

SMALL CHILDREN IN FRONT OF SCREENS: CROATIA IN RELATION TO EUROPE AND THE WORLD

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Small children and small screens through history

In today's society, modern technologies are an integral part of the life of almost every adult, including children. Research interest in this area has existed for the last 70 years. Ever since televisions have entered households en masse, it is clear that they have a major impact on everyday life and thus capture the attention of researchers. The first research dealt with television as the most accessible small screen of the time, so Schramm in his classic work as early as 1961 considers the role of television in the lives of young children and predicts its significant impact through generations to come, both positively and negatively.

In the next decade, researchers will focus on more specific research problems in this area - for example, Doolittle and Pepper (1975) find negative effects of children's exposure to uncensored television commercials, Verna (1975) studies the portrayal of women in children's television cartoons, Goldberg, Gorn and Gibson. (1978) link TV content to children's preference for junk food. It is noticeable, therefore, that as early as the 1970s, the TV program was associated with very diverse and important aspects of life, such as diet or gender identity. In the 1980s, researchers turned to the family facts of children's television use, for example Eron (1982) found that children who watched more violent television content were more likely to exhibit aggressive behavior, while the parent-child relationship proved to be an important mediator variable. Taras, Sallis, Nader, and Nelson (1990) find that television use in young children is significantly associated with their parents' television use; attention is drawn to model learning.

It was not until the 1990s that children were born who were in front of small screens almost from birth. At the same time, in more and more households, in addition to televisions, there are other electronic devices, and research is focused on each of them individually, taking into account the advantages and disadvantages of their use. For example, focusing on personal computers, Underwood and Underwood (1990) find positive effects of using certain computer programs on children's thinking development and learning. Brown (2011) finds that with adequate adult guidance, the use of small screens can be stimulating for general psychomotor development, even of very young children. On the other hand, Cordes and Miller (2000) warn of a number of negative effects of children's computer use such as social isolation, impaired creativity, language development, and the like. LeBlanc et al., (2012) warn of the danger of physical health impairment; find direct negative effects of "sedentary" activities, among which the use of small screens dominates, on the motor development of children up to four years of age.



Growing up with small screens

A number of electronic devices available to children and young people continue to be developed, and researchers are increasingly researching children's use of individual devices; talk about "digital media". Villani (2001) emphasizes that it was not until the early 2000s that the first real results of children's lifelong exposure to digital media could be observed, and that children who were exposed to more time and, with less content control, could see more aggressive and risky behaviors.

Longitudinal research in this area is rare, but for example Landhuis, Poulton, Welch, and Hancox (2007), who conducted the study in six stages, report significant attention deficit deficits in adolescents who were more exposed to small screens as preschoolers. Although modern technologies have aroused great interest and enthusiasm of the general public and can be useful for children and young people, experts are increasingly emphasizing their harmfulness to children's development, if they are not used moderately and appropriate to the age of the child. Depending on when, how, with what content and with how much parental involvement children use modern technologies, they can be a valuable tool for them, but also a source of developmental risks (e.g. Cordes and Miller, 2000; Ernest et al., 2014).

Today, the term Screen Time is systematically used in research and theories, which refers to the total time a person spends in front of small screens - television, mobile phone, tablet, computer, game consoles and something similar (Alper, 2014). Rideout, Foehr and Roberts (2010) found that children and young people (8-18 years) spend more than 7 and a half hours a day in front of small screens, and if we consider parallel use (for example, watching TV while using a mobile device) , the figure climbs to more than 10 hours a day.

While there are numerous findings on the Screen Time of school-age children and adolescents and on preschool children and their use of television and / or video games, scientific interest in preschool children and their overall Screen Time is still in its infancy. Extensive research on this topic, according to data from over 1000 parents of preschool children, was conducted in the United States by Vandewater et al., (2007). They found that most children continued to use TV (75%), followed by video content, e.g., DVD (32%) and computers (27%); a fifth of children under the age of two and a third of children under the age of six have a TV in the bedroom; more than 70% of children start using small screens before the age of two, and use small screens for an average of just over two hours a day.

