Acta Scientiarum
http://periodicos.uem.br/ojs
ISSN on-line: 1807-8648
https://doi.org/10.4025/actascihealthsci.v48i1.71022

The Effect of Technological Device Use Duration of the Children at Pre-school Age on the Relations with Their Parents

Tugba Topbas[1*] and Berna Bayir[2]

[1]Department of Psychiatric Nursing, Institute of Health Sciences, Atatürk University, Erzurum 25240, Turkey. [2]Department of Nursing, Faculty of Health Sciences, KTO Karatay University, Konya, Turkey.*Autor for correspondente. E-mail: tugba.topbas24@ogr.atauni.edu.tr

ABSTRACT. This study aimed to examine the impact of the parent-child relationship on the duration of technological device use among preschool-aged children. Designed as a cross-sectional analytical study, it was conducted with parents of children aged 3–6 years attending kindergartens and preschools in a district located in the western part of Turkey. The study population consisted of 265 parents, and 263 parents who consented to participate formed the study sample. The sample size was determined using the G*Power analysis program. Data were collected through the Socio-Demographic Characteristics Form, the Parent-Child Relationship Form, and the Technological Device Usage Form. Statistical analyses were performed using the Kruskal-Wallis and Mann-Whitney U tests.The results revealed a significant association between parental education levels and the duration of children's device use. It was observed that children whose parents had lower educational levels spent more time using technological devices. Additionally, children whose fathers were laborers had longer screen times compared to those whose fathers were civil servants. The study also found that children are exposed to technological devices at an early age and spend a considerable amount of time using them. These patterns varied depending on the socio-demographic characteristics of the parents. Furthermore, establishing clear rules regarding device use was found to be an effective strategy in reducing excessive screen time. In conclusion, parental characteristics significantly influence preschool children's use of technological devices. It is recommended that educational programs for parents be expanded, and awareness-raising activities on digital media literacy be implemented to support healthier technology use among young children.

Keywords: Mental health; nursing; parent-child relationship;preschool children; technology use.

Received on January 18, 2024.
Accepted on May 15, 2025.

Introduction

The period between 3 and 6 years of age which is known as the preschool period is one of the important developmental periods in which the behaviors of individuals are shaped and their physiological, psychological and cognitive developments start. The mental and physical development are faster, many characteristics for further life are shaped, and language and social skill developments accelerate during this period (Mulé et al., 2022). The children receive the basic information that they need first from the family, then from the social environment and technological devices (Lauricella et al., 2015; Radesky & Chiristakis, 2016;). The child observe the communication and interaction of her/his parents whom she/he takes role model in the center of socialization in addition to her/his deficient cognitive skills, and starts to use the technological device by mimicking her/his parents as a result of such observations (Essler et al., 2023; Jeong et al., 2024; Selak et al., 2025).

In recent years, parents have increasingly turned to technological devices in early childhood as tools to calm their children, distract them, and manage their behavior, instead of relying on digital caregivers (Kabali et al., 2015; Guedes et al., 2019). This tendency has led to the use of technology as a behavioral management tool; however, enhancing parental self-efficacy in managing children's device use has been shown to reduce screen time and promote better adherence to usage rules. (Jago et al., 2015; Gonçalves et al., 2019).

Furthermore, there are studies stating that parents often use technological devices to calm the children down while doing their housework, in public places, during meals and/or before going to bed (Scaglioni et al., 2018; Radesky et al., 2023; Fathima et al., 2024). Over the past fifteen years, the presence of technological devices in children's lives has not been limited to television; instead, new technological devices have increasingly become part of their daily routines (Yalçin et al., 2021; Lee et al., 2024). In a study conducted

among children aged 3-6 years attending kindergartens, the prevalence of technological device use was reported to be 91.5%, with children using these devices for an average of 3.1 hours per day (Al-Mehmadi et al., 2024). Increasing and constantly developing technology may cause preschool children to use technological devices at an early age with a higher level (Xie et al., 2020; Mallawaarachchi et al., 2024).

Although there are numerous epidemiological studies on the use of technological devices by children aged 3–6 in developed countries (Guedes et al., 2019; Nathan et al., 2022; Rathnasiri et al., 2022; Al-Mehmadi et al., 2024), similar studies in Turkey on this age group are quite limited (Saltuk & Erciyes, 2020;Topan & Kuzlu Ayyildiz, 2021; Yalçin et al., 2021). Additionally, the majority of studies conducted in Turkey focus on school-aged children (Eker & Taş, 2022; Moçoşoğlu et al., 2023), adolescents (Çakar & Eren, 2023; Eliacik et al., 2016), and young adults (Koçak et al., 2021; Turan et al., 2020). Considering the insufficient number of studies conducted on the technological device usage of children aged 3–6 in Turkey, this research is expected to make a significant contribution to the field. Furthermore, determining the technological device usage of preschool children is considered a critical factor in preventing technology addiction, which can develop due to unconscious and uncontrolled use of technology. This study provides a holistic perspective by examining both parent-child interaction and device usage together. By exploring the use of technological devices in conjunction with the parent-child relationship, the research is expected to contribute to studies aimed at preventing technology addiction and guide the development of early intervention strategies against it.

The aim of this research is to determine the effect of the relationship of preschool childrenwith their parents on the duration of technological device use in line with the information in the literature.

Research questions:

1. Is there a difference in the duration of the use of technological devices by the children according to the socio-demographic characteristics of the parents?
2. Does the relationship between the parents and children affect the technological device usage time of preschool children?
3. Do children's activities with their parents at home and outside change the time they use technological devices?
4. Do parents' views on children's use of technological devices change the duration of children's use of technological devices?

