techniques

The survey was answered by a total of 509 Portuguese respondents, that is, pairs of one parent and one child between 10 and 18 years old. The survey was divided in two parts, the first should be answered by the parent (19 questions + 12 sociodemographic questions), and the second by the child (if there were several children in this age range in the family, the parent was asked to select the older one) (25 questions, 3 sociodemographic questions). At the beginning of each of these parts, a short explanation of the project and what participating entails was presented, and informed consent was collected. The survey was built collaboratively by all the researchers working on the project and revised by the coordinators of the Joint Research Center and by UNESCO experts. It was later translated by each national team and approved by an Internal Review Board in each country. Finally, it was applied online by the market research company Valicon.

The interviews were conducted to 10 Portuguese families with children between 6 and 12 years old. The families were selected purposefully according to one uniformizing criterion - including at least one child between 6 and 12 years old, and to several diversifying criteria: age and gender of the child, family composition, socioeconomic status and geography. The families were first approached by telephone, and information was sent to them via email: informed consent forms for the parents and the children, a short questionnaire for parents which collected sociodemographic data, and an "Activity Booklet" that suggested different activities for the children about the lockdown period, such as drawings and games, and worked both as an icebreaker and as a way of registering data that could later be referred to during the interview. As it was impossible to visit families during lockdown, the interviews were conducted using the videoconferencing software Zoom, and were recorded in video. The interview script was semistructured (Quivy, 2003) and it was also built collaboratively by all the researchers working on the project, revised by the coordinators of the Joint Research Center, and approved by an Internal Review Board in each country. It included 25 questions, organized in 4 main topics that correspond roughly to the research questions: digital practices during lockdown (RQ1+RQ2); parental mediation (RQ1+RQ3); perceptions about positive

and negative aspects of the lockdown experience (RQ3); wellbeing of the family (RQ4). The interview protocol, inspired in previous research by Chaudron, di Gioia and Gemmo (2018), was divided in 5 parts:

a) Greeting, brief recall of the explanation about the project and collection of signed consent forms (about 5 minutes);
b) Ice-breaker conversation with the children about the "Activity Booklet" (about 5 minutes);
c) Interview to the children (about 15 minutes);
d) Interview to the parents (about 20 minutes);
e) Thank you and goodbye (about 5 minutes).

The children were interviewed first so that, if they got tired or bored, they could be excused, and the researchers would continue the conversation with the parents. Our work with children followed strict ethical guidelines, and their voluntary participation was always respected (Brito & Dias, 2017).

Data analysis techniques

For the analysis of the quantitative data, we conducted a simple descriptive statistical analysis and explored a few correlations. For this purpose, we used the software SPSS.

Concerning the qualitative data, the interviews were transcribed, and the participants anonymized, attributing a code and alias to each one. In order to create a context for a deeper analysis of the interviews, we used the questionnaire to parents and the children's "Activities Booklet" to write a one-page family portraits. Then, we conducted a qualitative content analysis, using the software NVivo. Following Ghiglione & Matalon (2005) we created a first set of categories using the questions of the interview scripts as reference. After the first round of coding, we coded subcategories inside the most diverse categories. Finally, we reread the transcripts and identified emerging new categories. Table 3 lists the categories used. We obtained a 96% correspondence in intercoder validation of three randomly chosen interviews (Esteves, 2006).

Table 3. Categories of the qualitative content analysis

Initial categories	Subcategories	Emerging categories
Digital devices in the home (Q1)	Smartphone, tablet, laptop, desktop, console, smart TV	Virtual assistants
Children's digital devices (Q2)	Smartphone, tablet, laptop, desktop, console, smart TV	-
Children's digital practices before lockdown (Q3, Q4)	Entertainment, Schoolwork	-
Children's digital practices during lockdown (Q5, Q6)	Entertainment, Schoolwork	Communication

Skills developed (Q7, Q8)	Related to entertainment, Related to schoolwork	Related to communication, Related to content production
Exposure to risks (Q9, Q10)	Privacy, Commercial exploitation, Cyberbullying, Health	Tiresomeness
Children's formal education during lockdown (Q13, Q14, Q15)	Practices, Relation with teachers	Relation with colleagues
Children's perception about role of digital devices during lockdown (Q11, Q12)	Positive, Negative, Mixed	-
Parents' perception about role of digital devices during lockdown (Q18, Q19)	Positive, Negative, Mixed	-
Parental mediation before lockdown (Q20)	Restrictive, Enabling (Livingstone, Óláfsson, Helsper, Lupiáñez-Villanueva, Veltri & Folkvord (2017)	-
Parental mediation during lockdown (Q21)	Restrictive, Enabling (Livingstone, Óláfsson, Helsper, Lupiáñez-Villanueva, Veltri & Folkvord (2017)	Mixed, Trial and Error, Adaptative
Parents' perceptions about formal Education during lockdown (Q22, Q23)	Positive, Negative, Mixed	-
Children's wellbeing during lockdown (Q16, Q17)	Health, Mental Health, Sleep, Physical activity	Socialization, Perception about the world
Parents' perception of children's wellbeing during lockdown (Q24, Q25)	Health, Mental Health, Sleep, Physical activity	Socialization

Source: own elabration

Limitations

There are always limitations to each data collection method, which we tried to minimize using a mixed research design. In the particular context of lockdown due to the Covid-19 pandemic, the data collection also suffered considerable limitations.

Concerning the survey, applying it online was the only viable option, but the families without access to digital technologies were not reached. Also, we had to focus on older children and adolescents, as they younger children were not proficient enough to read and understand all the questions. In addition, the nature of closed questions directs the answers, excluding other possible answers.

Regarding the interviews, the fact that they were conducted online was also a limitation because the researchers could not observe the home and the family dynamic in a more familiar setting. However, it facilitated the participation of families, as it was easier to include our meeting on their daily routine. The main limitation of this data collection method is the small size of the sample, and the fact that it was mostly recruited using the snowballing technique, and therefore it is slightly biased, including a majority of high and medium socioeconomic status families residing in urban areas. Finally, in order to understand the changes caused by the lockdown, we included questions about daily routines previous to the lockdown, and we had to trust on the participants memory and self-reporting. Particularly in the case of parents, we must consider the social desirability bias (Krumpal, 2013), as respondents tend to give answers that are consistent with what they believe they "should" say, others find correct, or the researcher will approve. This was noticeable when comparing their answers with the children's perspectives, particularly concerning digital practices and parental mediation.

