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Parental and Sociodemographic Factors Associated with Problematic Screen Use in Children

Çocuklarda Problemli Ekran Kullanımı ile İlişkili Ebeveynlere Ait ve Sosyodemografik Faktörler

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ABSTRACT

Objectives: Problematic screen use among children is increasing globally. Information regarding problematic screen use during childhood and the factors that may be associated with it is limited. We aimed to investigate the potential factors in problematic screen use in children. Our study examines the associations of sociodemographic and screen-related factors, digital parenting awareness, parents' screen addiction, and parental self-efficacy on screen use of children.

Materials and Methods: The study was conducted in Türkiye and involved 295 children aged 4-11 years. The sociodemographic and screen use-related questions, Problematic Media Use Measure (PMUM)-short form, Digital Parenting Awareness Scale, Perceived Parental Self-Efficacy Scale (PPSES), and Multiple Screen Addiction Scale (MSAS) were utilized.

Results: It was found that 51.2% of the children spent 2 hours or more in front of screens daily. There was a correlation between PMUM scores and the frequency of using screen during family meals (r=0.286), and screen use within one hour before bedtime (r=0.311). A linear regression analysis was conducted to examine variables that could influence PMUM scores. Significant factors found to increase PMUM scores included being male, having a psychiatric disorder, increased screen time, higher digital neglect scores, lower PPSES scores, and higher MSAS scores.

Conclusion: Understanding the associated factors of problematic screen use in children could help mitigate the long-term risks related to this behavior. Emphasizing the parents' role and ensuring their involvement in potential interventions appears crucial.

Keywords: Problematic screen use, children, self-efficacy, digital awareness, parental screen use

ÖZ

Amaç: Çocuklarda sorunlu ekran kullanımı küresel olarak artmaktadır. Çocukluk döneminde sorunlu ekran kullanımı ve bununla ilişkili olabilecek faktörler hakkında bilgiler sınırlıdır. Çocuklarda sorunlu ekran kullanımındaki potansiyel faktörleri araştırmayı amaçladık. Çalışmamız sosyodemografik ve ekranla ilişkili faktörler, dijital ebeveynlik farkındalığı, ebeveynlerin ekran bağımlılığı ve ebeveyn öz yeterliliğinin çocukların ekran kullanımı üzerindeki ilişkilerini incelemektedir.

Gereç ve Yöntem: Çalışma Türkiye'de yürütülmüş olup, 4-11 yaş aralığındaki 295 çocuk çalışmaya dahil edilmiştir. Çalışmada sosyodemografik ve ekran kullanımına ilişkin sorular, Problemli Medya Kullanım Ölçeği (PMKÖ)-Kısa Form, Dijital Ebeveynlik Farkındalık Ölçeği, Algılanan Ebeveyn Yetkinlik Ölçeği (EYÖ) ve Çoklu Ekran Bağımlılığı Ölçeği (ÇEBÖ) kullanılmıştır.

Bulgular: Çocukların %51,2'sinin günlük olarak ekranların önünde 2 saat veya daha fazla zaman geçirdiği bulundu. PMKÖ puanları ile aile yemekleri sırasında ekran kullanma sıklığı (r=0,286) ve uykudan önceki bir saat içinde ekran kullanımı (r=0,311) arasında bir korelasyon vardı. PMKÖ puanlarını etkileyebilecek değişkenleri incelemek için lineer regresyon analizi yapıldı. PMKÖ puanlarını artırdığı bulunan önemli faktörler arasında erkek olmak, psikiyatrik bir rahatsızlığa sahip olmak, artan ekran süresi, daha yüksek dijital ihmal puanları, daha düşük EYÖ puanları ve daha yüksek ÇEBÖ puanları yer aldı.

Sonuç: Çocuklarda sorunlu ekran kullanımının ilişkili faktörlerini anlamak, bu davranışla ilişkili uzun vadeli riskleri azaltmaya yardımcı olabilir. Ebeveynlerin rolünü vurgulamak ve olası müdahalelere katılımlarını sağlamak hayati önem taşımaktadır.