Materials and methods

Study overview and population

This cross-sectional research which examines the effect of the relationship of the children at preschool age with their parents on the duration of technological device use.The population of the study consisted of 265 parents living in a town in the western part of Turkey, who had children aged 3–6 attending preschool or kindergarten during the 2021-2022 academic year. When determining the sample size, G-Power analysis was used with a medium effect size (0.2), significance level (0.05), and power (0.95), resulting in a total of 262 participants. A total of 263 parents, including 183 mothers and 80 fathers, who voluntarily agreed to participate in the study, constituted the sample group of the research.The dependent variables of the study are the duration of use of technological devices and the parent-child relationship of children aged 3-6 years, the independent variables are the demographic characteristics of the child and parents, and the views of the parents on the use of technological devices.

Data collection tools

For the purposes of this study, data collection was carried out using a ‘Socio-Demographic Characteristics Form,’ which was designed by the researchers based on an extensive literature review, and a questionnaire comprising two distinct sections (Dinleyici et al., 2016; Kılıç et al., 2019; Lee et al., 2019; Chen et al., 2020). The questionnaire consisted of two components: the ‘Parent-Child Relationship Form,’ intended to evaluate the quality of the relationship between parents and their children, and the ‘Technological Device Usage Form,’ which included questions addressing factors that may influence children's usage of technological devices. Before the administration of the questionnaire, expert feedback was sought from two professors and four assistant professors with expertise in the relevant domain to assess the validity and reliability of the forms. Based on the feedback, the content validity index was calculated as 0.98. After incorporating the expert

suggestions and making the necessary revisions, a pilot study was conducted involving 10 parents. Following the pilot study, the forms were deemed appropriate, and the data collection process was initiated using these instruments. The data gathered from the pilot study were subsequently included in the analysis of the overall research data.

Socio-Demographic Characteristics Form: The Socio-Demographic Characteristics Form was developed by the researchers to gather information about both the parents and their children. This form consists of 10 questions in total, including 5 open-ended and 5 structured questions, designed to determine the parents' age, gender, educational and occupational status, the number of children, the number of children aged 3-6, and the ages of the children.

Parent-Child Relationship Form: The Parent-Child Relationship Form was created by the researchers to assess the relationship between parents and children, and was designed for completion by the parents. This form aims to determine the amount of time a child aged 3-6 spends indoors during weekdays and outdoors on weekends, to identify the activities parents engage in with their 3-6-year-old child both at home and outside, as well as the frequency and duration of these activities. Additionally, it seeks to identify the types of games the child plays both indoors and outdoors. The form consists of a total of 10 questions, including 2 open-ended questions and 8 structured questions.

Technological Device Usage Form: TheTechnological Device Usage Formwas designed to assess the parents' views on the use of technological devices by their children aged 3–6. This form includes questions related to the type of technological devices used by the child, the age at which the child was introduced to these devices, the frequency and duration of device use during weekdays and weekends, the purpose and reasons for using the device, the individuals who influence the child's device usage, the age at which the child was introduced to television, the active viewing time for television during weekdays and weekends, the child's use of the internet, the parent's perceived need for information about the child's use of technological devices, the rules set by the parent regarding device usage, the frequency of adherence to these rules, the extent of content and time control, the child's response when device usage is limited, and the parent's general views on technological device usage. The form consists of 27 questions, including 3 open-ended questions and 24 structured questions.

Data collection method

In order to collect the research data, a questionnaire and an informed consent form were distributed between January and April 2022 to parents who could not be contacted directly, through teachers working in one kindergarten and three primary schools with preschool classes in a town located in western Turkey. Parents who agreed to participate completed both the questionnaire and the consent form and returned them to the teachers via their children. In addition, the researchers visited the schools in person, provided information about the study to the parents, obtained signed consent forms, and collected data using face-to-face interviews. The time required to complete each questionnaire varied depending on the parents' individual comprehension speed, taking approximately 10 to 15 minutes on average.

Statistical analyses

Data entry and statistical analysis were performed by IBM SPSS Statistics (Statistical Package For Social Science) 18.0 package program. The conformity of the data to the normal distribution was analyzed through the Kolmogrorov-Smirnov/Shapiro-Wilk tests. In the evaluation of numerical data, arithmetic mean, standard deviation, median (1st quarter-3rd quarter), minimum and maximum values, frequency distributions and percentages were used to summarize categorical data. The correlation between non-normally distributed numerical data and categorical data was evaluated with the Man-Whitney U test. The Kruskal Wallis test was used to evaluate three or more groups with numerical data that were not normally distributed. Posthoc Man-Whitney U test and Bonferroni correction were performed for pairwise comparisons between groups with significant Kruskal Wallis test results. Correlations of non-normally distributed numerical variables were analyzed with the Spearman correlation coefficient. Type-1 error level was accepted as 5% for statistical significance.

The ethics of the research

Prior to data collection, ethical approval for the study was obtained from the Non-Pharmaceutical and Medical Device Research Ethics Committee of KTO Karatay University on 15.10.2021, with the decision

number 2021/018. Additionally, the necessary permissions to conduct the study in schools where data collection would take place were granted by the relevant provincial authority and school administrations on 27.12.2021. Participants who were reached through face-to-face communication were provided with detailed information about the purpose of the study, which was to examine the impact of the parent-child relationship on the duration of technological device use among preschool children. It was explained that the data collection instrument consisted of three sections: the Socio-Demographic Characteristics Form, the Parent-Child Relationship Form, and the Technological Device Usage Form. Participants were also informed that their responses would be kept confidential and that the data collected would be used solely for the purposes of this research. Informed consent was obtained from those who agreed to participate. For parents who could not be reached in person, the same information was provided in written form at the beginning of the data collection tool. Written informed consent was obtained from all voluntary participants. All procedures of the study were conducted in accordance with the principles of the Declaration of Helsinki.