De Decker et al., (2012) investigated how much time preschoolers spend in front of small screens in six European countries and obtained really diverse results - from 20 minutes to 4 hours a day. The lowest Screen Time for preschool children is reported by parents in Germany and Spain (20-30 minutes a day), parents from Greece (half an hour to an hour and a half a day), while parents from Belgium, Poland and Bulgaria state that their preschool children use small screens from one to four hours a day.

In the same study, parents reported that children sometimes switch to other activities on their own, such as while watching a cartoon, starting to paint or draw. In this case, parents generally feel that the child is no longer exposed to the small screen, which is not entirely

true. In addition to the Screen Time itself, screen saturation is shown to be significant for children's development (Vandewater et al., 2007), which represents the total number of electronic devices in the household that work in the presence of the child and affect the child.

In part of the research, special attention was paid to the use of small screens during meals or just before bedtime. It has been shown that this creates certain habits and patterns of future behavior in children - more precisely, it sends them the message that the use of small screens is closely related to the performance of basic life functions. Crowder et al., (2012) in a qualitative study with parents of preschool children find that one of the main reasons parents give young children electronic devices to use is precisely the idea that they will fall asleep more easily. On the other hand, experts recommend that the whole family in certain parts of the day, such as lunch and dinner together, declare a "technology-free zone," that is, engage in mutual conversation (Reddy, 2015).

According to the recommendations of the American Academy of Pediatrics (AAP, 2016), children under the age of two should not be exposed to small screens at all, exceptionally between the ages of 18 and 24 months with a selected and high-quality program, limited consumption with an adult. Although it was previously recommended that children spend a maximum of two hours a day with small screens until they start school, according to the 2016 guidelines, this number has been reduced to a maximum of one hour a day with the constant involvement of parents. It also emphasizes the importance of introducing rules about the total time a child spends in front of small screens, the time (per day) when small screens are used, which small screens, and what content is used.

Goal

This paper is part of the results of a more extensive research project on Screen Time of preschool children and their developmental outcomes. The aim of this paper is to present general data on the habits of using small screens in preschool children in Croatia, given that this is the first comprehensive research on the topic in national and European context, and compare the results with existing data in other countries. Some of the results were originally published on the website of the Zagreb Child and Youth Protection Center (2017) immediately after the end of the research so that the main descriptive data would be available primarily to practitioners working directly with children, parents and families. education and support in the upbringing of children of the Screen Time generation. In this paper, the data are presented systematically and in detail in the scientific-methodological framework, compared with related data from other European and world countries and placed in the context of theory and practice.

Methodology

The results are based on data collected as part of the first national survey on the use of small screens in early childhood during 2017.

The research included a suitable sample of 655 children aged 18 months to 7 years ($M = 5$; $SD = 1.2$) who attend kindergarten in different rural and urban areas in the Republic of



Croatia, approximately equal to boys (53%) and girls (47%). Questionnaires were filled out by their guardians - 80% of respondents were mothers, 19% fathers, and 1% other persons close to the child (grandmother, foster mother). The average age of child caregivers was 36.6 years (SD = 5.3; min = 22; max = 59). Due to the small number of other caregivers, the term parents will be used for all of them.

Parents reported (1) demographic data, (2) children's and (3) their own habits of using small screens, (4) ways of directing and (5) controlling children in their use through a questionnaire developed for research purposes (Screen Time questionnaire), and whose results will be discussed in this paper.

In order to assess various aspects of healthy child development and developmental disorders, the following measures were applied: Measurement of socioemotional development [SEAM] (Squires, Bricker, Waddell, Funk, Clifford, Hoselton, 2014), Checklist of child behavior (Achenbach, 2017) and questionnaires that were completed by parents following the Screen Time questionnaire, the results of which will not be discussed in this paper.

The questionnaires were applied in controlled conditions in preschool institutions during a meeting with parents organized by the kindergarten administration with the permission of the competent Ministry, the Agency for Education and the director of the kindergarten. Filling was performed by trained examiners, and the total duration of filling was about 45 minutes. Data from 653 participants were used in the final analysis.

