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AN INVESTIGATION OF PRESCHOOL CHILDREN'S DIGITAL FOOTPRINTS AND SCREEN TIMES, AND OF PARENTS' SHARENTING AND DIGITAL PARENTING ROLES

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ABSTRACT

With rapid advances in technology, young children gain rich digital experiences by using various information and communication technologies in the home environment from an early age. Therefore, parents have an important role in selecting appropriate content, providing guidance, and monitoring their children's digital activities. This study aims to investigate the activities of preschool children in digital environments, their screen time and digital footprints, as well as digital parenting roles within their families. The study's sample consists of 628 preschool children and their parents. The study's findings reveal that 97.5% of families have a television at home, 43.45% have desktop computers, 49% have laptop computers, 98.25% have smart phones, and 68% have tablets. Of the children participating in the study, 86% use information and communication technologies such as computers, tablets, or smartphones. Among parents, 68% share photos of their children on digital platforms. Parents also have concerns about the potential harm these technologies pose to children's emotional development (f = 198), as well as the addictive and time-consuming nature of these technologies (f = 165). Regarding parents' views on technology use in early childhood, 45.38% of parents are against it while 33.28% are in support of it, and 21.34% remain undecided. The study findings were discussed in the context of the related literature.

Keywords: Preschool, children, screen time, digital footprint, digital parenting roles.

INTRODUCTION

Young children have rich digital experiences from a very early age, using various information and communication technologies that are now available at home due to rapid advances in technology (Akkoyunlu & Tuğrul, 2002; Aktaş-Arnas, 2005; Altun, 2017; Holloway, Green, & Livingstone, 2013; Marsh, 2010). Prensky (2001) used the terms "digital natives" and "digital immigrants" to articulate generational differences in technology use. Digital immigrants encounter technology at some later point in their lives, and must make an effort to understand and learn about digital tools and applications. Digital natives are those born after the 1980s, during the age of digital technology, for whom that technology is indispensable. According to Guðmundsdóttir and Hardersen's (2011) study of technology use among preschool-aged children in Norway, 58% of children aged 0–6 years use online digital media; according to Findahl (2012), 70% of children in Sweden aged 3–4 years use digital media. Furthermore, a digital footprint survey across ten countries revealed that 81% of mothers digitally upload photographs of their children aged 0-2 years (Digital Birth, 2010).

According to the results of a national study in Turkey, 62% of preschool-aged children have a computer at home, and 54% of them have high levels of computer literacy (Akkoyunlu & Tuğrul, 2002). Akçay and Özcebe (2012) also found that 73% of children in Turkey aged 60–72 months play computer games. However, according to Turkish data from the EU Kids Online Project (2010), the rate of Internet use among children under the age of seven is 2.6% (Karakuş, Çağıltay, Kaşıkcı, Kurşun, & Ogan, 2014). Nevertheless, information and communication technology (ICT) use is rapidly developing in Turkey. According to data from the Turkey Statistical Institute (TUIK, 2018), home computer use in Turkey is 59.60%, and 83.80% of Turkish households have Internet access. According to We Are Social (2018), which examined countries' digital profiles, the average time spent on a computer in Turkey is seven hours and nine minutes per day, while the average time spent on social media is two hours and forty-eight minutes per day. Turkey consistently ranks among the top ten for country-wide social media use, with 51 million Facebook users (ranked ninth globally) and 33 million Instagram users (ranked fifth globally).

In response to this rapid dissemination of technology, researchers have increasingly investigated the effects of time spent in digital environments, and of different digital activities, on the development and education of young children. Studies have revealed that digital storytelling, educational practices, and other digital activities support children's cognitive and language development (Altun, 2018; Moyer-Packenham et al., 2015; Takacs, Swart, & Bus, 2015; Tarpley, 2001). However, other studies have drawn attention to various potential problems related to screen time, including increased cognitive, social, and emotional issues, as well as obesity, immobility, and lack of sleep. Therefore, the American Academy of Pediatrics (2016) recommended that children aged 18–24 months should be kept away from digital media, and that children aged 2–5 years should be limited to one hour of screen time per day and exposed only to high-quality programs. In addition, children have been found to be the most vulnerable group in terms of exposure to violence, sexual content, and harassment in online environments (Bullen & Harre, 2000; Çanbek & Sağıroğlu, 2007; Çelen, Çelik, & Seferoğlu, 2011; Soeters & Van Schaik, 2006). Moreover, Chau (2014) found that only 58 out of 100 applications designed

for preschool-aged children are appropriate for their level of development. Hence, families play a significant role when selecting content, guiding children, and monitoring their activities in digital environments (Duerager & Livingstone, 2012; Ey & Cupit, 2011; Kabakçı-Yurdakul, Dönmez, Yaman, & Odabaşi, 2013; Wu et al., 2014). Furthermore, recent studies have shown that a growing number of parents post photos of their children online, especially on social media (Bessant, 2017; Brosch, 2016; Keith & Steinberg, 2017; Livingstone et al., 2017). These studies introduce the term "sharenting" in reference to parents' sharing of information, photos, stories, videos, and, broadly, any content related to their children or their parenting via mass media (Blum-Ross & Livingstone, 2018; Choi & Lewallen, 2018; Mascheroni, Ponte, & Jorge, 2018). These studies warn that parents should protect their children's right to privacy, and that they should consider online threats, such as paedophiles, before broadcasting information about their children (Tait, 2016; Wayne, 2016). Furthermore, parents' sharenting activities create digital footprints and provide easy access to large amounts of information, establishing digital identities for their children that will be accessible to future audiences. The sharing of excessive personal information online may cause future ethical or social problems as children grow. This study therefore aims to investigate the activities of preschool-aged children in digital environments, the time they spend on digital media and their digital footprints, as well as the digital parenting roles within their families.

METHODS

Research Design

This is a cross-sectional study using the descriptive survey model. Descriptive survey models aim to depict the current situation for a particular subject by asking the participants' opinions; the data is collected at just one point in time (Fraenkel, Wallen, & Hyun, 2012).

Sample

Study participants were comprised of 628 children (50.3% girls and 49.7% boys) enrolled at preschools located in the centers of Kırşehir and Kayseri in Turkey, as well as those children's families (n=628). Of the children, 9.6% were four years old, 47.1% were five years old, and 43.3% were six years old.