Results

The findings of the study were analyzed and presented in line with the data obtained from a total of 263 parents (183 mothers and 80 fathers).

A statistically significant difference was found between children's use of technological devices and the educational status of their mothers and fathers.There was a significant difference between the use of technological devices by the children during the week, the total usage time of the device, and the occupation of the father ($p<0.05$; Table 1).

Table 1. Comparison of children use of technological devices and their parents' socio-demographic characteristics.

Variables	Weekday usage time			Weekend usage time			Total Usage Time		
	Median (1-3. quarter)	Test statistics	p	Median (1-3. quarter)	Test statistics	p	Median (1-3. quarter)	Test statistics	p
Gender*									
Female	60.0 (30.0-120.0)	-1.624	0.104	95.0 (60.0-120.0)	-0.794	0.427	140.0 (90.0-300.0)	-1.619	0.220
Male	60.0 (60,0-120,0)			120.0 (60,0-180,0)			180.0 (120.0-300.0)		
Mother's education*									
⩽ Primary& middle school	80.0 (50.0-180.0)	-3.549	<0.001	120.0 (60.0-180.0)	-2.756	0.006	180.0 (90.0-360.0)	-3.139	0.001
⩾ University	60.0 (30.0-120.0)			60.0 (60,0-120,0)			120.0 (80.0-210.0)		
Father's education*									
⩽ Primary& middle school	70.0 (40.0-180.0)	-2.377	0.017	120.0 (60.0-120.0)	-2.630	0.009	180.0 (92.5-360.0)	-2.620	0.004
⩾ Üniversity	60,0 (30.0-120.0)			60,0 (60.0-120.0)			120.0 (90.0-240.0)		
Mother's profession**									
Not working	60.0 (40.0-135.0)	4.184	0.123	120.0 (60.0-120.0)	1.581	0.454	180.0 (90.0-300.0)	1.747	0.266
Officer	60.0 (30.0-120.0)			80.0 (60.0-120.0)			140.0 (90.0-240.0)		
Employee	100.0 (30.0-150.0)			120.0 (60.0-225.0)			190.0 (60.0-360.0)		
Father's profession**									
Not working	105.0 (52.5-157.5)	8.899	0.012	120.0 (60.0-165.0)	3.298	0.192	180.0 (60.0-300.0)	5.614	0.046
Officer	60.0 (30.0-120.0)			80.0 (60.0-120.0)			120.0 (90.0-240.0)		
Employee	70.0 (40.0-180.0)			120.0 (60.0-180.0)			180.0 (90.0-360.0)		

*Mann-Whitney U test was used. **Kruskal-Wallis H test was used.

A statistically significant difference was not found between the use of technological devices by the child and the time the child spent on weekdays, the frequency of activities at home, the time he spent outside at the weekend, and the frequency of activities outside the home (Table 2; $p>0.05$).

Table 2. Comparison of children's technological devices use and activity characteristics.

Variables	Weekday usage time			Weekend usage time			Total usage time		
	Median (1-3. quarter)	Test statistics	p	Median (1-3. quarter	Test statistics	p	Median (1-3. quarter)	Test statistics	p
Time the child spends at home on weekdays*									
2-4 hours	90.0 (30.0-135.0)	5.707	0.127	60.0 (22.5-120.0)	5.398	0.145	90.0 (52.5-240.0)	5.482	0.140
5-7 hours	60.0 (30.0-120.0)			70,0 (60.0-120.0)			130.0 (90.0-240.0)		
8-10 hours	60,00 (30.0-120.0)			80.0 (45.0-120.0)			150.0 (90.0-240.0)		
⩾ 11 hours	60.0 (42.5- 180.0)			120.0 (60.0-180.0)			180.0 (92.5-300.0)		
Frequency of activities done at home with the child*									
1-2 times a week	75.0 (40.0-120.0)	0.588	0.964	120.0 (60.0-157.5)	1.422	0.840	175.0 (92.5-300.0)	1.860	0.762
3-4 times a week	60.0 (32.5-120.0)			120,0 (60.0-135.0)			150,0 (90.0-300.0)		
4-5 times a week	65.0 (30.0-120.0)			120.0 (60.0-165.0)			180.0 (90.0-345.0)		
Every day	60.0 (40.0-120.0)			70.0 (60.0-120.0)			150.0 (90.0-240.0)		
Weekend	60.0 (27.5-205.0)			90.0 (30.0-225.0)			120.0 (48.7-410.0)		
Time the child spends outside on the weekend*									
2-4 hours	60.0 (40.0-120.0)	2.758	0.431	120.0 (60.0-180.0)	4.094	0.251	150.0 (90.0-300.0)	3.652	0.302
5-7 hours	60.0 (40.0-120.0)			85.0 (60.0-120.0)			180.0 (90.0-367.0)		
8-10 hours	135.0			210.0			345.0		
⩾ 11 hours	30.0			30.0			60.0		

*Kruskal-Wallis H test was used.

Multiple linear regression analysis was performed to examine the effect of children's indoor and outdoor activities on the total use of technological devices by children. The examination of the regression analysis assumptions revealed that the correlation between the activities carried out inside and outside the home and the total use of technological devices by children was not significant (F = 1.385, p = 0.155; Table 3).

Table 3. The result of multiple linear regression analysis of the effect of activities on the child's total technological devices usage time.