Saturation of small screens

The results of the research indicate a significant saturation of small screens in households where preschool children grow up. Every child grows up in a household in which electronic devices are present in the family; in their households they have an average of 6.35 electronic devices (SD = 2.27; min = 2; max = 17), and 80% of preschool children live in a household with five or more copies of small screens (Table 1).

Table 1. Saturation of small screens in households of preschool children (N = 653)

Electronic devices	The share of the household that owns it	number of device copies		
		M	SD	range
TV	99,8	1,55	0,73	0-5
Cell phone	99,8	2,56	0,98	0-8
Computer or laptop	98	1,36	0,68	0-5
Tablet	79,3	0,94	0,63	0-5
Game consoles	37,3	0,40	0,65	0-4
In total	100	6,36	2,27	2-17

These data indicate a high saturation of children with small screens, which corresponds to American research. The difference can be seen in which electronic devices in the household are preferred by American and Croatian families with small children. According to Vandewater et al., (2007), almost all households with preschool children have televisions, as



shown by the results of this study. However, game consoles are found in 80% of households with young children in the United States, and in Croatia in less than 40%. In Croatia, in addition to televisions, most households have mobile phones (99.8%), followed by (laptops) (98%) and tablets (79.3%).

Croatian households with small children have the most mobile phones, on average 2.56 (SD = 0.98) per household, while the USA has the largest number of televisions. As many as one-fifth of American families with preschool children have four or more televisions, and in Croatia the average number of televisions per household is 1.55 (SD = 0.73). However, in both Croatia and the USA, it is customary to place a TV in a child's bedroom, so that about a third of preschool children have a TV in the room where they sleep (27% in Croatia and 31% in the USA).

Table 2. Share of children owning a mobile phone by age group (N = 653)

Age	Owning your own cell phone
Until 2 years old	0
2 and 3 years old	4,1
3 and 4 years old	4,6
6 and 7 years old	9,3

When asked if children have their own mobile devices, 6% of parents answered in the affirmative, with owning a mobile phone becoming more frequent with age and reaching 9.3% of children aged 6 and 7 (Table 2). The question arises of the purpose of a mobile device for a preschool child that should always be supervised by an adult - the purpose is clearly not primarily of a communication type. Comparable data from other countries for this particular particle are not available in the literature. For example, Campbell (2005) in a review paper discusses data on children and young people who have their mobile devices on different continents and in different countries, but the lowest age group, which is investigated, are children of early school age.

Table 3. Proportion of children using small screens by age (N = 653)

Age	Proportion of children using small screens
Younger then one years old	17,8
1 year old	58,4
2 years old	87,6
3 years old	95
4 years old	98,1
5 years old	99,5
6 years old	100

Children with small screens on average encounter as early as the second year of life (M = 1.69; SD = 1.01; min = 0.8; max = 6.92). Based on parents' reporting on the age when their children started spending time with small screens, we find that 58.4% of children aged one



year, 87.6% of two-year-olds spend time with screens, and almost all children do so at the age of three (95%). The biggest jump is observed between the first and second year of children's lives, which can be attributed to the expiration of parental leave, changes in the structure of days and lives, fatigue of parents who use small screens to entertain children and the like, which should be covered by further research. This information is also important for prevention and early intervention programs, ie it focuses on the critical age when parents start exposing their children to small screens more often. Later onset of exposure of children to small screens is important for a number of developmental outcomes, for example Chonchaiya and Pruksananonda (2008) find a significantly higher risk of developing language difficulties in children who have previously started using small screens, and the most at risk group are children who have started using small screens before the first year and use them for two hours or more (six times the risk).

Since access to electronic devices in preschool is still largely dependent on parents or guardians, the research also covered the motivation of parents to provide access to small screens to children.