Anahtar Kelimeler: Problemli ekran kullanımı, çocuklar, öz yeterlilik, dijital farkındalık, ebeveyn ekran kullanımı

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Introduction

With the rapid development of technology, screen devices have become more prevalent in our lives. Accordingly, there has been a significant increase in the use of these devices recently.[1] A review investigating screen time in children aged 6-14 years found that approximately 47.0% had two or more hours of screen time per day. Evaluations in similar regions indicated an increase in screen use from 41.3% to 59.4% during the COVID-19 pandemic.[2]

Given these concerning trends in children's screen exposure, understanding parental approaches to managing screen use becomes increasingly important. Parents may struggle to determine limits regarding screens, which are integral to children's daily lives. Various institutions provide information and recommendations on screen use. The Royal College of Psychiatrists advises parents to model appropriate technology use for their children, pay attention to online security, set screen time limits, and encourage balanced activities.[3] Despite these recommendations, compliance is low, with reports indicating that only 1 in 3 children aged 2-5 years adhere to screen guidelines.[4] Excessive screen use in children may be linked to various physical and psychological issues, such as obesity, sleep disorders, anxiety, and depression.[5]

To understand these complex parenting challenges in the digital environment, this study draws upon Bandura's social cognitive theory, which suggests that human behavior stems from the dynamic interaction between individual, behavioral, and environmental factors.[6] In the context of children's screen use, this theoretical lens helps us examine how the digital environment parents create (through digital parenting practices), parents' beliefs about their own capabilities (self-efficacy), and children's observational learning from parental screen behaviors collectively might influence screen use patterns. Within Bandura's framework, the environmental factor-represented by digital parenting practices-becomes particularly crucial. Parents need to develop comprehensive digital parenting skills. In today's digital world, being a "digital parent" involves responding to digital environment needs, being proficient with digital tools, recognizing opportunities, protecting children from risks, and instilling respect for personal rights in the virtual environment as in real life.[7] Parental behaviors in the digital sphere can significantly impact children's problematic screen use.[8] For example, not modeling appropriate screen use can contribute to this problem. Digital neglect (DN), a form of digital parenting, can also be associated with children's problematic screen use. Parental neglect is significantly associated with smartphone addiction in adolescents.[9] Additionally, parents' awareness of the efficient use (EU) of digital media, including the advantages and risks of technology, may be linked to children's problematic use. One study found a negative relationship between parental awareness of efficient digital media use and children's digital game addiction scores.[10] Another aspect of digital parenting awareness is protecting children from screen-related risks.[11] Monitoring children's screen use and content can reduce screen use during childhood.[12]

While digital parenting practices provide the framework for managing children's screen use, parents' confidence in implementing these practices-their parental self-efficacy-represents another crucial factor. Parental self-efficacy is defined as a parent's expectations and beliefs about their ability to parent effectively.[13] Higher parental self-efficacy is associated with reduced screen time in children.[14] Additionally, parental self-efficacy can predict children's screen use.[15] Beyond digital parenting and parental self-efficacy, parents' screen behaviors serve as powerful models for their children. Parental screen use was linked to problematic screen use,[16] increased screen time, and problematic media and video game use.[17]

Problematic screen use in children may differ from that in adolescents because children's access to screens is more dependent on their parents.[18] Based on this understanding and social cognitive theory, our research group focused on children aged 4-11 years. Environmental effects are particularly strong in this age group, with parents serving simultaneously as environmental architects (through digital parenting practices), behavioral models (through their own screen use), and sources of efficacy beliefs (through their confidence in managing digital parenting). In the literature, these parenting-related factors are often investigated separately, but the number of studies examining them in a holistic manner is limited. Understanding their combined and interactive effects may provide more comprehensive insights into preventing and addressing problematic screen use in childhood. Furthermore, understanding how well parents implement practices related to sleep and eating-areas that receive limited emphasis in many studies-as well as screen time limitations, which are emphasized in guidelines, could provide valuable information. Our research can contribute to advancing knowledge in this area.

Therefore, this study aims to examine how sociodemographic variables, child screen use characteristics, and multiple parental factors-including digital parenting awareness, parental self-efficacy, and parental screen use behaviors- collectively influence problematic screen use in children aged 4-11 years.