Variables		Beta	SEM	F	p
Activities at home with the child	Still			1.385	0.155
	Watching cartoons	-7.744	30.811	0.063	0.802
	Play a game	58.943	25.164	5.487	0.020
	Painting	54.480	25.779	4.466	0.036
	Homework	16.517	21.619	0.584	0.446
	Reading books	-14.475	25.413	0.324	0.569
	Listen to music	-28.439	24.774	1.318	0.252
	Dancing	11.255	24.750	0.207	0.650
Activities outside the home with the child	Go to the park	-42.047	28.210	2.222	0.137
	Shopping	11.062	24.540	0.203	0.653
	Visiting friends/relatives	-28.457	21.768	1.709	0.192
	Go to Picnic	18.552	21.814	0.723	0.396
	Take a walk	-9.374	21.434	0.191	0.662
	Ride a bike	24.504	20.339	1.451	0.229
	Go to cinema	3.634	25.537	0.020	0.887
	Go to the theater	-76.145	42.522	3.207	0.075

Independent variable: Total technological device usage time; F = 1.385, p = 0.155

Comparison of children's use of technological devices with children's use of technological devices and the views of parents is shown in Table 4. There was a difference between the interest of the children in technological devices and the duration of their use of technological devices (p<0.001).

This is due to the fact that the children of the participants who think that their use of technological devices are appropriate, the median of their use of technological devices is higher than those who think that the median of use of technological devices is not appropriate (p<0.001).

The median of the technological device duration of the parents who did not set rules for the use of technological devices for their children between 3 and 6 years of age was statistically significant and higher than those who set the rules (p = 0.037, p = 0.038, p = 0.021, respectively).

When the use of technological devices by the children was limited, the median of the use of technological devices was significantly higher in children who reacted when compared to children who did not react (p = 0.021, p = 0.001, p = 0.002, respectively). Furthermore, the median of technological device use was significantly higher for parents who thought that their children had any technological device addiction (p<0.001).

Table 4. Comparision of children's use of technological devices with parental attitudes.

Variables	Weekday usage time			Weekend usage time			Total usage time		
	Median (1-3. quarter)	Test statistics	p	Median (1-3. quarter)	Test statistics	p	Median (1-3. quarter)	Test statistics	p
What is the level of interest of your 3-6 year old child in using technological devices?**									
At a low level	55.0 (30.0-75.0)			60.0 (30.0-120.0)			90.0 (60.0-147.5)		
Medium level	60.0*** (30.0-100.0)			60.0*** (60.0-120.0)			120.0 (90.0-230.0)***		
High level	120.0 (60.0-180.0)			120.0 (60.0-200.0)			240.0 (120.0-380.0)		
Quite a lot	180.0 (52.5-255.0)			190.0 (105.0-300.0)			330.0 (165.0 555.0)		
Is the time your child spends using technology appropriate?*									
Yes	60.0 (30.0-70.0)	-5.394	<0.001	60.0 (40.0-120.0)	-4.893	<0.001	120.0 (60.0-180.0)	-5.559	<0.001
No	110.0 (60.0-180.0)			120.0 (60.0-180.0)			240.0 (120.0-360.0)		
Do you have a rule about the use of technological devices for your 3-6 year old child?*									
Yes	60.0 (35.0-120.0)	-2.083	0.037	80.0 (60.0-120.0)	-2.071	0.038	150.0 (90.0-270.0)	-2.309	0.021
No	120.0 (55.0-180.0)			120.0 (60.0-180.0)			240.0 (120.0-360.0)		
Do you get a reaction from your child when you limit your child's use of technological devices?*									
Yes	60.0 (40.0-120.0)	-2.309	0.021	120.0 (60.0-180.0)	-3.31	0.001	180.0 (90.0-330.0)	-3.094	0.002
No	60.0 (30.0-120.0)			60.0 (30.0-120.0)			120.0 (60.0-240.0)		
Do you think your child has any technological device addiction?*									
Yes	120.0 (60.0-180.0)	-4.320	<0.001	120.0 (60.0-180.0)	-4.842	<0.001	240.0 (120.0-360.0)	-4.936	<0.001
No	60.0 (30.0-100.0)			60.0 (40.0-120.0)			120.0 (70.0-180.0)		

* = Mann-Whitney U test was used. ** = Kruskal-Wallis H test was used.*** = Shows the group from which the difference originates.

Multiple linear regression analysis was performed to examine the effect of the answers given to some questions of parents about children's use of technological devices, on the total duration of use of technological devices by children. When the assumptions of the regression analysis were examined, it was determined that the correlation between the total use of technological devices by children and the dependent variables included in the analysis was significant (F = 7.975, p<0.001; Table 5).

Table 5. Multiple linear regression analysis result of the effect of parental attitudes on the child's total technological device usage time

Variables	Beta	SEM	F	p
Still			7.975	0.000
Is the time your child spends using technological devices appropriate?	-99.189	18.502	28.739	0.000
Is your child's learning to use technological devices at an early age an indication that her development is going well?	-58.082	27.644	2.500	0.084
Do you have an internet security application that you have made so that your child can use the internet safely?	6.914	17.975	0.148	0.701
Do you have any rules for your 3-6 year old child to use technological devices?	-42.873	22.789	3.539	0.061
Do you get a reaction from your child when you limit your child's use of technological devices?	41.313	21.936	3.547	0.061
Independent variable: Total technological device usage time F = 7.975, p<0.001; R^2 = 0.157, Durbin Watson = 1.915				

SEM: Standard error of mean.