Table 4. Frequency of individual caregiver motivation to provide access to electronic devices to children (N = 653)

Motivation to provide access to electronic devices to children	Never	Rarely	Sometimes	Often	Always
For fun	3,8	9	37	41,5	8,7
For learning	4	12,1	45	33,3	5,6
For capture attention	9,6	30	40,5	17,2	2,7
For easier fitting	47,7	26	19,5	6,3	0,5

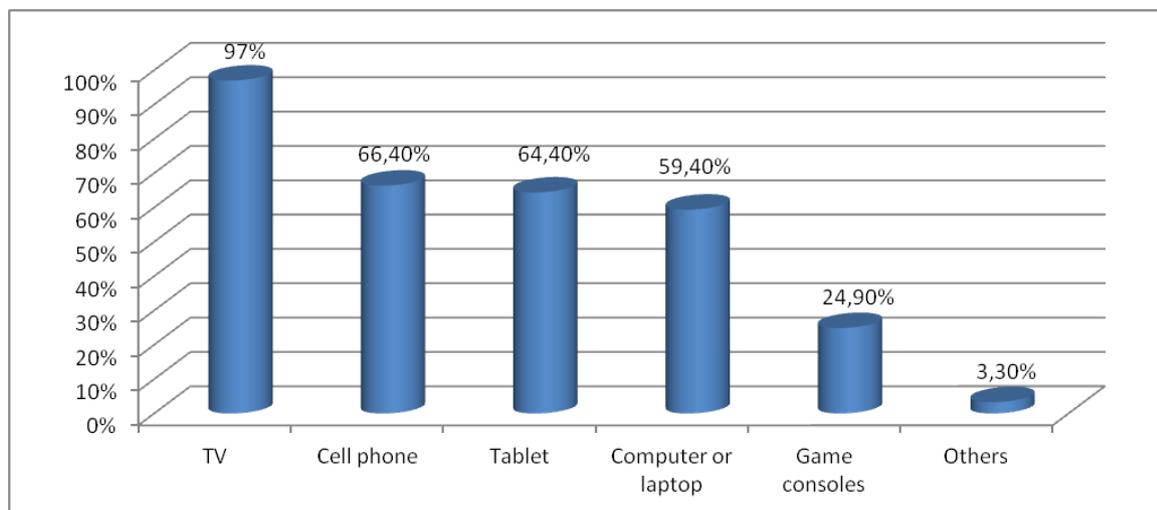
From Table 4 it can be seen that the motivation of parents to provide access to electronic devices is multiple. Every other parent often or always provides access to small screens to keep the child entertained while almost half sometimes do so to help children learn something. It is important to note that more than 60% of parents sometimes or more often allow their children to use small screens to get their attention. This intent is sometimes understandable, but raises concerns for researchers if this parental behavior is a pattern because electronic devices are known to have a long-term negative impact on children's attention and cannot replace parental supervision and child care (e.g., Kirkorian, Wartella, & Anderson, 2008; Landhuis et al., 2007).

It is also evident that more than half of parents, at least in some situations, allow access to small screens to make it easier for a child to fit into the middle of their peers. This motivation of parents leads researchers to question the value system of the family, but also the society in which children grow up and the pressures that parents face in order to enable children to more easily fit into the social environment. The practical implication is to explore with parents these and possible additional reasons for providing small screens to their children and to explore other ways (which will not be risky) to meet the needs of both theirs and their children, which they consider to satisfy them on small screens.



Habits of using small screens in preschool

Figure 1. Frequency of use of an individual electronic device in preschool children (N = 653)



The medium that is still most present in the lives of children is television, which is watched by 97% of preschool children. As can be seen from Figure 1, according to the frequency of use, mobile phones, tablets, computers or laptops follow, while the least widespread are game consoles, which are played by every fourth preschool child. Fewer children also use another electronic device, such as a portable DVD or virtual reality glasses. Compared to the American data (Vandewater et al., 2007), preschool children in Croatia use televisions in a significantly higher percentage (97% vs. 75%), as well as computers (59.4% vs. 27%), while for other electronic devices no data available. This can be explained by differences in media culture and habits of Croatian and American households, as well as the relatively large passage of time since the conduct of American and Croatian research; it is known that trends in digital media are changing rapidly (Brown, 2011).

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Most children have been shown to possess skills that allow them to actively shape their experience of using electronic media. Almost all children know how to turn on an electronic device on their own (96.5%), independently search (89.1%) and run the content they want (89.6%), three out of four children (76.7%) know how to take photos or record mobile phone, and almost every other child uses the Internet independently (43.4%). From the above, it follows that children from an early age are very active in the use of modern technologies, and not just passive recipients of information, which is confirmed by other research. For example, Couse and Chen (2010) in a study on learning through modern technologies in young children (ages 3 to 6 years) find very active and spontaneous involvement of children in the use of tablets, increased interest in learning content and the ability to overcome frustration due to ignorance of technology, which the authors explain by the relatively quick finding of a solution.