Table 1. Study Participants' Demographic Information

Child	***n***	***%***
Gender		
Female	316	50.3
Male	312	49.7
Age Group		
Four Years Old	60	9.6
Five Years Old	296	47.1
Six Years Old	272	43.3
Family's Monthly Income (TRY)*		
0–1,500	76	12.1
1,501–3,000	196	31.2

3,001–4,500	172	27.4
4,501–6,000	104	16.6
6,001+	80	12.7
Total	628	100

**Turkish Lira*

Among participating households, 31.2% had a monthly household income between 1,501 and 3,000 TRY. Mothers completed 76.4% of the questionnaires, fathers completed 19.7% of them, and 3.8% were completed jointly by the parents. Participating mothers' ages ranged from 23 to 48 years, and participating fathers' ages ranged from 26 to 60 years. As seen in Table 2, 37.6% of mothers and 51% of fathers graduated from university. Table 2 presents detailed demographics for participating parents.

Table 2. Participating Parents' Demographic Information

	Mother		***Father***	
	n	***%***	***n***	***%***
Age Range (Years)				
23–30	168	26.80	48	7.64
31–38	348	55.40	316	50.32
39–46	107	17.05	231	36.78
47–54	5	0.75	27	4.30
55+	-	-	6	0.95
Education Level				
Primary School	42	6.70	21	3.34
Middle School	80	12.73	54	8.60
High School	224	35.67	201	32.00
University	246	39.17	324	51.60
Postgraduate	36	5.73	28	4.46
Total	628	100	628	100

Data Collection Tools

The data collection questionnaire was developed by the researcher. The survey questions were categorized into the following groups: demographic information, children's screen time, children's digital activities, children's digital footprints, parents' screen time, parents' digital activities, and digital parenting roles based on previous survey research (Digital Birth, 2010; EU Kids Online Project, 2010; Holloway et al., 2013; Konca, 2014; Valcke, Bonte, Wever, & Rots, 2010). The final version of the questionnaire sent to the two field experts for seek to utilise their opinion. One question was excluded and two of the questions were revised based on the experts' suggestions.

Data Collection

Data was collected during spring term of the 2017–2018 academic year. A total of 1,000 printed questionnaires were distributed to families, with the goal of reaching a comprehensive group of parents—those who either use or do not use online media. Of the 1,000 questionnaires, 723 were returned, and 95 were excluded for incompleteness. Hence, study data is comprised of 628 completed questionnaires.

Data Analysis

The study data were analyzed using the IBM SPSS 22 software package program to generate descriptive (e.g., percentage, frequency) and inferential statistics (chi-squared tests).

FINDINGS

The findings of this study are presented under the following headings: information and communication technologies available at home, parents' Internet use, parents' Internet activities, children's information and communication technology use, children's digital footprints, parent's opinions on technology use among preschool-aged children, and digital parenting roles.

Information and Communication Technologies Available at Home

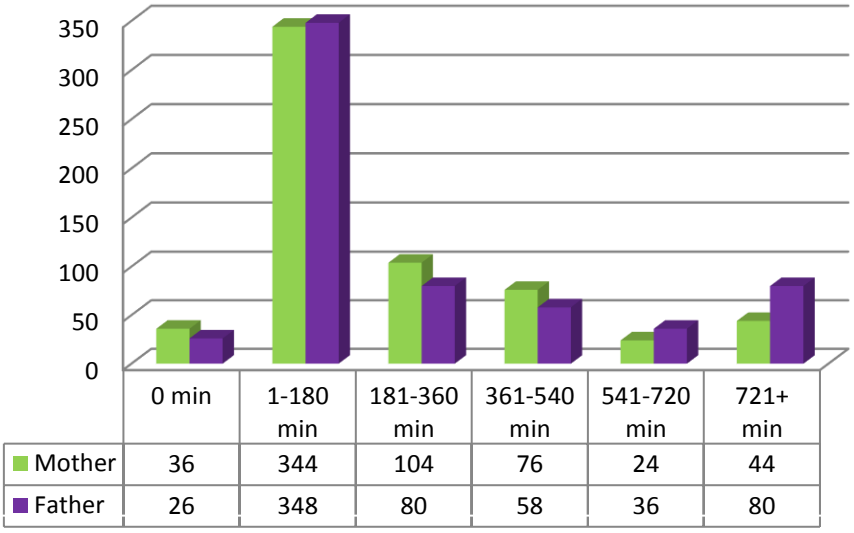
The information and communication technologies available at participating families' homes are presented in Table 3. Of the participating families, 97.50% had a television at home, while 43.45% had a desktop computer, and 49% had a laptop computer. In addition, 98.25% of homes had a smartphone, while 68.00% had a tablet. Furthermore, 74.52% of families had an Internet connection in their home. As seen in Table 3, the most common information and communication technology tool was the smartphone, and the desktop computer was the least common.

Table 3. Information and Communication Technologies Available at Home

	Available		*Not Available*		*Number of devices*				
	f	***%***	***f***	***%***	***0***	***1***	***2***	***3***	***4***
Television	612	97.50	16	2.50	16	408	191	13	-
Desktop Computer	273	43.45	355	56.55	355	260	13	-	-
Laptop Computer	308	49.00	320	51.00	320	281	27	-	-
Smartphone	617	98.25	11	1.75	11	48	428	108	33
Tablet	427	68.00	201	32.00	201	350	71	6	-
Internet Connection	468	74.52	160	25.48	-	-	-	-	-

Parents' Internet Use

Mothers spent an average of 238 minutes (0–1,400 minutes) on the Internet each week, while fathers' average weekly time spent on the Internet was 291 minutes (0–1,850 minutes). Figure 1 shows that mothers (*n* = 344) and fathers (*n* = 348) spent one to three hours on the Internet weekly.