Discussion

The World Health Organization and APA recommend that the total time of use of technological devices for preschool children should not exceed 60 minutes (Guram & Heinz, 2017; Bull et al., 2020). The Green Crescent Society, an important organization in Turkey combating addiction, reports that the time children aged 3-6 should spend with technological devices should be a maximum of 20-30 minutes. (Yesilay, 2021). It was detected that that children aged 3-6 use technological devices for an average of 60 minutes on weekdays, 110 minutes on weekends and 160 minutes on average per day. It was observed that there were some variables affecting these times. According to the research findings, it was determined that the duration of device use was higher than the children of parents whose mother and father had a high school education level and below, and children of mothers and fathers with a bachelor's degree or higher education level (Table 1). Studies have reported that as the education level of parents increases, the time children spend with technological devices decreases (Määttä et al., 2017; Pérez-Farinós et al., 2017; Kühhirt & Klein, 2020; Durmuş & Övür, 2021; Yalçin et al., 2021; Kwon et al., 2024). The results of the studies show parallelism with the results of this research. However, there are also studies that show different results. In a study by Radesky et al. (2020); It has been stated that children with high maternal education level spend less time in front of the screen than children with low maternal education level. However, in the study, it was stated that there was no significant relationship between the education level of the father and the time spent by the children in front of the screen (Radesky et al., 2020). Although the findings of the conducted study are similar to those of this research, the relationship between father's education level and the amount of time children spend in front of screens has differed according to the findings of this study. A study conducted in Malaysia reported that there is no significant correlation between parental education status and the duration of the use of technological devices by the children (Abdullah et al., 2022). Radesky et al.'s and Abdullah's studies differ from this research due to the selection of the population, which is influenced by cultural factors. In addition, it is thought that parents with a high level of education can assume the role of competent parents in managing their children's use of technological devices from a young age, and this may affect the research finding. The presents study also detected a significant difference between the children's use of technological devices during the week, the total device use time and the father's occupation. However, it was determined that the working status of the mothers did not have an effect on the use of technological devices by their children (Table 1).

A study conducted in Japan found that children's sedentary time included screen time, and that screen time was longer than non-screen sedentary time. The study also revealed that children of mothers who worked more than 20 hours per week had higher screen time compared to children of stay-at-home mothers. Furthermore, it was found that as mothers' weekly working hours increased, children's screen time also increased. In contrast, children whose fathers worked more than 48 hours per week had lower screen time compared to children whose fathers did not work (Hatakeyama et al., 2022).

A study conducted in China found that children of working mothers had longer screen time on weekdays, weekends, and throughout the entire week compared to children of non-working mothers. Additionally, it was determined that the working status of fathers did not show a significant relationship with the children’s screen time (Xie et al., 2023). The differences between the findings of this study and the results of the research conducted in Japan and China are thought to stem from the variations in the measurement criteria and variables used in the studies, as well as from sociocultural differences between countries. Additionally, a study conducted in Spain has reported results parallel to those of the study conducted in China (Gracia & García-Román, 2018). This similarity can be explained by the fact that, in both countries, the mother's employment status has a significant effect on children's screen time. Despite cultural differences, common dynamics such as the primary role of mothers in child care and time management within the household may have contributed to similar outcomes regarding screen time. In this study, it is assumed that 65% of mothers not working may affect the results. Due to differing societal norms, women's roles as workers in the workplace and as mothers at home may reduce the time they spend with their children. Therefore, it is suggested that this factor may have influenced the differences in the results between this study and other studies conducted on the same topic.

In the study, no statistically significant difference was found between the time spent by children on weekdays, the frequency of activities at home, the time they spent outside on weekends, the frequency of activities outside the home, and the duration of children's use of technological devices. Although there is no statistically significant difference between these findings, it is seen that as the time spent by children at home

on weekdays increases, the duration of using technological devices decreases. Furthermore, it was seen that parents' activities with their children every day of the week were effective in reducing the use of technological devices (Table 2).

A study conducted in Australia found no statistically significant association between parents' participation in active outdoor play with their children on weekdays and weekends and the children's screen time (Wiseman et al., 2019). The results of this research demonstrate similarities with those reported in the aforementioned study.

The parents stated in a study in which the views of parents on the use of tablets by preschool children were obtained that the reason why children spend a lot of time with the tablet is that they spend more time with the tablet because of the absence of outdoor activities such as spending time with outdoor games, going to the park, walking, playing with friends. However, it was mentioned that children prefer to spend time with their friends instead of using tablets when they have the chance to play outside, and that they spend time with tablets or television when they are alone at home and when there are no indoor activities (Yılmaz Genc & Fidan, 2017). A study conducted in China on preschool children revealed a relationship between parents' socioeconomic status and children's outdoor activity time and screen time. According to the findings, children of parents with higher socioeconomic status participated more frequently in outdoor activities and spent less time in front of screens. These results suggest that family socioeconomic conditions may have a significant influence on children's physical activity levels and media use behaviors (Zong et al., 2024).The findings of this research are similar to those of a study conducted in China. This suggests that the quality of time parents spend with their children and the living conditions of families may indirectly affect the amount of time children spend in front of screens.It was observed that the findings of this study and the literature findings were different. This result suggests that even if families spend time with their children, they do not effectively limit the time spent in front of the screen.

The findings of this study revealed that the children of parents who did not set rules, the children of parents who did not set rules, the children who reacted when device use was limited, children who did not react when device use was limited, and the children of parents who thought that their children were technologically addicted were significantly higher than children of parents who thought that their children were not addicted (Table 4). Studies have indicated that children of parents who do not impose limits, exercise control, or establish rules regarding screen time tend to use technological devices for longer periods compared to children of parents who set boundaries, enforce rules, and monitor usage (Lauricella et al., 2015; Xu et al., 2016; Hinkley et al., 2017; Miguel-Berges et al., 2020;). These findings are consistent with the results of the current research, demonstrating that parental attitudes significantly influence the duration of children's use of technological devices. It is observed that the research findings and the findings of the studies in the literature support each other. More than half of the parents stated in this study that the time spent by their children with technological devices is not appropriate. Although some parents think that this time is appropriate, it was detected that children use technological devices for an average of 160 minutes per day. In other words, it is much higher than the time considered appropriate for the age group. This situation still demonstrates the need for community education on technology addiction. The fact that parents did not have accurate information about how their children should use technological devices within 3 to 6 years of age affected the findings of this research.