Although the findings cannot be directly compared with some foreign studies because they were conducted methodologically differently (usually on a sample of a narrower age range), it is possible to illustrate the differences between European countries. Ofcom (2012) finds that in the United Kingdom 87% of children aged 5 and 6 use the Internet independently, in

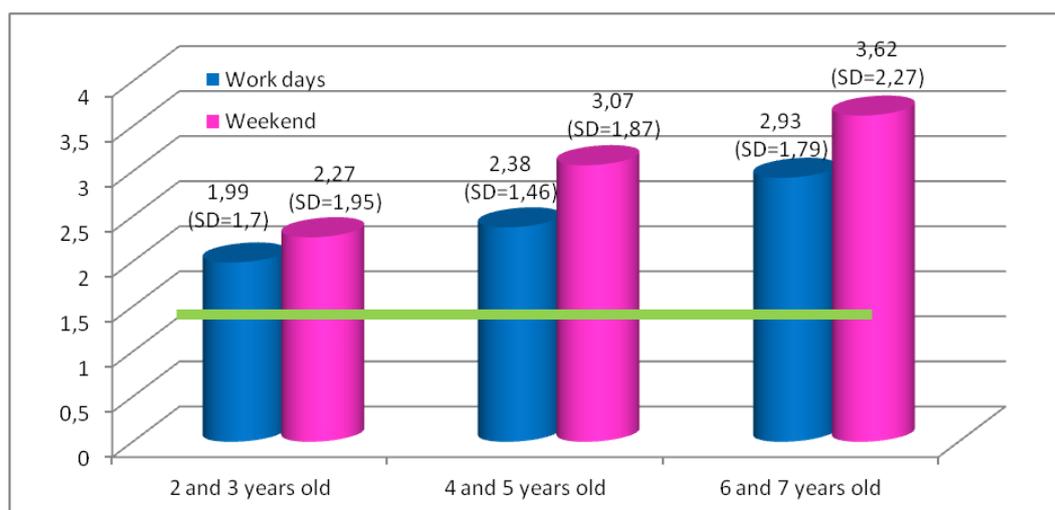


the Netherlands it is 78% of preschoolers (Brower et al., 2011), while according to Pääjärva (2012) in Finland only 64% of seven-year-olds active online. Croatian results (43.4% of preschool children on the Internet) are most similar to Austrian data (Jungwirth, 2013), where also slightly less than half of preschool children use the Internet. Holloway, Green, and Livingstone (2013) explain the described differences primarily by cultural specificities and the overall technological development of countries in relation to the importance attached to relationships and physical activity. South Korea stands out as an extreme example of rapid technological development and the impact of the Internet on everyday life, where 93% of children aged 3 to 9 use the Internet for an average of eight to nine hours a week (excluding other uses of small screens) (Jie, 2012; according to Holloway et al., 2013).

The time children spend in front of screens goes beyond the current recommendations of the American Academy of Pediatrics (2016) based on current knowledge of possible implications for the development and well-being of children suggesting that time between two and five years should be limited to an hour. Children with different electronic devices spend an average of 2.42 hours on weekdays (SD = 1.64) and 3.03 hours on weekends (SD = 2.05), and Figure 2 shows, with regard to the age group, how many children spend hours a day with small screens, weekdays and weekends.

One-way analysis of variance found that with age there is a significant increase in time spent with electronic media on weekdays ($F(2, 369) = 13.37; p < .001$) and weekends ($F(2, 368) = 17.17; p < .001$) (Figure 2). Differences between individual age groups were examined by the Scheffe test. The results indicate that there is an increase in time spent with screens on weekdays in the age group of 6 and 7 years, and that children aged 6 and 7 spend significantly more time with screens on weekdays than younger children ($M_{2.3} = 1.99 < M_{6.7} = 2.38; p > .001$; $M_{4.5} = 2.38 < M_{6.7} = 2.38; p > .001$), while the difference between the younger groups is not significant.