Materials and Methods

Participants and Procedure

The study population comprises parents with children aged between 4 and 11. All participants who had children within this age range and agreed to take part in the study were included. The study sample was collected online. An online form consisting of 71 questions—covering sociodemographic and screen use-related questions, the Digital Parenting Awareness Scale, the Perceived Parental Self-Efficacy Scale (PPSES), the Problematic Media Use Measure (PMUM)-short form, and the Multiple Screen Addiction Scale (MSAS) was created on a survey platform. We used snowball sampling for reaching the participants. Before starting the study, a power analysis was performed to determine the required sample size for this type of research. Reference findings from a study examining the correlation between a parent's and child's screen addiction

revealed a moderate effect.[19] Assuming a smaller effect size (r=0.2), it was determined that 90.0% power could be achieved with a 95.0% confidence level (5.0% type 1 error rate) when a minimum of 255 participants were included in the study.

The data collection began on November 2, 2022, and lasted for a duration of three months. The survey form was distributed to 477 individuals, of whom 472 agreed to participate. Forty-two children were not included in the study since their age was not in the evaluated age group. Out of the remaining 430 participants, 295 completed the research forms.

The Non-Interventional Clinical Research Ethics Committee of Pamukkale University approved the study with the decision dated October 18, 2022, and numbered E-60116787-020-279007. All participants provided informed consent, and the study was conducted in line with the Declaration of Helsinki.

Measures

Sociodemographic and Screen Use-Related Questions: In the form created by the researchers, questions are asked about the child's age, gender, family composition, parental education level, and family income. It also assessed whether the child had any psychiatric disorders or chronic physical diseases. In addition, there are questions to understand the child's screen use, such as screen time, the purpose of screen use, parental content monitoring, whether there are limitations related to screen use, whether screen use occurs during meals, and whether screen use occurs before sleep.

Problematic Media Use Measure-Short Form: It was developed by Domoff et al.[18] This scale assesses problematic screen usage in children aged 4-11 years. It consists of 9 items; each rated on a 5-point Likert scale ranging from 1 (never) to 5 (always). The total score is derived by summing the item scores and dividing by 9. Higher scores indicate more problematic media use. Furuncu and Öztürk[20] performed the validity and reliability of the scales' Turkish version.

Digital Parenting Awareness Scale: Manap and Durmuş[21] created the scale, which includes 16 questions and four sub-dimensions: negative modeling (NM), which measures parents demonstrating poor digital habits that children may imitate; DN, which assesses using digital devices as a substitute for parenting or avoiding active interaction with children; EU, which measures intentional and appropriate use of digital tools with children; and protection from risks (PR), which evaluates proactive measures to protect children from online dangers and harmful content. Questions are scored on a Likert scale ranging from 1 to 5, with sub-dimension scores ranging from 4 to 20. Each sub-dimension is evaluated separately. Higher scores on the NM and DN sub-dimensions are linked to lower digital parenting awareness, while higher scores on the PR and EU sub-dimensions are linked to higher digital parenting awareness.[21]

Perceived Parental Self-Efficacy Scale: Caprara et al.[22] developed the scale. The scale measures parents' competencies in supporting and communicating openly with their children, managing parent-child conflicts, maintaining self-confidence, and effectively coping with new situations. The Turkish adaptation of the scale was validated and tested for reliability by Demir and Gündüz.[23] The original version consists of 12 items, whereas the Turkish version includes 11 items. Each item is rated on a 7-point scale ranging from 1 (highly inadequate) to 7 (highly adequate). Higher scores indicate greater parental self-efficacy.[23]

Multiple Screen Addiction Scale: Sarıtepeci[24] developed the scale to assess addiction to multiple screens (TV, computer, tablet, phone, etc.). The scale contains 15 items across three sub-dimensions: compulsive behavior, loss of control, and excessive screen time. Items are scored on a 5-point scale ranging from 1 (never) to 5 (always). The total scale score is used to evaluate addiction status, with higher scores indicating a greater risk of multiple screen addiction.[24]