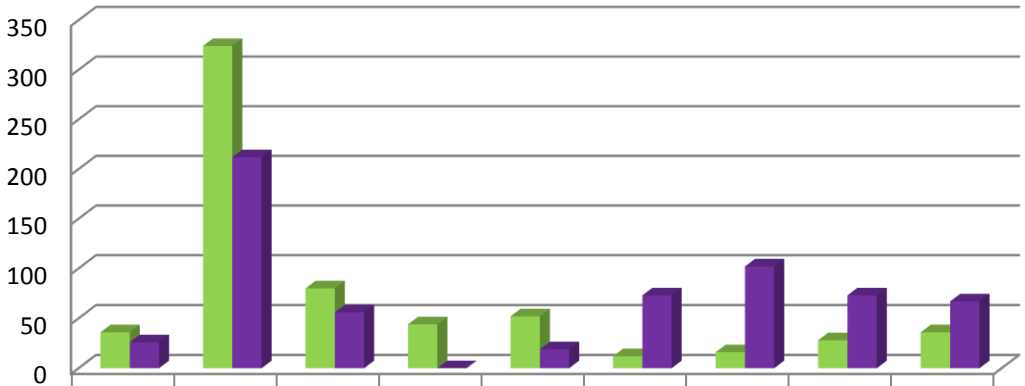


	0 min	1-180 min	181-360 min	361-540 min	541-720 min	721+ min
Mother	36	344	104	76	24	44
Father	26	348	80	58	36	80

Figure 1. Parents' weekly Internet use

Parents' Internet Activities

Regarding participating parents' Internet activities, 52% of mothers (*n* = 324) primarily used social media, while 13% (*n* = 80) primarily used online shopping sites, and 8.3% (*n* = 52) primarily used communication tools. Among fathers, 34% primarily used social media, while 16% primarily used digital games, and 12% primarily used news and video platforms. Figure 2 displays detailed information about parents' Internet activities.



	Not user	Social media	Online shopping	Recipe websites	Communi -cation	Film-video	Digital games	News	Job
Mother	36	324	80	44	52	12	16	28	36
Father	26	212	56	0	19	73	102	73	67

Figure 2. Parents' Internet activities

Children's Information and Communication Technology Use

As shown in Table 4, 86% of participating children (87.3% of girls; 84.6% of boys) used ICTs such as computers, tablets, or smartphones at home. Furthermore, 42.72% of girls and 46.50% of boys used ICTs daily.

Table 4. Children's Information and Communication Technology Use

	Girls		*Boys*		*Total*	
	n	***%***	***n***	***%***	***n***	***%***
Use of ICTs						
Yes	276	87.3	264	84.6	540	86
No	40	12.7	48	15.4	88	14
Frequency of Use						
Never	40	12.70	48	15.40	88	14.00
Once a Month	3	0.94	2	0.60	5	0.80
Several Times a Month	34	10.76	10	3.20	44	7.00
Several Times a Week	104	32.91	107	34.30	211	33.60
Every Day	135	42.72	145	46.50	280	44.60
Internet Usage						
Yes	244	77.20	220	70.50	464	73.90
No	72	22.80	92	29.50	164	26.10
Frequency of Use						
Never	72	22.80	92	29.50	164	26.11
Once a Month	3	0.94	3	0.96	6	0.96
Several Times a Month	26	8.22	17	5.44	43	6.85
Several Times a Week	115	36.40	73	23.40	188	29.93
Every Day	100	31.64	127	40.70	227	36.15
Internet Activities						
YouTube (e.g., Cartoons)	117	37.02	61	19.55	178	28.34
Games	57	18.03	115	36.85	172	27.38
Communication (e.g., Video Calls)	49	15.50	27	8.65	76	12.10
Educational Applications	21	6.64	17	5.44	38	6.05
None	72	22.80	92	29.50	164	26.11

As shown in Table 4, 77.2% of girls and 70.5% of boys were Internet users. Furthermore, 31.64% of girls and 40.70% of boys used the Internet daily. While girls primarily used the Internet to watch videos and cartoons (37.2%), boys primarily used it to play games (36.85%).

Children's Digital Footprints

Table 5 shows that of the participating parents, 68% shared photographs of their children on digital platforms: 70.88% shared photographs of their daughters, and 65.06% shared photographs of their sons. While 36.94% of participating families first shared a photograph of their child on a digital platform when that child was two years of age or younger, 31.06% did so when their child was older than two years of age.

Table 5. Children's Digital Footprints

	Girls		*Boys*		*Total*	
	n	*%*	*n*	*%*	*n*	*%*
Sharing a Child's Photograph on a Digital Platform						
Yes	224	70.88	203	65.06	427	68.00
No	92	29.11	109	34.94	201	32.00
First Photograph Shared						
Before Child was 2 Years	141	44.62	91	26.16	232	36.94
After Child was 2 Years	83	26.27	112	35.90	195	31.06
Never	92	29.11	109	34.94	201	32.00
Frequency of Uploading Photographs						
Never	92	29.11	109	34.94	201	32.00
Once a Month	38	12.03	84	26.92	122	19.43
Several Times a Month	107	33.86	78	25.00	185	29.46
Several Times a Week	63	19.94	34	10.90	97	15.45
Every Day	16	5.06	7	2.24	23	3.66
Social Media Account in the Child's Own Name						
Created	31	9.82	37	11.86	68	10.83
Not Created	285	90.18	275	88.14	560	89.17

Table 5 also shows that 10.83% of participating children have a social media account in their own names (9.82% of girls and 11.86% of boys).

Parents' Opinions on Technology Use during the Preschool Period and on Digital Parenting Roles

Table 6 shows that while 45.38% of participating parents were opposed to the use of information and communication technologies by their children during the preschool period, 33.28% of parents supported it, and 21.34% of parents were hesitant. A chi-squared test for independence indicated that parents' opinions on technology use during the preschool period did not differ based on their child's gender (X^2 (2, n = 628) = 4.174, p > .05, phi = .07).