Findings and Discussion

For this article, to address the research questions presented, we focused on the digital practices during lockdown and on the experience of studying from home, mainly from the perspective of children. The parents' inputs were occasionally used to complement the data reported by the children.

Digital practices of children during the Covid-19 lockdown

The surveyed parents report that digital devices are present in most homes. Additionally, new devices were acquired during que lockdown. The interviews revealed that the main challenge for families was coordinating the simultaneous use of the devices, the parents for working remotely and the children for schoolwork, often for synchronous online classes.

Figure 2. Devices at home during lockdown, according to the parents (in percentage)
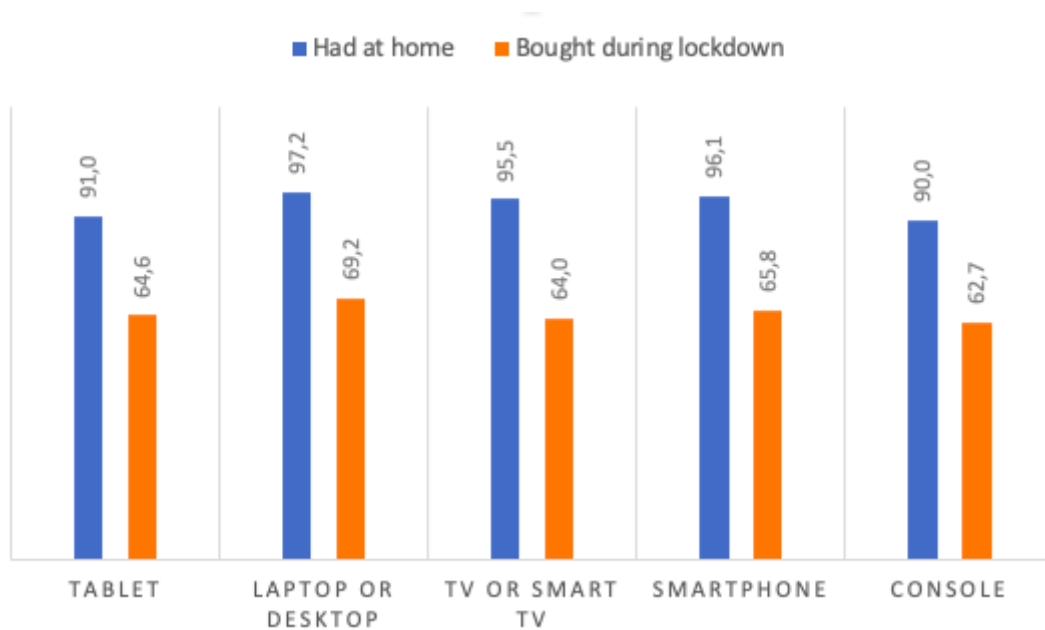
Source: own elabration

Figure 3 shows changes in the use of digital devices reported by 10-18 children. We can observe an increase of use of all the devices. The computer, a device that had become less favorite during the past few years in favor of the smartphone and the tablet (Chaudron, Di Gioia & Gemmo, 2018), made a comeback as one of the devices that was used more frequently by 80,2% of the children and that started to be used by 7,7%, generally as a requirement of distance learning. The interviews revealed that older children were already familiar with using the computer for schoolwork, but for many of the younger children, this was their first experience with this device. André (PT1, 8 years old), Miguel (PT4, 8 years old) and Henrique (PT7, 7 years old) were excited about this new experience and proud of what they have learned, of being able to do the same things that they saw their parents and older siblings doing, such as using Google Classroom and Zoom.

Figure 3. Changes in the use of digital devices reported by 10-18 children (in percentage)
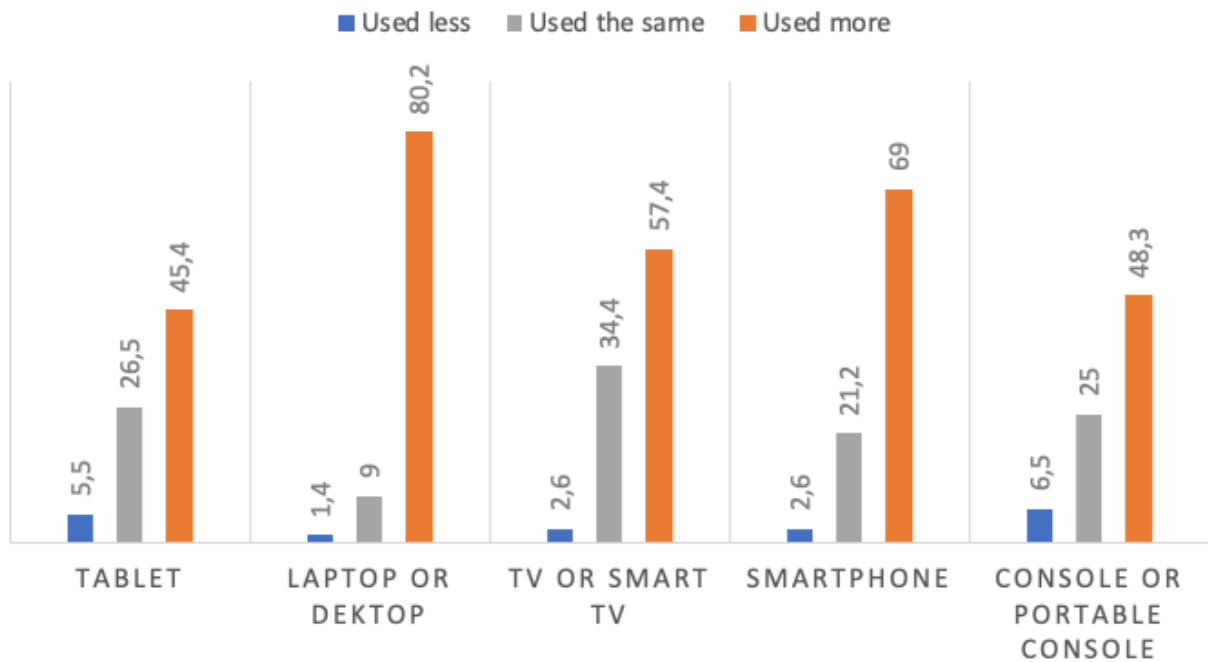
Source: own elabration