Conclusion

This study found that preschool children spend more time on technological devices than recommended. Parents aware of the risks often struggle to set proper boundaries, leading to longer usage. The study suggests that parents should avoid device interaction for children under 3, limit use to 20-30 minutes for ages 3-6, and ensure age-appropriate content. Encouraging physical activities, improving peer communication, and ending device use an hour before sleep are also recommended. Enhancing parental digital literacy is essential for better boundary-setting. Future research should focus on device addiction and improving parent-child interactions.

Limitations of the study

Our findings have several limitations that must be mentioned. The sample of this study consists of parents of children aged 3-6 years attending kindergarten and preschool in a town located in the western of Turkey, including 183 mothers and 80 fathers. Therefore, the findings of this study can only be generalized to children

in this specific group.The data used in this study are restricted to students attending kindergarten or pre-school during the 2021-2022 academic year. This research is limited to the responses provided by the parents in the questionnaire used for data collection. The demographic characteristics of the children are limited to the data obtained from the Socio-Demographic Characteristics Form. The data concerning the relationship between the children and their parents are limited to the responses in the Parent-Child Relationship Form. The data on children's use of technological devices are limited to the responses obtained from the Technological Device Usage Form, which reflects the opinions of the parents.

Acknowledgment

This study was supported within the scope of the 2021/10 Turkey Gereen Crescent Society Postgraduate Thesis Research Grant Program. During the conduct of the study, the author, Tuğba Topbaş, received a scholarship from the Turkey Green Crescent Society.

References

Abdullah, N. N., Mohamed, S., Abu Bakar, K., & Satari, N. (2022). The influence of sociodemographic factors on mobile device use among young children in Putrajaya, Malaysia. *Children*, *9*(2), 228. https://doi.org/10.3390/children9020228

Al-Mehmadi, S. O., Halawani, A. T., Sulaimani, M. T., & Al-Mehmadi, T. O. (2024). Electronic device usage among preschool children and its association with mental health status in Saudi Arabian kindergartens. *Saudi Medical Journal*, *45*(9), 945–951. https://doi.org/10.15537/smj.2024.45.9.20240354

Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Carty, C., Chaput, J. P., Chastin, S., Chou, R., Dempsey, P. C., DiPietro, L., Ekelund, U., Firth, J., Friedenreich, C. M., Garcia, L., Gichu, M., Jago, R., ... Katzmarzyk, P. T., (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British Journal of Sports Medicine*, *54*(24), 1451–1462. https://doi.org/10.1136/bjsports-2020-102955

Çakar, S., & Eren, G. (2023). Internet addiction in constipated adolescents. *Turkish Journal of Gastroenterology*, *34*(3), 287–292. https://doi.org/10.5152/tjg.2023.22190

Chen, J. Y., Strodl, E., Huang, L. H., Chen, Y. J., Yang, G. Y., & Chen, W. Q. (2020). Early electronic screen exposure and autistic-like behaviors among preschoolers: The mediating role of caregiver-child interaction, sleep duration and outdoor activities. *Children*, *7*(11), 200. https://doi.org/10.3390/children7110200

Dinleyici, M., Carman, K. B., Ozturk, E., & Sahin-Dagli, F. (2016). Media use by children, and parents' views on children's media usage. *Interactive Journal of Medical Research*, *5*(2), e18. https://doi.org/10.2196/ijmr.5668

Durmuş, K., & Övür, A. (2021). Analysis of new media use of preschool children in the context of media impacts. *e-Journal of New Media*, *5*(2), 136–155. http://dx.doi.org/10.17932/IAU.EJNM.25480200.2021/ejnm_v5i2003

Eker, H., & Taş, İ. (2022). The relationship between game addiction, emotional autonomy, and emotion regulation in adolescents: A multiple mediation model. *International Journal of Technology and Educational Sciences*, *6*(4), 569–584. https://doi.org/10.46328/ijtes.390

Eliacik, K., Bolat, N., Koçyiğit, C., Kanik, A., Selkie, E., Yilmaz, H., Catli, G., Dundar, N. O., & Dundar, B. N. (2016). Internet addiction, sleep and health-related life quality among obese individuals: A comparison study of the growing problems in adolescent health. *Eat Weight Disorders*, *21*(4), 709–717. https://doi.org/10.1007/s40519-016-0327-z

Essler, S., Becher, T., Pletti, C., Gniewosz, B., & Paulus, M. (2023). Longitudinal evidence that infants develop their imitation abilities by being imitated. *Current Biology*, *33*(21), 4674–4678.e3. https://doi.org/10.1016/j.cub.2023.08.084

Fathima, N., Venkatraman, K., & Hariharan, T. S. (2024). Qualitative study on the influence of mealtime screen exposure on children's feeding practices: Perspectives from paediatricians and speech-language pathologists in Chennai, Tamil Nadu. *BMJ Open*, *14*(12), e087904. https://doi.org/10.1136/bmjopen-2024-087904

Gonçalves, W. S. F., Byrne, R., Viana, M. T., & Trost, S. G. (2019). Parental influences on screen time and weight status among preschool children from Brazil: A cross-sectional study. *International Journal of Behavioral Nutrition and Physical Activity*, *16*(1), 27. https://doi.org/10.1186/s12966-019-0788-3

Gracia, P., & García-Román, J. (2018). Child and adolescent developmental activities and time use in Spain: The gendered role of parents' work schedules and education levels. *European Sociological Review*, *34*(5), 518–538. https://doi.org/10.1093/esr/jcy029

Guedes, S. D. C., Morais, R. L. S., Santos, L. R., Leite, H. R., Nobre, J. N. P., & Santos, J. N. (2019). Children's use of interactive media in early childhood - An epidemiological study. *Revista Paulista de Pediatria*, *38*, e2018165. https://doi.org/10.1590/1984-0462/2020/38/2018165