Table 6. Parents' Opinions on Technology Use during the Preschool Period

	Girls		*Boys*		*Total*	
	n	*%*	*n*	*%*	*n*	*%*
ICTS Use during the Preschool Period						
I support it	108	34.18	101	32.37	209	33.28
I am hesitant to support it	76	24.05	58	18.59	134	21.34
I oppose it	132	41.77	153	49.04	285	45.38
Total	316	100	312	100	628	100
Internet Use during the Preschool Period						
I support it	72	22.79	24	7.70	96	15.29
I am hesitant to support it	92	29.11	92	29.48	184	29.30
I oppose it	152	48.10	196	62.82	348	55.41
Total	316	100	312	100	628	100

As seen in Table 6, 55.41% of participating parents reported their opposition to Internet use during the preschool period, whereas 29.30% of parents were hesitant to support such use, and 15.29% of parents supported Internet use during the preschool period. A chi-squared test for independence showed that parents' opinions on Internet use during the preschool period significantly differed based on their child's gender (X^2 (2, n = 628) = 29,539, $p < 0.05$). The effect size of the difference was moderate (phi = .22) (Pallant, 2007). These results show that parents support Internet use during the preschool period for girls more than for boys. However, 103 parents opposed their daughters' technology use for fear that their daughters might encounter inappropriate content, and 51 parents opposed their daughter's technology use for fear of detrimental effects on the child's mental development. Nevertheless, 88 parents indicated that digital educational and other useful programs could be beneficial when used while under parental supervision.

As shown in Table 7, 198 parents were concerned about the potential harm of technology use on their son's emotional development, 167 parents were concerned about the addictive and time-consuming aspects of their son's technology use, and 165 parents were opposed to technology use for fear that their sons might encounter inappropriate content.

Table 7. Reasons for Parents' Opinions on Technology Use during the Preschool Period

	Girls		***Boys***
	f*		***f****
High risk of inappropriate content (e.g., violence and sexuality)	103	Harmful to emotional development (e.g., short temper, bad temper, and obstinacy)	198
Beneficial educational and useful programs with parental guidance	88	Addiction and time-control problems	167
Harmful to mental development (e.g., distractibility, lack of focus, and unnecessary mental load)	51	High risk of inappropriate content (e.g., violence and sexuality)	165
Addiction and time-control problems	47	Social pressure to provide what others give their children	91
Harmful to social development	39	Harmful to mental development (e.g., distractibility, lack of focus, and unnecessary mental load)	83
Preparation for a technological future	38	Harmful to social development	57
Harmful to emotional development (e.g., short temper, bad temper, and obstinacy)	33	Harmful to language development (e.g., limited speech and inability to establish dialogue)	45
Immobility	27	Using digital environments to protect children from physically harmful environments outside the home	43
Social pressure to provide what others give their children	25	Beneficial educational and useful programs with parental guidance	41
Diminishment of creativity and imagination	17	Preparation for a technological future	31
Harmful to eye health	12	Negative effect on sleeping habits and daily responsibilities (e.g., eating and tidying up the room)	23
Using digital environments to protect children from physically harmful environments outside the home	11	Distraction for the child while the parent(s) do(es) other things	18
Uncertainty about the benefits or detriments	10	Uncertainty about the benefits or detriments	16
		Immobility	12

** Participants indicated more than one reason*

The majority of parents (for girls = 272; for boys = 293) indicated that they control the content of the programs or applications that their children use. Parents articulated that when choosing programs or applications for their children, they strive to select appropriate content (e.g., non-sexual and non-violent content).

Table 8. Digital Parenting Roles with Respect to Children's Gender

	Girls *f**	*Boys* *f**	*Total* *f**
Content Control	272	293	565
Time Control	214	289	503
Children use digital technologies in close proximity to/in the same room as/under the supervision of their parents	133	175	308
Children use digital technologies with their parents; they play games and watch content with their parents	72	33	105
Parents teach their children how to use technological devices/applications	38	23	61
Parents prevent their children from using technological devices/applications	45	48	93

** Participants indicated more than one digital parenting role.*

In addition, most parents (daughters = 214; sons = 289) stated that they set time limits on their children's use of technology. Table 8 shows that parents (daughters = 133; sons = 175) asserted that they closely supervise their children's technology use period; parents also engage in co-use of technology with their daughters (n=72) and sons (n=33). The number of parents who have taught their children how to use technological devices and applications was 38 for daughters and 23 for sons. Finally, some parents (daughters = 44; sons = 48) prevented their child from using technology during the preschool period.

DISCUSSION and CONCLUSION

The purpose of this study was to investigate preschoolers' use of ICTs at home, their digital footprints, their Internet activities, their parents' Internet activities, and digital parenting roles in the household. According to the results of this study, 98.25% of homes with preschool-aged children have a smartphone, but only 43.45% of homes with preschool-aged children have a desktop computer. This is because smartphones and mobile technologies have developed very quickly and because smartphones can be used for many daily tasks, including communication, Internet access, photography, banking, and shopping (Anshari & Alas, 2015; Hsiao & Chen, 2015; Nayak, 2018).

Parents who participated in this study spent an average of three hours per week on the Internet. Mothers spent time on social media (52%), online shopping (13%), and communicating (8.3%); fathers spent time on social media (34%), playing games (16%), and watching news and video (12%). The study's findings are in-line with the international We Are Social (2018) report, which showed that the use of social media in Turkey is very widespread, with the average person spending two hours and forty-eight minutes on social media each day. According to the TUIK (2018) report, 29.3% of individuals aged 16–74 years engage in online shopping, the ratio was 25% for females.

The study findings show that 86% of children use ICTs in their homes, and 44.6% of them use technological devices and applications daily. Furthermore, 73% of children use the Internet in their homes, and 36% of them are daily Internet users. This data reveals that the rate of technology use among children has increased compared to previous years (Akçay & Özcebe, 2012; Akkoyunlu & Tuğrul, 2002; Aktaş-Arnas, 2005; Aral & Dogan-Keskin, 2018; Karakuş et al., 2014). For example, Karakuş et al. (2014) present the results of the EU Kids Online Project (2010), which found that only 2.6% of children in Turkey under seven years of age used the Internet, compared to 13.3% in Europe. In 2010, 41.6% of Turkish households had Internet access (TUIK, 2010). In 2018, 83.8% of households have Internet access, and 72.9% of households use the Internet (TUIK, 2018). Similarly, 74% of families participating in this study indicated that they have an Internet connection in their home and use it regularly. These data show that as Internet access and use has increased in Turkey, children's Internet use has increased in parallel.

Participating parents reported that 28% of children watch cartoons, music videos, and other videos on platforms such as YouTube, and that 27% of children played digital games. This aligns with findings from previous studies, which found that children mostly watch cartoons and other videos on YouTube (Altun, 2017; Childwise, 2012; Teuwen et al., 2012). Only 6% of parents in this study stated that their children used educational applications and programs online (e.g., supportive applications such as foreign language training, electronic stories, and applications to develop mathematical and vocabulary skills). One of the reasons for the low rate of educational application and program use is the limited number of educational applications available in Turkish that are appropriate for preschool-aged children (Altun, 2017).