Children reported spending, on average, 7 hours and 43 minutes a day using digital media. Figure 4 presents their activities. We can observe that the activity that increased the most - 72,9% - was watching videos and movies online, which was already one of the favorites of children (Chaudron, Di Gioia & Gemmo, 2018). There is also a significant increase - 67,6% - in the use of instant messaging apps, and the interviews show the same scenario in the case of younger children. They miss their family and friends, but the ones they refer the most are grandparents and classmates. For example, Patrícia (PT9, 6 years old) was allowed to have a personal smartphone for the first time, and the mother claims that the lockdown precipitated this decision, but she observed how much her daughter missed her classmates. Henrique (PT7, 7 years old) was also allowed to use his mother's smartphone for about an hour a day, which didn't happen before lockdown. In addition, 63,7% of the surveyed children claim playing online more often during lockdown. The interviews reveal that this activity is particularly important for the boys, as it is simultaneously a way of socializing with their friends. André (PT1, 8 years old) and Miguel (PT4, 8 years old) report playing Fortnite and Minecraft with their classmates, while Dinis (PT6, 12 years old) prefers FIFA. It is a bit surprising that 57,3% of the surveyed children report an increase of frequency in creating and editing online content, as previous research shows that most children have a passive or interactive relation with digital content, but only a few are active content producers (Ponte & Batista, 2018). Among these, 49,3% posted more on social media. During the interviews, we observed that several girls were allowed to create profiles on Tik Tok and Instagram for the first time - this was the case of Ana (PT5, 10 years old), Laura (PT8, 11 years old) and Madalena (PT10, 10 years old), and some who already had them dedicated them more time - such as Sara (PT3, 10 years old).

Figure 4. Digital practices reported by 10-18 children (in percentage)
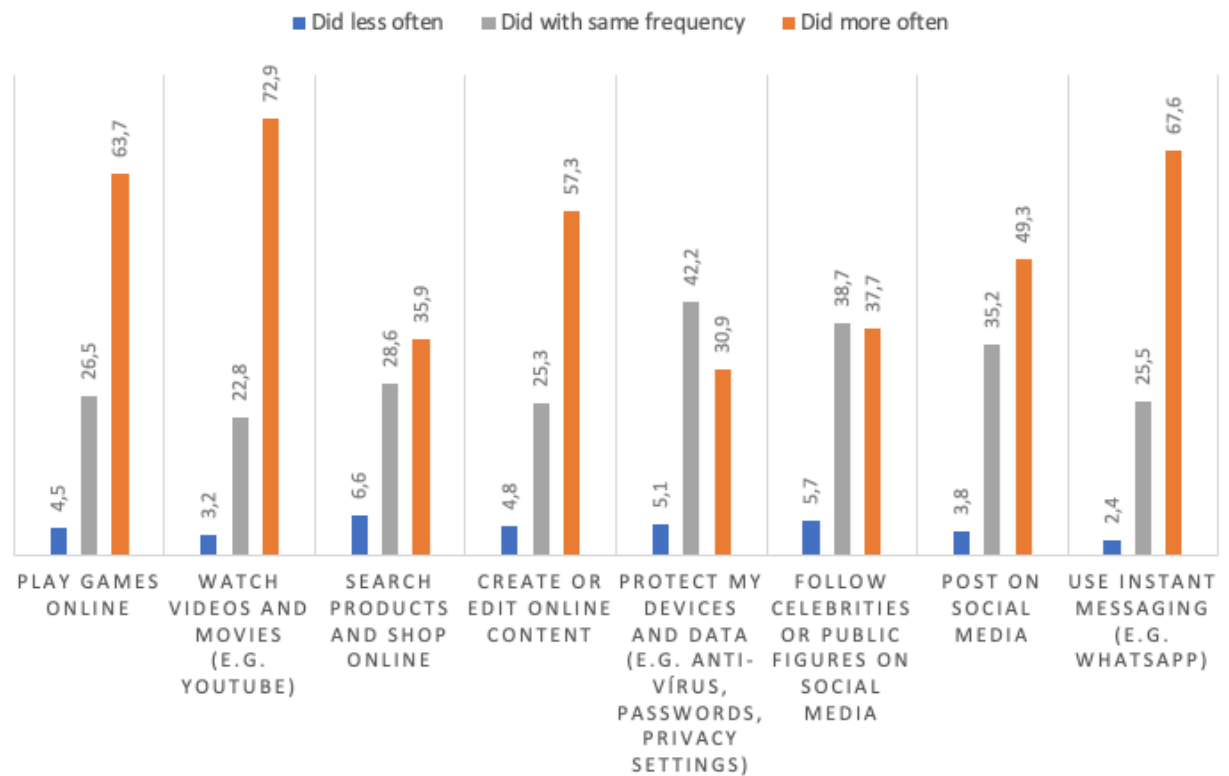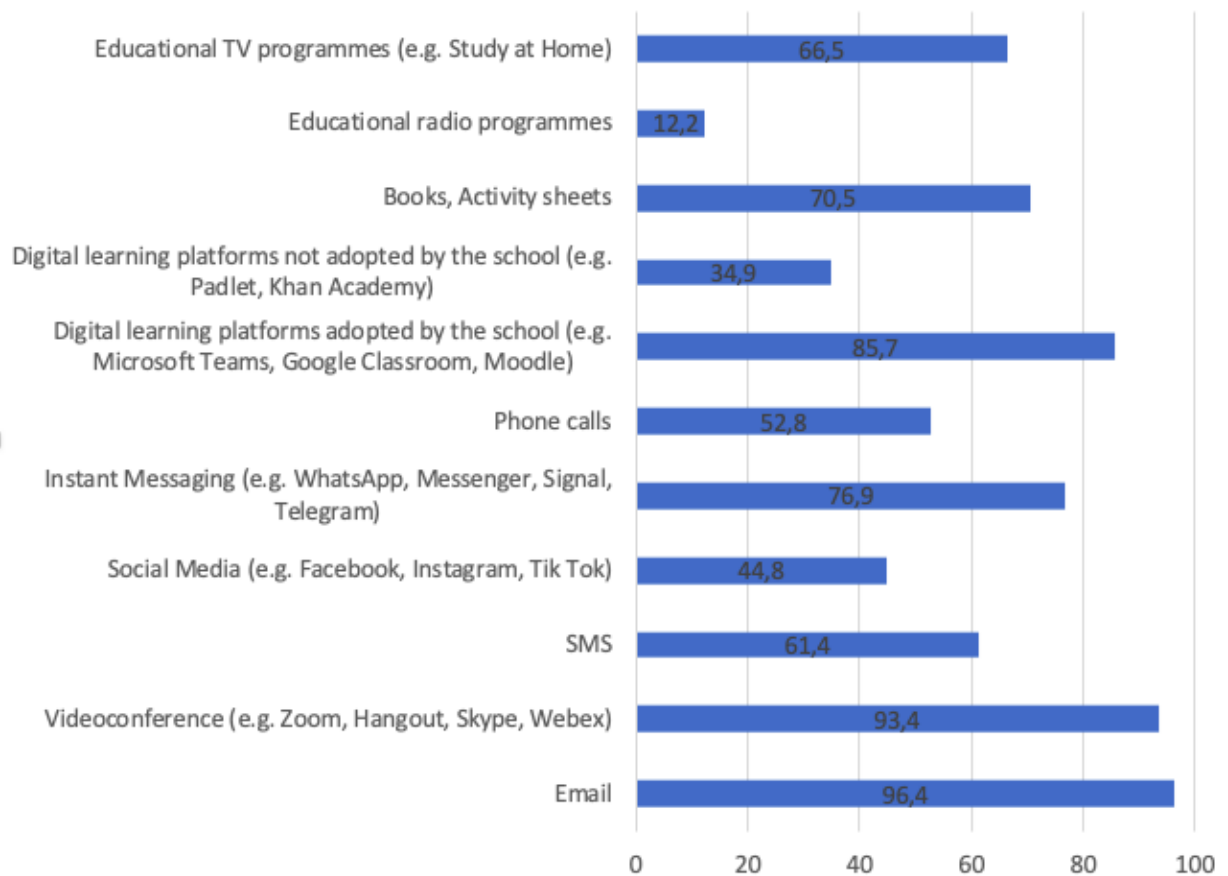