Statistical Analysis

Statistical analyses were conducted using SPSS 25.0 (IBM SPSS Statistics 25; Armonk, NY: IBM Corp.). Continuous variables were reported as the mean, standard deviation, median [interquartile range (IQR): 25th-75th percentiles], and minimum and maximum values, while categorical variables were reported as the number and percentage. Normality was assessed using the Shapiro-Wilk and Kolmogorov-Smirnov tests. The Mann-Whitney U test and Kruskal-Wallis variance analysis (post hoc: Mann-Whitney U test with Bonferroni correction) were performed for group comparisons. The Spearman correlation coefficient was utilized to examine the relationship between continuous variables. Univariate and multivariate linear regression models were used to investigate the effects of independent factors on the problematic media use measure. First, univariate analyses were conducted using sociodemographic and child screen use variables, digital parenting awareness subscales, the PPSES, and the MSAS. Then, multivariate analyses were performed with the variables found to be statistically significant in the univariate analyses. Multicollinearity was assessed using variance inflation factors. Statistical significance was considered at $p<0.05$.

Results

Sample Characteristics and Screen Usage Patterns

The number of females slightly exceeded that of males, accounting for 52.2% of the children. The mean age of the children was 7.85 years [standard deviation (SD)=2.11]. The mean age of the mothers of these children was 38.19 years (SD=4.61), and the fathers were 40.98 years (SD=5.35). A significant majority, 87.1%, of families were nuclear families. Most parents had achieved higher education, with 62.7% of mothers and 61.7% of fathers being university graduates. Over half of the families, 54.6%, identified themselves as middle class. The percentage of children with chronic physical diseases was 13.2%, and that of those with psychiatric disorders was 6.4%.

In terms of screen usage, 51.2% of children spent two or more hours daily in front of a screen. Specifically, 30.4% spend exactly 2 hours, 11.9% spend 3 hours, 5.1% spend 4 hours, and 3.8% spend more than 5 hours daily. Notably, 87.8% of families set

limitations on screen use, and 96.6% monitored the content of the screen usage. The main purposes for children's screen use were watching videos (55.3%), playing games (47.1%), and watching TV (44.4%). When screen use during family meals and 1 hour before bedtime was examined, the majority of families reported some level of screen use for their children. For family meals, 51.2% reported occasional screen use ("sometimes"), while 13.2% reported "often" using screens and 6.8% reported "always" using screens during meals, meaning 71.2% of families used screens during family meals to some degree. Similarly, for the hour before bedtime, 63.1% reported "sometimes" using screens, 19.0% reported "often," and 5.4% reported "always," with 87.5% of families reporting some level of screen use before bedtime (Table 1).

The participants' scores on the PMUM, Digital Parenting Awareness Scale, MSAS, and PPSES are presented in Table 2.

Problematic Media Use Analysis

When the PMUM scores were compared according to sociodemographic variables, males had significantly higher scores than females [Median (Mdn)=2.00, IQR=1.56-2.78 vs. Mdn=1.67, IQR=1.22-2.47, p=0.001]. Children with reported psychiatric disorders also demonstrated significantly higher scores compared to those without psychiatric disorders (Mdn=2.78, IQR=1.56-3.56 vs. Mdn=1.89, IQR=1.44-2.56, p=0.013). No significant differences were found in comparisons according to family composition (p=0.485) or chronic disease status of children (p=0.403). Additionally, no significant correlations were found between PMUM scores and maternal and paternal age (p=0.077 and p=0.093), maternal and paternal education level (p=0.368 and p=0.212), or family income level (p=0.954).

Although no statistical difference was observed between participants who reported setting screen time limits and those who did not (p=0.701), children whose screen content was not monitored by parents demonstrated significantly higher PMUM scores than those whose content was monitored (Mdn=2.83, IQR=1.94-3.22 vs. Mdn=1.89, IQR=1.44-2.56, p=0.022). Daily screen time of children, the frequency of screen use during family meals and frequency of screen use within 1 hour before bedtime had significant positive correlations with PMUM scores (r=0.499, r=0.286, and r=0.311, respectively; p<0.001 for all three).

Table 3 shows that PMUM scores correlated positively with screen time, screen use during meals, screen use within 1 hour before bedtime, NM, DN, and MSAS scores and negatively with PR, EU, and PPSES scores.

Linear regression analysis was conducted to examine the factors influencing the PMUM scores, with univariate model results presented in Table 4. The analysis began with univariate analyses before moving to multivariate analyses, including variables significant in the univariate analysis.