Regarding children's digital footprints, 68% of parents shared their children's photographs on digital platforms. The proportion of those who uploaded a photograph of their child before the age of two was 36.94%, and 31.06% uploaded a photograph of their child after the age of two. According to the Digital Birth (2010) report, digital footprints are created shortly after the birth of a child, when parents share information about and upload photographs of that child on a digital platform; this is distinctly different from the activities of prior generations. Parents share photographs online of their children in the hospital shortly after birth, and often begin sharing photos of their children even earlier, starting with ultrasound images. Parents who share information about and photographs of their children on digital platforms can create several problems for their children in terms of privacy rights and information security. In particular, children's photographs are vulnerable to malicious use (Holloway et al., 2013; Leaver, 2011; O'Neill, 2010; Otero, 2017; Steinberg, 2016; Wagner & Gasche, 2018). Therefore, parents should consider the ethics of privacy and information security before sharing information about and photographs of their children via digital media (Bessant, 2018; Livingstone, Blum-Ross, & Zhang, 2018; Mascheroni, Ponte, & Jorge, 2018).

This study also found that 45% of parents stated that they opposed the use of technological devices and applications during the preschool period, and 55.41% of them were opposed to their preschoolers using the Internet; 268 parents indicated that they were concerned that their children would be exposed to inappropriate content, such as violence and sexuality, if allowed to use the Internet. According to Aslan's

(2016) study on Internet security for children, the exposure of children to sexual content online has increased from 14.4% in 2010 to 51% in 2015. These results indicate that parent's concerns are justified. Furthermore, parents articulated that they were especially concerned about advertisements containing sexual content, which appeared automatically on websites when playing games or watching videos.

Additionally, the study findings revealed that parents are also concerned about the potential harm these technologies may cause to children's emotional development (*f* = 198), as well as the addictive and time-consuming nature of these technologies (*f* = 165). Previous studies have shown that playing digital games and watching videos can be addictive to children (Chiu, Lee, & Huang, 2004; Kuss & Griffiths, 2012; Skoric, Teo, & Neo, 2009), and some studies found that violent games can lead to problems controlling anger as well as aggressive behaviors (Elson & Ferguson, 2014; Ferguson, 2015; Scharrer, Kamau, Warren, & Zhang, 2018). These results are in-line with the concerns of participating parents. Parents often control their children's technology use in terms of content (*f* = 565) and time (*f* = 503). Family friendly internet filters were suggested to limit and control content, facilitating children's safe Internet use (Jones, Thom, Davoren, & Barrie, 2014; Kabakçı-Yurdakul et al., 2013; Karakuş et al., 2014).

According to the study findings, 105 parents have used technological devices and applications together with their children, while 61 have taught their children how use technological devices and applications. Previous studies have pointed out that parental scaffolding of technology use substantially supports children's learning (Blankson et al., 2015; Bus et al., 2015), compared to controlling children's use of technology in terms of content and time only. Parent-child co-use and co-viewing of ICT activities are suggested to expand children's knowledge and understanding when compared with passive, individual use or viewing by the child (Skaug, Englund, Saksvik-Lehouillier, Lydersen, & Wichstrøm, 2018). Employing technological devices as digital caretakers for children, and the prolonged exposure of children to the screens of technological devices, has been shown by previous studies to be detrimental to children's cognitive, social, emotional, and linguistic development; it also affects the attachment between mother and child (American Academy of Pediatrics, 1999; Chau, 2014; Napier, 2014; Pempek & Lauricella, 2018; Sanchez, 2018). Therefore, children's ICT activities should be blended with parent-child interactions (Connell, Lauricella, & Wartella, 2015; Takeuchi & Stevens, 2011).

In conclusion, this study found that ICT use during the preschool period increased compared to previous studies. Both the quantity and the quality of technology use (e.g., family involvement and appropriate/high-quality digital activity selection) are important in children's development and learning. Thus, further studies should examine both the quality and quantity of young children's ICT experiences in detail. Finally, Republic of Turkey Ministry of National Education, Ministry of Family and Social Policies, and Ministry of Industry and Technology should jointly conduct studies to ensure that technology use supports children's safe development and education.

OKUL ÖNCESİ DÖNEM ÇOCUKLARININ DİJİTAL AYAK İZLERİ, EKRAN SÜRELERİ VE AİLELERİNİN DİJİTAL EBEVEYNLİK ROLLERİNİN İNCELENMESİ

GİRİŞ

Teknolojide yaşanan hızlı gelişmeler ile birlikte çocuklar erken yaşlardan itibaren ev ortamında çeşitli bilgi ve iletişim teknolojilerini kullanarak zengin dijital deneyimler kazanmaktadır (Akkoyunlu ve Tuğrul, 2002; Aktaş-Arnas, 2005; Altun, 2017; Holloway, Green ve Livingstone, 2013; Marsh, 2010). Prensky (2001) kuşaklar arasında gözlenen teknoloji kullanımını farkını ifade etmek için dijital yerli ve dijital göçmen ifadelerini kullanmıştır. Dijital göçmenler, teknoloji ile sonradan tanışan, teknolojik alet ve uygulamaları öğrenmeye çalışan ve dijital dünyaya uyum sağlamaya çalışan kuşak olarak tanımlanmaktadır. Dijital yerliler ise 1980'li yıllardan sonra dijital bir dünyaya gözlerini açan ve teknoloji günlük hayatlarının vazgeçilmez bir parçası olduğu kuşağa verilen isimdir. Okul öncesi teknoloji kullanımını araştıran çalışma sonuçlarına göre Norveç'te 0-6 yaş grubu çocukların %58'si (Guðmundsdóttir ve Hardersen, 2011) ve İsveç'te 3-4 yaş çocuklarının %70'i çevrim içi dijital ortamlardan yararlanmaktadır (Findahl, 2012). Uluslararası on ülkeyi kapsayan dijital ayak izi araştırma sonuçlarına göre annelerin %81'i dijital platformlara çocuklarının iki yaş öncesinde fotoğraflarını yüklemektedir. Araştırmaya katılan ülkeler arasında Japon anneler % 43 ile en az iki yaş öncesi çocuklarının fotoğraflarını dijital platformlara yüklerken %92 ile Amerikan anneler en fazla fotoğraf yüklemektedir (Digital Birth, 2010).