Source: own elabration

Experience of formal Education from home

On average, children have spent 4 hours and 29 minutes daily online dedicated to school activities. During lockdown, 98,6% of the children in our sample stopped going to school (the remaining were offspring of health professionals, and some schools remained open so that these parents could keep working).

An almost direct transposition of classes to a digital environment, keeping the same time of synchronous contact and schedule, was adopted in the schools of 71,1%. Only 2,2% didn't use the internet for formal learning, their schools opted to follow the TV programme that was created, "Study at Home". The remaining 25,3% experienced a mixed model, with some synchronous online classes and a study plan for autonomous work. The contact with the teachers was quite diverse: for 62,1% of the children, it was at least daily, for the remaining 37,9% it was once a week or less. Figure 5 shows the digital tools that children used for formal Education. The most common were videoconferencing software (used 96,4%) and email (used by 93,4%). Several schools adopted digital learning platforms (87,5%). Our interviews showed that this solution pleased children because they could find all the information and activities on the same platform and didn't feel lost. The most common were Google Classroom (often complemented with Zoom) and Microsoft Teams. In a transitional period, several schools sent manuals and activity books in digital format, for the parents to print, scan and send back to the teachers. Iolanda (PT5, mother) complained about this practice, as the family quickly ran out of paper and printer cartridges, and it was hard to shop during lockdown. Also, scanning everything and sending back to the teachers was a very time-consuming process that overloaded

her. Alice (PT8, mother) agreed that this was confusing and disorganized, and that it was hard to keep track of what to do and get feedback from the teachers. Instant messaging apps were very important to agilize the contact with the teachers. Both these mothers kept close contact with the teachers and with other parents, sharing Zoom links and other practical information. About the TV programme "Study at Home", watched by 66,5% of our quantitative sample, the interviewees gave us contrasting feedback: André (PT1, 8 years old) and Miguel (PT4, 8 years old) found it very boring, while Madalena (PT10, 10 years old) loved it.

Figure 5. Digital tools used by 10-18 children for formal Education during lockdown (in percentage)

Source: own elabration

When asked about the workload at home, 50,3% of the children claimed to work more than at school, 17,7% the same, and 29,7% less. Our interviews reflect a similar scenario, with a tendency for older children experiencing increased workload: for example, in family PT1, André (8 years old) worked less than at school and his sister Alexandra (13 years old) worked more. Older children such as Sara (PT3, 10 years old), Matilde (PT5, 11 years old), Dinis (PT6, 12 years old) and Laura (PT8, 11 years old) report spending long hours in synchronous classes and using the computer for schoolwork, and some of them mention feeling very tired. In the case of the younger children, they require more support from the parents, because they get distracted easily, and this overloaded the parents, juggling this support with their own remote work and house chores.

This was the case of families PT1, PT2, PT5 and PT9. José (PT2, father) considered the 1 hour daily Preschool classes of his son Filipe (6 years old) useless, as well as the arts and crafts work that was requested, for which they often lacked materials. Iolanda (PT5) told us that she felt so overwhelmed helping her older daughters that she realized, at the end of one week, that her son Bernardo (6 years old) had not done his schoolwork. It wasn't much, but he couldn't do it autonomously, and she felt overwhelmed and unable to help all of her children.