Child's gender, father's age, the child's psychiatric disorder, screen time, content monitoring, using screens during meals, screen use within 1 hour before bedtime, and the NM, EU, PR, DN, PPSES, and MSAS scores were associated with PMUM scores on univariate analyses. The multivariate model included only those factors that showed statistical significance in the univariate analysis presented in Table 5. The presence of a psychiatric disorder, an increase in screen time, an increase in DN scores, a decrease in PPSES scores, an increase in MSAS scores, and gender (male) were all found to have a significant impact on PMUM scores.

Table 1. Sample characteristics and participants' screen usage data

Baseline characteristics	Full sample	
	n	%
Gender		
Female	154	52.2
Male	141	47.8
Family composition		
Nuclear family	257	87.1
Extended family	22	7.5
Parents divorced	15	5.1
One or more parents died	1	0.3
Maternal education		
Non-educated	1	.3
Primary-middle school	13	4.4
High school	35	11.9
University	185	62.7
Post graduate and higher	61	20.7
Paternal education		
Primary-middle school	8	2.7
High school	42	14.2
University	182	61.7
Post graduate and higher	63	21.4

Table 1. Continued

Baseline characteristics	Full sample	
	n	%
Income		
Low	8	2.7
Middle	161	54.6
High	126	42.7
Chronic disease of the child		
No	256	86.8
Yes	39	13.2
Psychiatric disorder of the child		
No	276	93.6
Attention-deficit hyperactivity disorder	11	3.7
Learning disorder	3	1.0
Anxiety disorder	3	1.0
OCD	1	0.3
ASD	1	0.3
How much time does your child spend in front of a screen per day?		
None	5	1.7
0-1 hour	72	24.6
1 hour	66	22.5
2 hours	89	30.4
3 hours	35	11.9
4 hours	15	5.1
More than 5 hours	11	3.8
Do you limit your child's screen		
No	36	12.2
Yes	259	87.8
Do you monitor the content of your child's screen use?		
No	10	3.4
Yes	285	96.6
Do you use any screens when you eat meals as a family?		
Never	85	28.8
Sometimes	151	51.2
Often	39	13.2
Always	20	6.8
Does your child use screens in the hour before sleep?		
Never	37	12.5
Sometimes	186	63.1
Often	56	19.0
Always	16	5.4
Screen usage purpose		
Watching TV	131	44.4
Watching video	163	55.3
Games	139	47.1
Education	77	26.1
Communication	19	6.4
Socializing	9	3.1

OCD: Obsessive compulsive disorder, ASD: Autism spectrum disorder

Table 2. Participants' scores on the scales

	Mean ± SD	Median (IQR)	Min-max
PMUM	2.04±0.79	1.89 (1.44-2.67)	1-4.78
Negative modelling	8.32±2.53	8 (7-10)	4-19
Digital neglect	8.79±2.88	8 (7-11)	4-18
Efficient use	15.92±2.38	16 (14-18)	7-20
Protecting from risks	14.84±3.14	15 (13-17)	6-20
MSAS	30.73±9.65	29 (23-38)	15-63
PPSES	60.22±8.69	60 (55-66)	19-77

SD: Standard deviation, IQR: Interquartile range, Min-max: Minimum-maximum, PMUM: Problematic Media Use Measure, MSAS: Multiple Screen Addiction Scale, PPSES: Perceived Parental Self Efficacy Scale

Table 3. Associations of the PMUM with other scales and sociodemographic and screen-related variables

		PMUM
Age	r	0.081
	p	0.167
Mother's age	r	0.103
	p	0.077
Father's age	r	0.098
	p	0.093
Maternal education	r	-0.053
	p	0.368
Paternal education	r	-0.073
	p	0.212
Income	r	-0.003
	p	0.954
How much time does your child spend in front of a screen per day?	r	0.499*
	p	<0.001
Do you use any screens when you eat meals as a family?	r	0.286*
	p	<0.001
Does your child use screens in the hour before sleep?	r	0.311*
	p	<0.001
Negative modelling	r	0.332*
	p	<0.001
Digital neglect	r	0.562*
	p	<0.001
Efficient use	r	-0.227*
	p	<0.001
Protecting from risks	r	-0.209*
	p	<0.001
PPSES	r	-0.335*
	p	<0.001
MSAS	r	0.491*
	p	<0.001

*p<0.05 statistically significant. PMUM: Problematic Media Use Measure, PPSES: Perceived Parental Self Efficacy Scale, MSAS; Multiple Screen Addiction Scale

Discussion

This research examined the characteristics of screen usage among preschool and elementary school-aged children, the association between problematic media use of children and parental self-efficacy, digital parenting awareness, parental multiple-screen addiction, and the factors influencing problematic media use among children.