Figure 2. Number of hours spent with screens by age (N = 653)

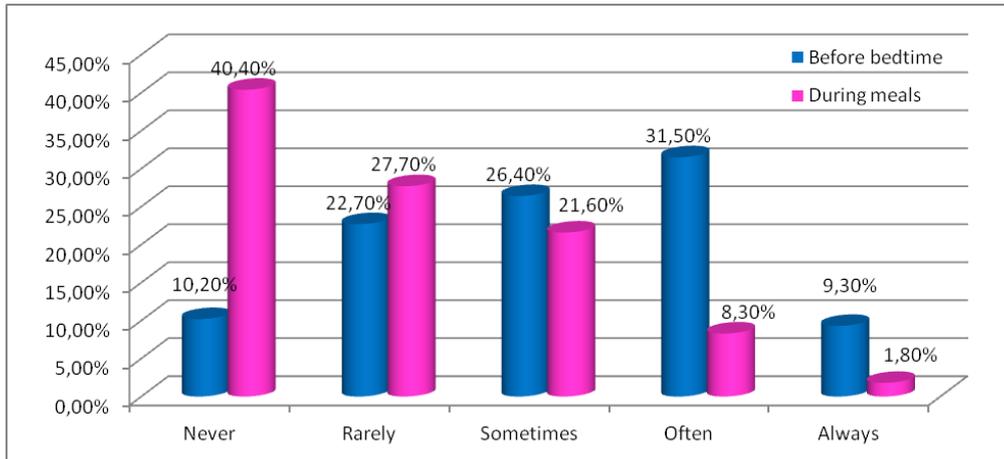


* the green line represents the recommendation of the American Academy of Pediatrics (2016) on the maximum recommended exposure to screens; data available only for children up to 6 years of age



The time children spend with electronic media on weekends systematically increases with age ($M_{2.3} = 2.27 < M_{4.5} = 3.07$; $p > .01$; $M_{2.3} = 2.27 < M_{6.7} = 3.62$; $p > .01$; $M_{4.5} = 3.07 < M_{6.7} = 3.62$; $p > .05$). As the number of children under the age of two was small, they were not included in the analyzes.

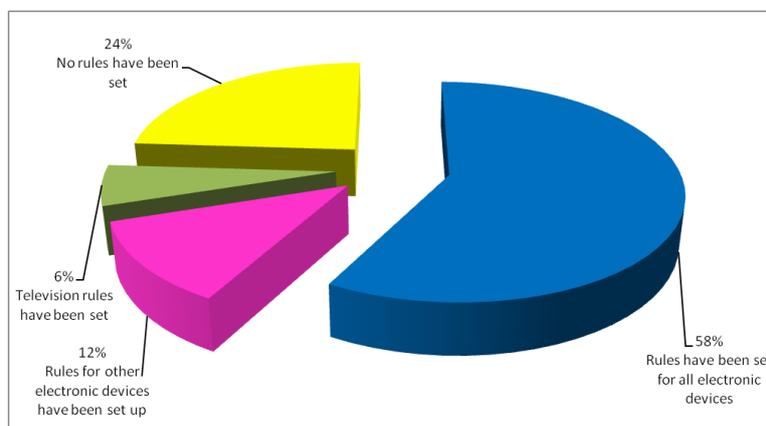
Figure 3. Frequency of children's use of electronic media within an hour before bedtime and during meals (N = 653)



In addition to the amount of Screen Time, its timeliness is also important. Excessive use of electronic media in preschool age is considered risky and their use just before bedtime and during meals, which research links to sleep difficulties (De Jong et al., 2013; Garrison, Liekweg and Christakis, 2011; Paavonen, Pennonen, Roine, Valkonen and Lahikainen, 2010) and overweight (Dennison, Erb, & Jenkins, 2002; Epstein et al., 2008). Nine out of ten parents state that their child at least sometimes spends time with screens within an hour before bedtime (89.8%), and 40.6% that they do so often or always (Figure 3). It can be seen from Figure 4 that electronic devices are used at least occasionally by every third child during a meal (59.5%), while one in ten does so often or always (10.1%). These results also point to the importance of parent education and prevention.