In the perspective of children, they adapted easily to the digital tools proposed by the schools (66,5%). For example, André (PT1, 8 years old) and Henrique (PT7, 7 years old) feel very proud about their achievements. In addition, 83,1% of the children felt motivated to participate in online school activities, and 50,5% declared being able to keep up with schoolwork. However, 37,3% feel worried about not being able to complete all the schoolwork (although 50,8% claim having sufficient support from their teachers and parents), and 37,9% are worried about having "bad grades" due to these changes. In our qualitative sample, although some children express tiredness and anxiety facing a workload that they consider excessive, all of them feel that they are learning.

Concerning additional action that parents expected from schools, 89,4% claim that teachers should have done more group activities that allowed or promoted interaction among classmates, 86,6% expected official guidelines from school on how to support their child with learning from home and schoolwork, 83,1% expected suggestions of activities that helped the family cope with the pandemic, and 77,8% believe that psychological support for the children was necessary.

Generally, 58,6% of the parents in our sample are worried that distance learning will have a negative impact on the development of their children.

Children's perception of the lockdown experience

The children consider positive having developed their digital skills, as Figure 6 shows. This was partly required by school, but also partly as a result of having more free time and not many alternatives for entertainment. Among the surveyed children, 67,4% report having learned something new online. The skill that they have improved the most is videoconferencing, as is the case of 91,2% of the children.

Figure 6. Improvement in digital skills reported by 10-18 children (in percentage)
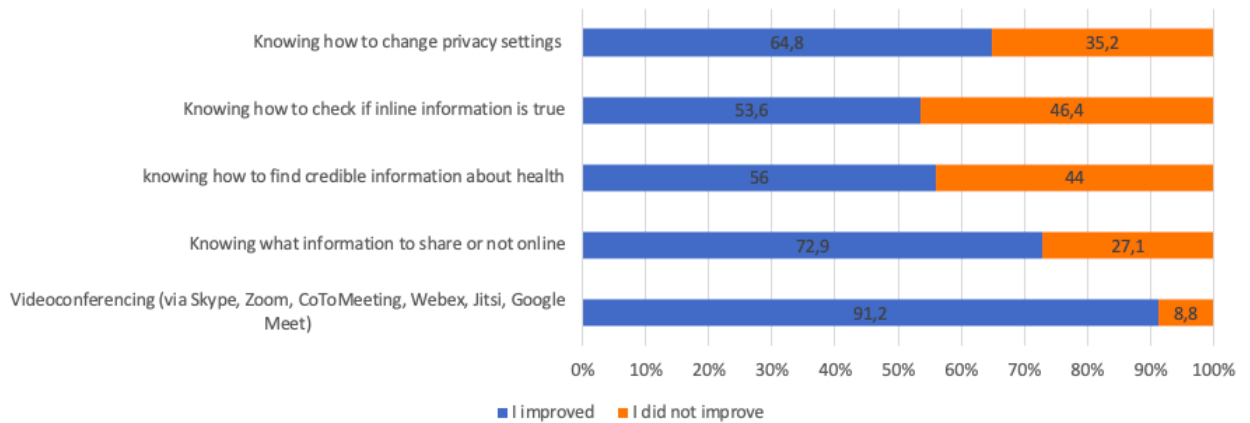
Source: own elabration

Another positive aspect that emerged in the interviews was the possibility of spending more time with the parents, which was highlighted by Henrique (PT7, 7 years old) and Patrícia (PT9, 6 years old). On the contrary, the children with more siblings, Ana (PT5, 10 years old) and Laura (PT8, 11 years old), missed spending time alone. The negative aspect that was more evident in the interviews was missing the grandparents and the classmates. Some children missed playing outdoors and their sports activities, as was the case of André (PT1, 8 years old) and Miguel (PT4, 9 years old), but there was also the case of Dinis (PT6, 12 years old), whose mother invited to walk and ride bike, and he refused because he preferred playing with his console.

In the survey, we explored the possibility of children being more exposed to risks, as they are spending more time online. However, as Figure 7 shows, most children report never having been exposed to the risks mentioned. The most frequent risk is coming across false information, which was reported as more frequent for 39,6% of the children. In the interviews, Henrique (PT7, 7 years old) reported as a negative aspect feeling tired of watching so much news about the pandemic on TV, and that they made him feel more scaredExposure to violent or inappropriate content is one of the main online risks explored in previous research (Ponte & Batista, 2018), and this was more frequent for 22% of the children.

Figure 7: Exposure to online risks during lockdown, by 10-18 children (in percentage)
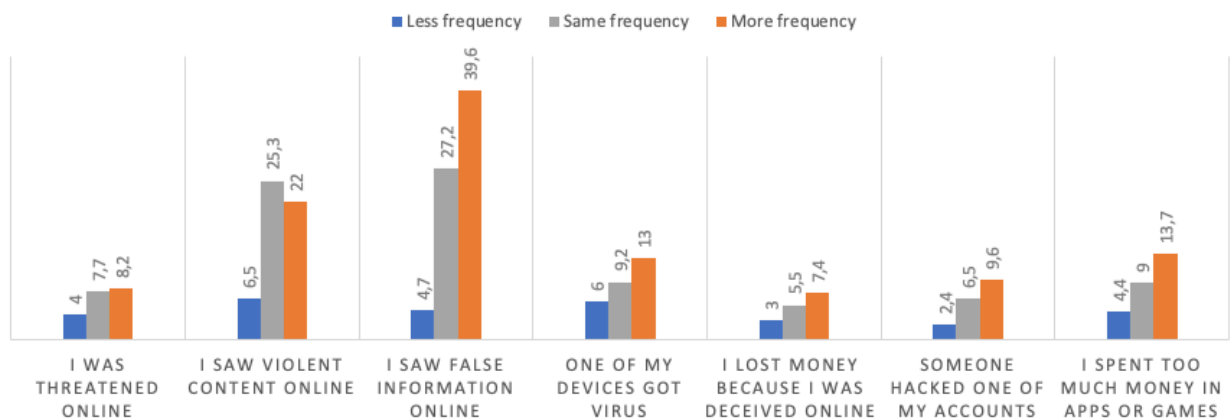
Source: own elabration

Children's wellbeing during lockdown

The perceptions of children about positive and negative aspects of the lockdown are very much connected to their wellbeing. For example, Figure X shows some online risks that may impact on wellbeing. For example, 20,8% of the children felt upset or disturbed more often because of content that they saw online. Contrary to previous research that indicates an increase of cyberbullying in Portugal (Ponte & Batista, 2018), only 28,8% of the children report being victims of mean or hurtful online messages, and only 12,6% claim this has happened with more frequency. During the interviews, Ana (PT5, 10 years old) talks about how their classmates sometimes exchange unpleasant messages in the Zoom chat during synchronous online classes, but she does not consider this an increase of bullying, she claims that "*what would happen in school now is happening on Zoom*".