Guram, H., & Heinz, P. (2017). Media use in children: American Academy of Pediatrics recommendations 2016. *Archives of Disease in Childhood-Education & Practice Edition*, *103*(2), 99–101. https://doi.org/10.1136/archdischild-2017-312969

Hatakeyama, N., Kamada, M., & Kondo, N. (2022). Parental working hours and children's sedentary time: A cross-sectional analysis of the J-SHINE. *Journal of Epidemiology*, *32*(1), 4–11. https://doi.org/10.2188/jea.JE20200170

Hinkley, T., Carson, V., Kalomakaefu, K., & Brown, H. (2017). What mums think matters: A mediating model of maternal perceptions of the impact of screen time on preschoolers' actual screen time. *Preventive Medicine Reports*, *6*, 339–345. https://doi.org/10.1016/j.pmedr.2017.04.015

Jago, R., Wood, L., Zahra, J., Thompson, J. L., & Sebire, S. J. (2015). Parental control, nurturance, self-efficacy, and screen viewing among 5- to 6-year-old children: A cross-sectional mediation analysis to inform potential behavior change strategies. *Childhood Obesity*, *11*(2), 139–147. https://doi.org/10.1089/chi.2014.0110

Jeong, K.-H., Kim, S., Ryu, J. H., & Lee, S. (2024). A longitudinal relationship between mother's smartphone addiction and child's smartphone addiction. *International Journal of Mental Health and Addiction*, *22*, 1771–1782. https://doi.org/10.1007/s11469-022-00957-0

Kabali, H. K., Irigoyen, M. M., Davis, R. N., Budacki, J. G., Mohanty, S. H., Leister, K. P., & Bonner, R. L. (2015). Exposure and use of mobile media devices by young children. *Pediatrics*, *136*(6), 1044–1050. https://doi.org/10.1542/peds.2015-2151

Kılıç, A. O., Sari, E., Yucel, H., Oğuz, M. M., Polat, E., Acoglu, E. A., & Senel, S. (2019). Exposure to and use of mobile devices in children aged 1–60 months. *European Journal of Pediatrics*, *178*(2), 221–227. https://doi.org/10.1007/s00431-018-3284-x

Koçak, O., Yılmaz, İ., & Younis, M. Z. (2021). Why are Turkish university students addicted to the internet? A moderated mediation model. *Healthcare (Basel)*, *9*(8), 953. https://doi.org/10.3390/healthcare9080953

Kühhirt, M., & Klein, M. (2020). Parental education, television exposure, and children's early cognitive, language and behavioral development. *Social Science Research*, *86*, 102391. https://doi.org/10.1016/j.ssresearch.2019.102391

Kwon, S., Armstrong, B., Wetoska, N., & Capan, S. (2024). Screen time, sociodemographic factors, and psychological well-being among young children. *JAMA Network Open*, *7*(3), e2354488. https://doi.org/10.1001/jamanetworkopen.2023.54488

Lauricella, A. R., Wartella, E., & Rideout, V. J. (2015). Young children's screen time: The complex role of parent and child factors. *Journal of Applied Developmental Psychology*, *36*(1), 11–17. https://doi.org/10.1016/j.appdev.2014.12.001

Lee, D. Y., Roh, H. W., Kim, S.-J., Park, E.-J., Yoo, H., Suh, S., & Shin, Y. (2019). Trends in digital media use in Korean preschool children. *Journal of Korean Medical Science*, *34*(41), e263. https://doi.org/10.3346/jkms.2019.34.e263

Lee, S., Kim, D., & Shin, Y. (2024). Screen time among preschoolers: Exploring individual, familial, and environmental factors. *Clinical and Experimental Pediatrics*, *67*(12), 641–650. https://doi.org/10.3345/cep.2023.01746

Määttä, S., Kaukonen, R., Vepsäläinen, H., Lehto, E., Ylönen, A., Ray, C., & Roos, E. (2017). The mediating role of the home environment in relation to parental educational level and preschool children's screen time: A cross-sectional study. *BMC Public Health*, *17*(1), 796. https://doi.org/10.1186/s12889-017-4694-9

Mallawaarachchi, S., Perera, B., Wijesundara, L., Samaraweera, A., Goonewardena, C., Hettiarachchi, M., Perera, B., De Silva, A., & Jayasinghe, D. (2024). Early childhood screen use contexts and cognitive and psychosocial outcomes: A systematic review and meta-analysis. *JAMA Pediatrics*, *178*(10), 1017–1026. https://doi.org/10.1001/jamapediatrics.2024.2620

Miguel-Berges, M. L., Santaliestra-Pasias, A. M., Mouratidou, T., Flores-Barrantes, P., Androutsos, O., De Craemer, M., Galcheva, S., Koletzko, B., Kulaga, Z., Manios, Y., & Moreno, L. A. (2020). Parental perceptions, attitudes and knowledge on European preschool children's total screen time: The ToyBox-study. *European Journal of Public Health*, *30*(1), 105–111. https://doi.org/10.1093/eurpub/ckz151

Moçoşoğlu, B., & Yorulmaz, B. (2023). The relationship between digital game addiction levels and study habits of primary school 4th grade students: The Example of Ümraniye. *Anadolu Journal of Educational Sciences International*, *13*(2), 459–492. https://doi.org/10.18039/ajesi.1270411

Mulé, D., Jeger, I., Dötsch, J., Breido, F., Ferrari, N., & Joisten, C. (2022). Correlation between language development and motor skills, physical activity, and leisure time behaviour in preschool-aged children. *Children*, *9*(3), 431. https://doi.org/10.3390/children9030431