Ulusal çalışma sonuçlarına göre okul öncesi dönem çocuklarının %62'sinin evinde bilgisayar bulunmakta ve %54'ü yüksek bilgisayar okuryazarlığı düzeyine sahiptir (Akkoyunlu ve Tuğrul, 2002). Akçay ve Özcebe (2012) 60-72 ay çocuklarının %73'ünün bilgisayarda oyun oynadığını belirtmişlerdir. EU Kids Online Projesi (2010) Türkiye verilerine göre 7 yaş öncesinde internet kullanım oranı %2.6'dır (Karakuş, Çağıltay, Kaşıkcı, Kurşun, & Ogan, 2014). Bununla birlikte ülkemizde bilgi ve iletişim teknolojileri kullanım oranı hızla artmaktadır. Türkiye İstatistik Kurumu (TUİK) (2018) verilerine göre, evde bilgisayar kullanım oranı % 59.6 iken internet erişimi %83.8'dir. Ülkelerin dijital profillerini inceleyen uluslararası We Are Social (2018) araştırma raporuna göre, Türkiye'de ekran başında geçirilen günlük ortalama süre 7 saat 9 dakikadır. Sosyal medyada geçirilen günlük süre ise ortalama 2 saat 48 dakikadır. Sosyal medya kullanımı açısından Türkiye verileri incelendiğinde ise 51 milyon Facebook kullanıcısı ile ülkeler sıralamasında dokuzuncu ve 33 milyon Instagram kullanıcısı sayısı ile dünya beşincisi olduğu görülmektedir.

Okul öncesi dönemden itibaren teknoloji kullanımının artış göstermesiyle birlikte yürütülen çalışmalar çocukların dijital ortamda geçirdikleri süre ve etkinlik çeşitlerinin gelişim ve öğrenmelerine etkisini araştırmaktadır. Dijital hikâyeler, eğitimsel uygulama ve etkinliklerin çocukların bilişsel ve dil gelişimlerini desteklediği gösteren çalışmalar bulunmaktadır (Altun, 2018; Moyer-Packenham vd., 2015; Takacs, Swart ve Bus, 2015; Tarpley, 2001). Bununla birlikte, Amerikan Pediatri Akademisi (American Academy of Pediatrics, 2016) yayınladığı bildirge ile 18- 24 ay öncesinde çocukların dijital ortamlardan uzak tutulmasını önermektedir.

Ailelere, 2 ve 5 yaş çocuklar için ise günlük bir saat ekran süresine aşmadan uygun içerik ve yüksek kaliteli uygulamaların kullanılmasını tavsiye etmektedir. Araştırmalar, ekran başında geçirilen sürenin artması durumunda obezite, hareketsizlik, yetersiz uyku, bilişsel, sosyal ve duygusal gelişim alanlarında yaşanabilecek çeşitli problemlere dikkat çekmektedir. Ayrıca, çevrim içi ortamlarda çocukların şiddet, cinsel içerik ve taciz gibi risklere en açık ve savunmasız grup olduğu görülmektedir (Bullen ve Harre, 2000¸Canbek ve Sağıroğlu, 2007; Çelen, Çelik, & Seferoğlu, 2011; Soeters ve Van Schaik, 2006). Chau (2014) çocuklar için geliştirilen 100 aplikasyondan sadece 58 tanesinin çocukların gelişim seviyesine uygun hazırlandığını tespit etmiştir. Bu nedenle çocukların dijital ortamlarda zaman geçirecekleri etkinliklerin içerik seçimnde ve yönlendirmesinde ve takibinde ailelere büyük görevler düşmektedir (Duerager ve Livingstone, 2012; Ey ve Cupit, 2011; Kabakçı-Yurdakul, Dönmez, Yaman, & Odabaşi, 2013; Wu, Fowler, Lam, Wong, Wong, ve Loke, 2014). Bu çalışmada, okul öncesi dönem çocuklarının dijital ortamlardaki faaliyetleri, geçirdikleri süre, dijital ayak izleri ve ailelerinin dijital ebeveynlik rollerinin araştırılması hedeflenmiştir.

YÖNTEM

Bu çalışma betimsel tarama modelinde kesitsel bir araştırmadır. Betimsel tarama çalışmaları katılımcıların bilgi ve görüşlerine başvurarak belirli bir konu ya da durum hakkında mevcut durumu tanımlamayı amaçlar. Kesitsel çalışmalarda veriler tek bir seferde toplanır. (Fraenkel, Wallen ve Hyun, 2012). Çalışmanın örneklemini ise 628 okul öncesi dönem çocuğu ve ebeveynleri (n=628)oluşmaktadır. Çalışmaya katılan çocukların % 50.3'ü kız ve %49.7'si erkektir. Çocukların yaş grupları incelendiğinde, %9.6'sı 4 yaş, %47.1'i 5 yaş ve %43.3'ü 6 yaş grubunda olduğu görülmektedir.

Çalışmanın verileri araştırmacı tarafından hazırlanan anket formu aracılığıyla toplanmıştır. Anket soruları demografik bilgiler, çocukların ekran süreleri, dijital faaliyetleri, ayak izleri, ebeveynleri ekran süreleri, dijital faaliyetleri ve dijital ebeveynlik rolleri başlıkları altında toplanmıştır. Ankette yer alan soruların hazırlanmasında alanyazında yer alan çalışmalardan yararlanılmıştır (Digital Birth, 2010; Eu Kids Online, 2010; Holloway, Green ve Livingstone, 2013; Konca, 2014; Valcke, Bonte, Wever ve Rots, 2010). Anket formu hazırlandıktan sonra iki uzmanın görüşü alınmıştır. Uzman görüşleri doğrultusunda bir soru çıkartılmış ve iki soru yeniden düzenlenmiştir.