Figure 8. Exposure to online risks during lockdown, by 10-18 children (in percentage).
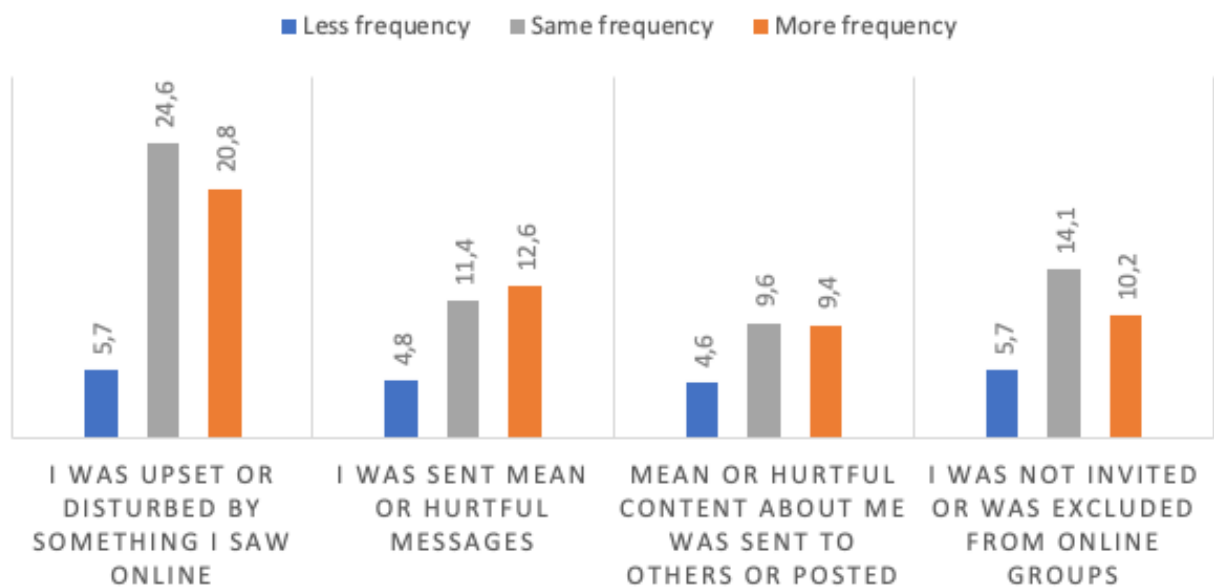
Source: own elabration

Some children feel that they are using digital media excessively - 76,9%. Also, 73,1% of the children tried to use the internet less during lockdown and failed. It is very significant that 42% of the children report having slept less or even not eaten because they were too engaged with online activities. This was the case of Miguel (PT4, 8 years old), who explained how he kept watching videos before going to sleep, checking the time, telling himself that it was time to sleep and he would just watch one more, and finally fall asleep around 2 a.m., with online classes on the next day. Dinis (PT6, 12 years old) also prefers to stay indoors and play console, despite his mothers' efforts to reduce his screen-time.

When questioned about more general aspects of their wellbeing, 64,1% claim being optimistic about their future, and during lockdown, 87,6% felt safer in their home. Figure 9 reveals that most children do not report negative changes in their wellbeing. However, significant percentages feel worried (44,6%), restless

(42,1%) and nervous (40,6%). In our qualitative sample, there are two cases that report problems in their wellbeing. Filipe (PT2, 6 years old) refuses to participate in his PreSchool Zoom classes because "*seeing my friends and not being able to hug them or play with them makes me even sadder*" and "*I don't like watching myself on the screen, I don't feel comfortable*". Henrique (PT6, 7 years old) started avoiding watching news on TV because that made him anxious, "*the news are always talking about how Covid-19 is getting worse, and there are more cases. That makes me afraid that me or my mother can get ill. I prefer not to watch*". Also, Ana (PT6, 10 years old) and Laura (PT8, 11 years old), who are members of big families, claim being tired of being closed at home with all their siblings and needing time for themselves, to "*be alone*".