Strategies for parental guidance in the use of electronic media in preschool age

Figure 4. Frequency of parental setting of rules related to the child's use of small screens (N = 653)



From Figure 4 we can see that parents estimate that at least sometimes without their supervision 47% of children spend time with television, 38% with tablet, 26% with computer, and 26% without adult supervision play video games. Although three out of four children (76%) in the family have certain rules regarding the use of small screens, in 18% of families the rules are set only for some devices, and for every fourth child (24%) the rules are omitted.

Unsupervised children most often use a tablet (75%), followed by a television (70%), and two-thirds of preschool children use a mobile phone and computers without adult supervision.

Adult supervision can also be at different levels, so it turned out that parents, who reported monitoring their child's activities on electronic devices, are 40% always with the child, 30% continuously monitor the content to which the child is exposed, and only 11% always watch facilities together with the child. One-fifth of parents state that they never comment with the child on the content to which the child is exposed on small screens.

Such behaviors are also inconsistent with the recommendations (AAP, 2016) that children under the age of 5 should consume high-quality media content, not only under supervision, but with the involvement of an adult. For older children, these recommendations are somewhat more flexible, but still include adult activity whose role is to guide children through content on small screens.

Parents' low reliance on computer programs to monitor children's activities and protect them from inappropriate content was noted. Only one in three parents (36%) use programs on computers that restrict children's access to inappropriate content, and one in four use programs that monitor their child's activity (26%). On mobile phones, programs that restrict access to inappropriate content were installed by 29%, and programs that monitor child activity by 24%. Among parents who report that their preschool child uses the Internet, one in two checks their child's search history frequently or always (54%), one in five states that they do so sometimes (22%), while one in four rarely or never (25%).

33% of parents are completely satisfied with their knowledge of electronic devices, while the harmfulness and usefulness of electronic devices for their children is not entirely clear. According to the obtained data, as many as 50% of parents do not know how to assess whether electronic devices are harmful or useful for their children, 17% consider them more useful, and 33%, or one third of parents, consider them more harmful. However, all children in the sample still use electronic devices.

The results indicate the need for stronger parental support for children in developing digital literacy and the use of modern technologies through supervision, rules and sharing.

Conclusion

The results of the research point to the significant presence of electronic devices in the environment in which preschool children grow up, as well as in the rest of Europe and in America. Every child grows up in a household with electronic devices and there is a high

saturation of children with small screens - more than 80% of children live in households with more than five electronic devices, and the same number of electronic devices begin to use before the second year of life. The results show that children from an early age are very active in the use of modern technologies, not just passive recipients of information. However, it is worrying how much time children spend with screens because it significantly exceeds the current recommendations of experts - while on weekdays Screen Time is almost twice as much as recommended, on weekends the use of electronic media is even greater. It was also found that with age there is a significant increase in time spent with electronic media. Of the risky Screen Time behaviors, the use of electronic devices before bed and during meals is also observed.

Establishing rules, monitoring the use and assessing the harmfulness and usefulness of electronic devices proved to be particularly challenging areas for parents in this study - a large number of children use small screens unsupervised, and for every fourth child the rules of use are completely absent. Parents say that the harmfulness and usefulness of electronic devices for their children are not entirely clear to them, and only a third of them are completely satisfied with their knowledge of small screens.

The study also observed a trend of cell phone ownership among preschool children. Considering the motivation of parents to enable the use of electronic devices and the stress they report on, the question arises of the importance and possibility of spending quality time with children as well as the values and social norms within which parents raise children.

Taking into account the guidelines of the American Academy of Pediatrics, the results show that a large number of children are at risk for developing the negative consequences of excessive use of electronic devices because the manner and amount of screen exposure exceeds the recommended guidelines. on the subject.

Also, the results point to the importance of educating all caregivers about the possibilities and impact of modern technologies, in order to strengthen their and the child's skills of media literacy and critical thinking of the content they consume. These results are of particular importance to professionals working with children and their carers, but also to those involved in technology development, to take responsibility for providing parental support and healthy child development.

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