BULGULAR

Çalışmaya katılan ailelerin evlerinde bulunan bilgi ve iletişim teknolojileri Tablo 3'te sunulmuştur. Ailelerin %97.5'in evinde TV, %43.45'inde masaüstü bilgisayar, %49'unda dizüstü bilgisayar, %98.25'inde akıllı telefon ve %68'inde tablet bulunmaktadır. Ayrıca, ailelerin %74.52'sinin evinde internet bağlantısı vardır. Tablo 3 incelendiğinde, ailelerin en çok sayıda sahip olduğu bilgi ve iletişim teknoloji cihazının akıllı telefon iken, en az sayıda sahip olunan cihaz masaüstü bilgisayar olduğunu gözlenmektedir. Ebeveynlerin internette geçirdiği süre incelendiğinde, anneler haftalık ortalama olarak 238 dakika (0- 1400 dk) internette süre geçirmektedir. Babaların haftalık ortalama internette geçirdiği süre 291 dakikadır (0-1850 dk).

Araştırmaya katılan ebeveynlerin internet faaliyetleri incelendiğinde, annelerin %52'si (n=324) en fazla sosyal medyada zaman geçirirken, %13'ü (n=80) online alışveriş sitelerinde ve %8.3'i (n=52) ise iletişim ve sohbet amaçlı uygulamalarda zaman geçirmektedir. Babaların %34'ü sosyal medyada en fazla zaman geçirirken, %16'sı dijital oyun ve %12 haber ve video izlemek için internette zaman geçirdiklerini belirtmişlerdir. Araştırmaya katılan çocukların %86'sı bilgisayar, tablet ya da akıllı telefon gibi bilgi ve iletişim teknolojilerini kullanmaktadır. Kızların %87.7'ü ve erkeklerin %84.6'sı evlerinde bulunan bilgi ve iletişim teknolojilerini kullanmaktadır. Çocukların bilgi ve iletişim teknolojilerini kullanma sıklığı incelendiğinde, kızların %42.72'si ve erkeklerin %46.50'si günlük kullanıcı olduğu görülmektedir.

Çocukların internet kullanım sıklıkları incelendiğinde, kızların 31.64'ü ve erkeklerin %40.70'i günlük internet kullanıcısı olduğu gözlenmektedir. Kızlar interneti daha çok video ve çizgi film izlemek (%37.2) için kullanırken, erkekler oyun oynamak (%36.85) için kullanmaktadır. Araştırma sonuçları incelendiğinde, ebeveynlerin %68'i çocuklarına ait fotoğrafları dijital ortamlarda paylaşmaktadır. Ebeveynlerin %70.88'i kız çocuklarının ve %65.06'sı erkek çocuklarının fotoğraflarını dijital ortamlarda paylaşmaktadır. Ailelerin %36.94'ü iki yaş öncesinde çocuklarına ait ilk fotoğraf paylaşımı yaparken, %31.06'sı ilk dijital fotoğraf paylaşımını iki yaş sonrasında yaptıkları gözlenmektedir.

Ebeveynlerin %45.38'i okul öncesi dönemde bilgi ve iletişim teknolojileri kullanımına karşı olduğunu belirtirken, %33.28'i desteklemekte ve %21.34'ü ise kararsız olduklarını ifade etmişlerdir. Ebeveynlerin %55.41'i okul öncesinde internet kullanımına karşıyken, %29.30'u kararsız ve %15.29'u ise internet kullanımını desteklediğini belirtmişlerdir. Araştırmaya katılan ailelere çocuklarının teknoloji kullanımı sırasında ebeveyn olarak rolleri ve uygulamaları sorulduğunda, ebeveynlerin büyük çoğunluğu (kız = 272, erkek = 293) kullanılan program ya da uygulamayı içerik açısından kontrol ettiklerini beyan etmişlerdir. Ebeveynler, çocukları için program ya da uygulama seçerken özellikle cinsellik ve şiddet içermeyen, çocukların yaşlarına uygun içerikleri seçmeye çalıştıklarını ifade etmişlerdir.

TARTIŞMA VE SONUÇ

Bu çalışma okul öncesi dönem çocuklarının evlerinde bulunan bilgi ve iletişim teknolojilerini kullanım durumlarını, dijital ayak izlerini, ebeveynlerinin internet faaliyetlerini ve dijital ebeveynlik rollerini araştırmayı amaçlamıştır. Araştırma sonuçlarına göre, çocukların evlerinde en çok (%98.25) akıllı telefon bulunurken en az (%43.45) masaüstü bilgisayar bulunmaktadır. Bu durumun, mobil teknolojilerin hızla yaygınlaşması ile iletişim, eğlence, internet erişimi, fotoğraf çekme ve içerdiği birçok uygulamanın ile günlük işlerin kolayca halledilebilmesinden kaynaklandığı düşünülmektedir (Anshari & Alas, 2015; Hsiao & Chen, 2015; Nayak, 2018).

Araştırmaya katılan anne ve babaların haftalık ortalama üç saat internette zaman geçirdiği tespit edilmiştir. Anneler internette en fazla sosyal medya(52), online alış veriş (%13) ve iletişim(%8.3) için zaman geçirmektedirler. Babalar ise en fazla sosyal medya (%34), oyun (%16), haber ve video (%12) izlemek için internetti kullanmaktadırlar. Bu araştırma sonuçları uluslararası We Are Social (2018) raporu ile tutarlılık

göstermektedir. Türkiye'de sosyal medya kullanımının yaygın olduğu ve günlük sosyal medya kullanım süresinin ortalama 2 saat 48 dakika olduğu görülmektedir. TUİK (2018) verilerine göre 16-74 yaş grubu bireylerin internet üzerinden alışveriş oranları %29.3'dür. Kadınların internetten alışveriş oranları ise %25'dir.