Figure 9. How 10-18 children feel during lockdown (in percentage)
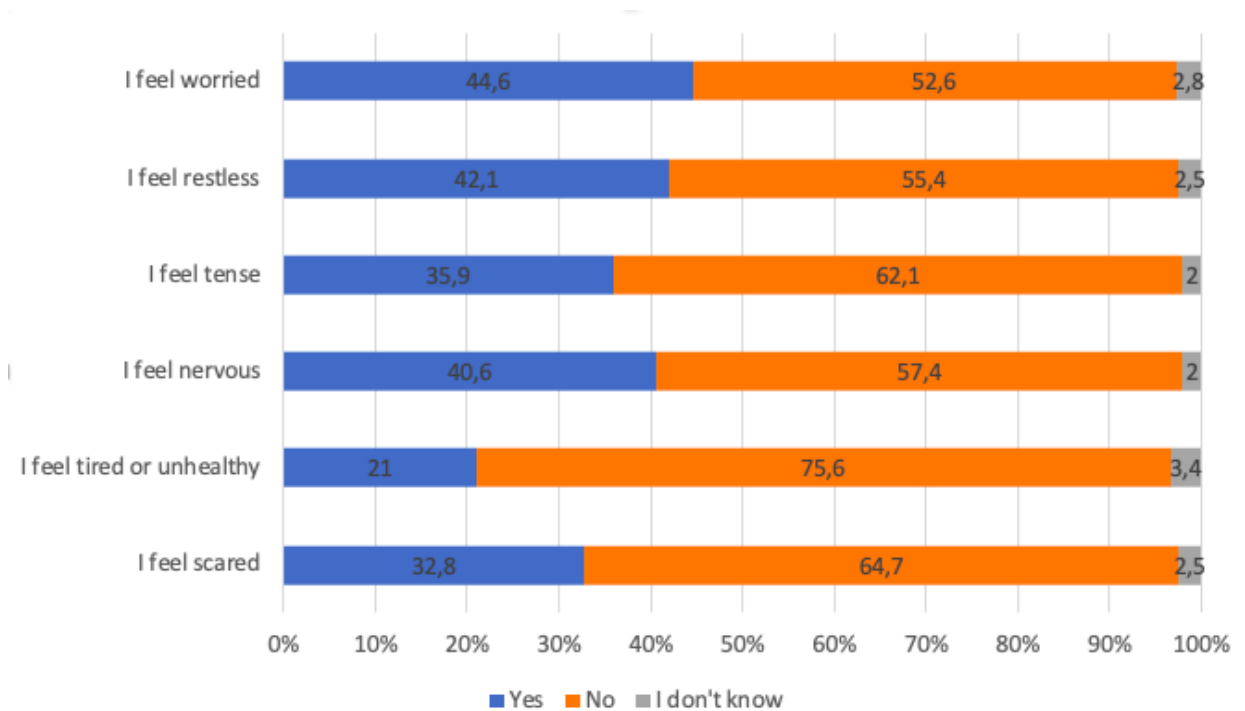
Source: own elabration

Conclusion

Our findings show that, during Covid-19 lockdown, children dedicated more time to digital technologies, and about half of such time was required by synchronous classes and schoolwork. Children developed new digital skills, prompted by the necessity of using platforms chosen by their schools and teachers. They also report a higher exposure to online risks, among which false information, hate speech and cyberbullying.

Studying from home was challenging. Children adapted quickly to the digital tools, but a significant number felt overwhelmed with a heavier workload and tired of spending so much time online, particularly the older children. The younger children were less autonomous and had difficulties in concentrating and learning

without support from parents. Parents and children look at the diverse models implemented by their schools and find them acceptable considering the circumstances but falling short when compared to presential school. Children highlight missing socializing with their peers.

This "forced" experience focused our reflection and efforts on concrete challenges: one is the important role played by school in ensuring equality and inclusivity, which must be preserved regardless of the learning method and context; another is the important role of school in promoting the development and wellbeing of children in dimensions that go beyond learning, among which mental health; and another is the acknowledgment that online learning is not "doing the same but using digital technology", and therefore an investment in teacher training must be made so that the full potential of digital technologies for learning can be harvested.

As positive aspects of the lockdown experience, children highlight the digital skills that they acquired and being able to spend more time with their parents. As negative aspects they mention missing family and friends, missing playing outdoors and practicing sports, feeling tired or bored, and feeling anxious and fearful about the pandemic. Regardless of these negative aspects, the majority of children do not reveal significant problems concerning their wellbeing. However, many reveal signs of internet addiction. Attention should be given to this indicator, and further research should explore if, after lockdown, children reduce their screen-time or feel withdrawal.

Bibliographical References

Brito, R., & Dias, P. (2017). A participação ética de crianças com menos de 8 anos em investigação qualitativa. *Edapeci* – Volume Especial Ética em Pesquisa em Contextos Educativos, *17*(2), 16-29. https://doi.org/10.29276/redapeci.2017.17.26516.16-29

Carretero-Gomez, S., Napierala, J., Bessios, A., Mägi, E., Pugacewicz, A., Ranieri, M., Triquet, K., Lombaerts, K., Robledo Bottcher, N., Montanari, M. & Gonzalez Vazquez, I. (2020). *What did we learn from schooling practices during the COVID-19 lockdown.* EUR 30559 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-28418-5, doi:10.2760/135208, JRC123654.

Chassiakos, Y., Radesky, J., Christakis, D., Moreno, M. & Cross, C. (2016). Children and Adolescents and Digital Media. *Pediatrics, 138*(5). https://doi.org/10.1542/peds.2016-2593

Chaudron, S., Di Gioia, R. & Gemo, M. (2018). *Young children (0-8) and digital technology, a qualitative study across Europe.* EUR 29070; doi:10.2760/294383. https://bit.ly/2XwYDNn

Creswell, J. (2003). Res*earch Design, Qualitative, Quantitative, and Mixed Methods Approaches.* Thousand Oaks: Sage Publications.

De, R., Pandey, N., & Pal, A. (2020). Impact of Digital Surge during Covid-19 pandemic: A viewpoint on research and practice. *International Journal of Information Management, 55.* doi: 10.1016/j.ijinfomgt.2020.102171

Dias, P. & Brito, R. (2016). *Crianças (0 a 8 anos) e Tecnologias Digitais*. Lisboa: Centro de Estudos em Comunicação e Cultura, Universidade Católica Portuguesa. Disponível em http://hdl.handle.net/10400.14/19160

Dias, P., & Brito, R. (2017). *Crianças (0 a 8 anos) e Tecnologias Digitais: Que mudanças num ano?*. Lisboa: Centro de Estudos em Comunicação e Cultura, Universidade Católica Portuguesa. Disponível em http://hdl.handle.net/10400.14/22498

Drane, C., Vernon, L., & O'Shea, S. (2020). *The impact of 'learning at home' on the educational outcomes of vulnerable children in Australia during the Covid-19 pandemic*. National Center for Student Equity in Higher Education, Curtin University. Retrieved from https://bit.ly/3npvSNd

Esteves, M. (2006). Análise de Conteúdo. In J. A. Lima, & J. A. Pacheco, (org.), *Fazer investigação – Contributos para a elaboração de dissertações e teses*. Porto: Porto Editora.