Nathan, T., Muthupalaniappen, L., & Muhammad, N. A. (2022). Prevalence and description of digital device use among preschool children: A cross-sectional study in Kota Setar District, Kedah. *Malaysian Family Physician*, *17*(3), 114–120. https://doi.org/10.51866/oa.25

Pérez-Farinós, N., Villar-Villalba, C., López Sobaler, A. M., Dal Re Saavedra, M. Á., Aparicio, A., Santos Sanz, S., Robledo de Dios, T., Castrodeza-Sanz, J. J., & Ortega Anta, R. M. (2017). The relationship between hours of sleep, screen time and frequency of food and drink consumption in Spain in the 2011 and 2013 ALADINO: A cross-sectional study. *BMC Public Health*, *17*(1), 33. https://doi.org/10.1186/s12889-016-3962-4

Radesky, J. S., & Christakis, D. A. (2016). Increased screen time implications for early childhood development and behavior. *Pediatric Clinics of North America*, *63*(5), 827–839. https://doi.org/10.1016/j.pcl.2016.06.006

Radesky, J. S., Kaciroti, N., Weeks, H. M., Schaller, A., & Miller, A. L. (2023). Longitudinal associations between use of mobile devices for calming and emotional reactivity and executive functioning in children aged 3 to 5 years. *JAMA Pediatrics*, *177*(1), 62–70. https://doi.org/10.1001/jamapediatrics.2022.4793

Radesky, J. S., Weeks, H. M., Ball, R., Schaller, A., Yeo, S., Durnez, J., Tamayo-Rios, M., Epstein, M., Kirkorian, H., Coyne, S., & Barr, R. (2020). Young children's use of smartphones and tablets. *Pediatrics*, *146*(1), e20193518. https://doi.org/10.1542/peds.2019-3518

Rathnasiri, A., Rathnayaka, H., Yasara, N., & Mettananda, S. (2022). Electronic screen device usage and screen time among preschool-attending children in a suburban area of Sri Lanka. *BMC Pediatrics*, *22*(1), 390. https://doi.org/10.1186/s12887-022-03452-6

Saltuk, M. C., & Erciyes, C. (2020).Investigation and attitude of parents about the use of technology in preschool children. *e-Journal of New Media, 4*(2), 106–120. https://doi.org/10.17932/IAU.EJNM.25480200.2020.4/2.106-120

Scaglioni, S., De Cosmi, V., Ciappolino, V., Parazzini, F., Brambilla, P., & Agostoni, C. (2018). Factors influencing children's eating behaviours. *Nutrients*, *10*(6), 706. https://doi.org/10.3390/nu10060706

Selak, M. B., Merkaš, M., & Žulec Ivanković, A. (2025). The effects of parents' smartphone use on children's emotions, behavior, and subjective well-being. *European Journal of Investigation in Health, Psychology and Education*, *15*(1), 8. https://doi.org/10.3390/ejihpe15010008

Topan, A., & Kuzlu Ayyildiz, T. (2021). Examination of the effects of technological device use on preschool children's quality of life: An exploratory and cross-sectional study. *International Journal of Nursing Practice*, *27*(4), e12918. https://doi.org/10.1111/ijn.12918

Turan, N., Durgun, H., Kaya, H., Aştı, T., Yılmaz, Y., Gündüz, G., Kuvan, D., & Ertaş, G. (2020). Relationship between nursing students' levels of internet addiction, loneliness, and life satisfaction. *Perspectives in Psychiatric Care*, *56*(3), 598–604. https://doi.org/10.1111/ppc.12474

Wiseman, N., Harris, N., & Downes, M. (2019). Preschool children's preferences for sedentary activity relates to parent's restrictive rules around active outdoor play. *BMC Public Health*, *19*(1), 946. https://doi.org/10.1186/s12889-019-7235-x

Xie, G., Deng, Q., Cao, J., & Chang, Q. (2020). Digital screen time and its effect on preschoolers' behavior in China: Results from a cross-sectional study. *Italian Journal of Pediatrics*, *46*(1), 9. https://doi.org/10.1186/s13052-020-0776-x

Xie, Q.-W., Luo, X., Chen, R., & Zhou, X. (2023). Associations between parental employment and children's screen time: A longitudinal study of China health and nutrition survey. *International Journal of Public Health*, *67*, 1605372. https://doi.org/10.3389/ijph.2022.1605372

Xu, H., Wen, L. M., Hardy, L. L., & Rissel, C. (2016). A 5-year longitudinal analysis of modifiable predictors for outdoor play and screen-time of 2- to 5-year-olds. *International Journal of Behavioral Nutrition and Physical Activity*, *13*(1), 96. https://doi.org/10.1186/s12966-016-0422-6

Yalçin, S. S., Tezol, Ö., Çaylan, N., Erat Nergiz, M., Yildiz, D., Çiçek, Ş., & Oflu, A. (2021). Evaluation of problematic screen exposure in pre-schoolers using a unique tool called "seven-in-seven screen exposure questionnaire": Cross-sectional study. *BMC Pediatrics*, *21*(1), 472. https://doi.org/10.1186/s12887-021-02939-y

Yesilay. (2021). *Teknoloji bağımlılığı nedir?*(Access link: https://www.yesilay.org.tr/tr/bagimlilik/teknoloji-bagimliligi)

Yılmaz Genc, M. M. Y., & Fidan, A. (2017). Children, parents and tablets: Preschool children's tablet use. *Pegem Journal of Education and Instruction*, *7*(3), 367–398. https://doi.org/10.14527/pegegog.2017.014

Zong, B., Li, L., Cui, Y., & Shi, W. (2024). Effects of outdoor activity time, screen time, and family socioeconomic status on physical health of preschool children. *Frontiers in Public Health*, *12*, 1434936. https://doi.org/10.3389/fpubh.2024.1434936