Çalışma sonuçlarına göre çocukların %86'sı bilgi ve iletişim teknolojilerini evlerinde kullanmaktadır. Çocukların %44.60'ı her gün teknolojik cihaz ve uygulamaları kullanmaktadır. Ayrıca, çocukların %73'ü evlerinde internet kullanmaktadır. Günlük internet kullanıcı oranı ise %36'dır. Araştırma sonuçları önceki yıllarda yapılan çalışmalar ile karşılaştırıldığında çocukların teknoloji kullanım oranlarının arttığı görülmektedir (Akçay & Özcebe, 2012; Akkoyunlu & Tuğrul, 2002; Aktaş-Arnas, 2005; Aral & Dogan-Keskin, 2018; Karakuş vd., 2014). Örneğin, Karakuş vd. (2014) EU Kids Online Projesi (2010) Türkiye verilerine göre 7 yaşından önce internet kullanımına başlama oranı %2.6 iken Avrupa oranı %13.3'dür. TÜİK (2010) verileri incelendiğinde hanelerden internete erişim oranı %41.6 iken TÜİK (2018) verilerine göre bu oran %83.8 ve kullanımı %72.9'dur. Bu araştırmaya katılan ailelerin %74'ünün evinde internet bağlantısı bulunduğunu ve kullandığını belirtmiştir. Bu sonuçlardan yola çıkarak Türkiye'de internet erişimi ve kullanım oranının yıllara göre artış gösterdiği ve çocuklarında bu artışa paralel internet erişim ve teknoloji kullanımlarının arttığı görülmektedir.

Çocukların internet faaliyetleri incelendiğinde, %28'i YouTube gibi video paylaşım siteleri üzerinden çizgi film, müzik ve çeşitli videoları izlerken, %27'si oyun oynamaktadır. Alanyazında yer alan çalışmalarda da benzer şekilde çocukların internette en çok Youtube kanallarında çeşitli çizgi film ve videolar izleyip, oyun oynadıklarını göstermektedir (Altun, 2017;Childwise, 2012; Teuwen vd., 2012). Araştırmaya katılan ailelerin sadece %6'sı çocuklarının internet üzerinden eğitici uygulama ve programları (ikinci dil edinimini destekleyici uygulamalar, elektronik hikâyeler, kelime, sayı ve kavram gelişimini destekleyici uygulamalar vb.) kullandıklarını belirtmişlerdir. Çalışma bulguları ışığında çocukların internette daha çok eğlence amaçlı vakit geçirdikleri söylenebilir. Bu durum, okul öncesi çocuklara uygun sınırlı sayıda Türkçe eğitici uygulama ve program bulunmasından kaynaklandığı düşünülmektedir (Altun, 2017).

Ebeveynlerin görüşlerine göre çocukların dijital ayak izleri incelendiğinde, ailelerin %68'si çocuklarının fotoğraflarını dijital ortamlarda paylaşmaktadır. İki yaşından önce dijital ortamda fotoğraf paylaşım oranı %36.94 iken iki yaş sonrası fotoğraf paylaşım oranı %31.06'dır. Dijital Birth (2010) raporuna göre günümüz dijital yerli kuşağının önceki kuşaklardan farklı olarak dijital ortamlarda kendilerine ait bilgi ve fotoğraf paylaşımları ile doğduktan kısa bir süre sonra dijital ayak izleri oluşmakta ve bu izler kayıt altına alınmaktadır. Aileler bebeklerinin doğum öncesinde ultrason görüntülerinden başlayarak, doğumdan kısa bir süre sonra hastanede fotoğraf paylaşımı yapmaktadırlar. Uzmanlar, aileler tarafından dijital ortamda çocuklarına ait bilgi ve fotoğraf paylaşımında bulunmalarının, çocukların özel hayatlarının gizliliği ve bilgi güvenlikleri açısından çeşitli problemlere neden olabileceğini belirtilmektedir. Özellikle, online ortamlarda paylaşılan fotoğrafların kolay kaydedilip paylaşılabilmesi çocukların fotoğraf ve bilgilerinin kötü niyetli kullanımına açık hale getirmektedir (Holloway, Green, & Livingstone, 2013; Leaver, 2011; O'Neill, 2010). Dolayısıyla, aileler

çocuklarına ilişkin dijital ortamlarda bilgi ve fotoğraf paylaşımı yaparken gizlilik ve bilgi güvenliği gibi etik ilkeleri göz önünde bulundurmaları gerekmektedir.

Araştırma sonuçlarına göre çocukları ile birlikte teknolojik uygulamaları kullananan ebeveyn sayısı 105 iken, çocuklarına teknolojik cihaz/uygulamaları kullanmayı öğreten ebeveyn sayısı 61'dir. Aileler, çocuklarının teknoloji kullanımlarını içerik ve süre açısından kontrol etmelerinin yanı sıra dijital okuryazarlığını geliştirmelerine yardımcı olmaları da önemli görülmektedir. Çalışmalarda, teknolojik cihazları çocukların dijital bakıcıları olarak görüp, uzun süre tek başına ekran başında bırakmanın çocukların zihinsel, sosyal, duygusal ve dil gelişimleri ile anne-çocuk bağlanma stillerine zarar verebileceği belirtilmektedir (Amerikan Pediatri Akademisi, 1999; Chau, 2014;Napier, 2014; Pempek & Lauricella, 2018). Uzmanlar bu nedenle ebeveyn ile çocuğun etkileşim içinde olduğu, birlikte oynadığı, katıldığı ve izlediği teknolojik deneyimlerin çocukların öğrenme ve gelişimlerine daha fazla katkı sağladığını vurgulamaktadır (Connell, Lauricella, & Wartella, 2015; Takeuchi & Stevens, 2011). Bu çalışma sonuçlarından yola çıkarak, Türkiye'de okul öncesi dönemde teknoloji kullanımının niceliksel artışı yanında niteliksel açıdan da (aile katılımı, uygun ve kaliteli dijital etkinlik seçimi) artış ve gelişime ihtiyaç olduğu söylenebilir. Milli Eğitim Bakanlığı, Aile ve Sosyal Politikalar Bakanlığı, Sanayi ve Teknoloji Bakanlığının ortaklaşa yürütecekleri çalışmaların çocukların güvenli, gelişim ve öğrenmelerini destekleyici teknoloji kullanımını sağlamada etkili olacağı düşünülmektedir. İleride yapılacak çalışmalar da çocuk ve ebeveynlerin teknoloji kullanım durumları ve dijital ebeveynlik rolleri ev ortamında gözlemlenerek ailelerin beyanları ve uygulamaları konusunda karşılaştırmalı daha detaylı bilgiler sunulabilir.

Anahtar Kelimeler: Okul öncesi, çocuk, ekran süresi, dijital ayak izi, dijital ebeveynlik rolleri

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