Garbe, A., Ogurlu, U., Logan, N., & Cook, P. (2020). Parents' Experiences with Remote Education during COVID-19 School Closures. *American Journal of Qualitative Research, 4*(3), 45-65. https://doi.org/10.29333/ajqr/8471

Ghiglione, R., & Matalon, B. (2005). *O Inquérito: Teoria e prática*. Oeiras: Celta Editora.

Gómez-Gerdel, M.A. (2020). El cerebro pleno del niño/a: la labor de un/a maestro/a de Educación Inclusiva con las familias en tiempos de confinamiento. Una reflexión educativa. *Revista Internacional de Educación para la Justicia Social, 9*, 1–10.

Guernsey L., Ishmael K., & Prescott S. (2020). *Online learning in the wake of COVID-19 tips and resources for PreK-12 with equity in mind.* New America. Retrieved from https://bit.ly/3nkW8Za

Jiao, W.Y., Wang, L.N., Liu, J., Fang, S.F., Jian, F.Y., Pettoello-Mantovani, M. & Somekh, E. (2020). Behavioral and Emotional Disorders in Children during the COVID-19 Epidemic. *Journal of Pediatrics, 221*, 264-266. DOI: 10.1016/j.jpeds.2020.03.013

Krumpal, I. (2013). Determinants of social desirability bias in sensitive surveys: a literature review. *Quality & Quantity 47*(4), 2025-2047**.** https://doi.org/10.1007/s11135-011-9640-9

Lee, S.J., Ward, K., Chang, O., & Downing, K. (2020). Parenting Activities and the Transition to Home-based Education During the COVID-19 Pandemic. *Children and Youth Services Review,* 105585. https://doi.org/10.1016/j.childyouth.2020.105585

Liu, J.J., Bao, Y., Huang, X., Shi, J., & Lu, L. (2020). Mental health considerations for children quarantined because of Covid-19. *The Lancet - Child and Adolescent Health, 4*(5), 347-349. https://doi.org/10.1016/S2352-4642(20)30096-1

Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2011). *Risks and safety on the internet: the perspective of European children: full findings and policy implications from the EU Kids Online survey of 9-16 year olds and their parents in 25 countries.* EU Kids Online, Deliverable D4. EU Kids Online Network, London, UK.

Livingstone, S., Mascheroni, G., Ólaffson, K., & Haddon, L. (2014). *Children's Online Risks and Opportunities: Comparative findings from EU Kids Online and Net Children Go Mobile*. London: London School of Economics and Political Science. https://bit.ly/3osTDFA

Livingstone, S. & Bulger, M. (2014). A Global Research Agenda for Children's Rights in the Digital Age. *Journal of Children and Media, 8*(4), 317-335, DOI:10.1080/17482798.2014.961496

Livingstone, S., & Third, A. (2017). Children and young people's rights in the digital age: An emerging agenda. *New Media & Society, 19*(5), 657–670. https://doi.org/10.1177/1461444816686318

Livingstone, S., Óláfsson, K, Helsper, E., Lupiáñez-Villanueva, F., Veltri, G., & Folkvord, F. (2017). Maximizing Opportunities and Minimizing Risks for Children Online: The Role of Digital Skills in Emerging Strategies of Parental Mediation. *Journal of Communication*, *67*(1), 82–105. https://doi.org/10.1111/jcom.12277

Lobe, B., Velicu, A., Staksrud, E., Chaudron, S. & Di Gioia, R. (2020). How children (10-18) experienced online risks during the Covid-19 lockdown. Joint Research Center. https://doi.org/10.2760/562534

Masonbrink, A.R., & Hurley, E. (2020). Advocating for Children During the COVID-19 School Closures. *Pediatrics, 146*(3). https://doi.org/10.1542/peds.2020-1440

Miranda, D., Athanasio, B., Oliveira, A.C., & Simões-e-Silva, A.C. (2020). How is OCvid-19 pandemic impacting mental health of children and adolescents? *International Journal of Disaster Risk Reduction, 51*. https://doi.org/10.1016/j.ijdrr.2020.101845

Patrick, S., Hankaus, L., Zickafoose, J., Lovell, K., Halvorson, A., Loch, S., Letterie, M. & Davis, M.M. (2020). Well-being of Parents and Children During the COVID-19 Pandemic: A National Survey. Pediatrics 146(4). https://doi.org/10.1542/peds.2020-016824

Phelps, C., & Sperry, L.L. (2020). Children and the COVID-19 pandemic. Psychological Trauma: Theory, Research, Practice, and Policy, 12(1), 73-75. http://dx.doi.org/10.1037/tra0000861

Ponte, C., Simões, J.A., Batista, S., & Jorge, A. (2017). *Crescendo entre Ecrãs: O uso de meios tecnológicos por crianças (3 a 8 anos)*. Entidade Reguladora para a Comunicação Social (ERC). Retrieved from https://bit.ly/39hwteM

Ponte, C., & Batista, S. (2019). *EU Kids Online Portugal. Usos, competências, riscos e mediações da internet reportados por crianças e jovens (9-17 anos)*. EU Kids Online e NOVA FCSH. https://bit.ly/2XnKClm

Tso, W.W.Y., Wong, R.S., Tung, K.T.S. et al. (2020). Vulnerability and resilience in children during the COVID-19 pandemic. *Eur Child Adolescent Psychiatry.* . https://doi.org/10.1007/s00787-020-01680-8

UNESCO (2020). 10 recommendations to ensure that learning remains uninterrupted. https://bit.ly/3bokdvI

Vuorikari, R., Velicu, A., Chaudron, S., Cachia, R., & Di Gioia, R. (2020). How families handled emergency remote schooling during the Covid-19 lockdown in spring 2020 - Summary of key findings from families with children in 11 European countries. Joint Research Center. https://doi.org/10.2760/31977

Wang, G., Zhang, Y., Zhao, J., Zhang, J., & Jiang, F. (2020). Mitigate the effects of home confinement on children during the Covid-19 outbreak. *The Lancet, 395*(10228), 945-947. https://doi.org/10.1016/S0140-6736(20)30547-X