The study results indicated that about 50.0% of children spent 2 hours or more per day in front of screens. According to the Australian physical activity guidelines, children aged 5-17 years should not exceed 2 hours of screen time per day.[25] Increased screen time has been associated with sleep problems, overweight, or obesity.[26] In our study, it is concerning that approximately 50.0% of the children exceeded the recommended screen time, particularly given the potential health issues that may arise. Although 87.8% of the participating parents indicated that they set limitations on screen use, considering the 50.0% rate of exceeding recommended screen time, it may be appropriate to provide parents with information about screen use and strategies for appropriate approaches.

Another finding was that increased screen time had an increasing effect on PMUM scores. Rega et al.[27] noted that the amount of time spent on media is a risk factor for developing problematic media use in children under 10. Our study aligns with this literature, though it should be remembered that screen time may contribute to problematic media use alongside many other factors.[28] Our study also found that families who did not monitor screen content had higher PMUM scores. Not monitoring screen content contributes to problematic screen use.[29] Lack of content monitoring may reflect a general parental style regarding screen use, leading to unsupervised and problematic screen use by the child. This relationship requires further investigation.

Nearly three-quarters of children were found to use screens during family meals. Jusienė et al.[30] reported that more than half of children are exposed to screens during meals. Exposure to screens during meals may increase food consumption.[31] The high prevalence of screen use and its association with increased food consumption may pose a risk to children's health, highlighting the need to raise awareness at the societal level.

Table 4. PMUM scores univariate linear regression analysis

Univariate models	Std. beta	t	p	95% CI lower	95% CI upper
Age	0.072	1.239	0.217	-0.016	0.07
Gender (ref: female)	0.182	3.166	0.002*	0.109	0.468
Mother's age	0.105	1.802	0.073	-0.002	0.038
Father's age	0.129	2.224	0.027*	0.002	0.036
Maternal education	-0.046	-0.782	0.435	-0.174	0.075
Paternal education	-0.071	-1.217	0.225	-0.216	0.051
Family composition (ref: nuclear family)	-0.048	-0.83	0.407	-0.386	0.157
Income	-0.007	-0.114	0.909	-0.178	0.158
Chronic disease of the child (ref: no disease)	0.091	1.558	0.12	-0.056	0.48
Psychiatric disorder of the child (ref: no disorder)	0.186	3.238	0.001*	0.235	0.964
How much time does your child spend in front of a screen per day?	0.51	10.112	<0.001*	0.24	0.356
Do you limit your child's screen use? (ref: no limit)	-0.052	-0.885	0.377	-0.403	0.153
Do you monitor the content of your child's screen use? (ref: no monitor)	-0.144	-2.491	0.013*	-1.128	-0.132
Do you use any screens when you eat meals as a family?	0.29	5.185	<0.001*	0.171	0.381
Does your child use screens in the hour before sleep?	0.325	5.873	<0.001*	0.241	0.484
Negative modelling	0.343	6.249	<0.001*	0.074	0.141
Digital neglect	0.587	12.399	<0.001*	0.136	0.188
Efficient use	-0.224	-3.933	<0.001*	-0.112	-0.037
Protecting from risks	-0.219	-3.836	<0.001*	-0.084	-0.027
PPSES	-0.304	-5.465	<0.001*	-0.038	-0.018
MSAS	0.507	10.07	<0.001*	0.034	0.05

*p<0.05 statistically significant. CI: Confidence interval, ref: reference class, PMUM: Problematic Media Use Measure, PPSES: Perceived Parental Self Efficacy Scale, MSAS; Multiple Screen Addiction Scale, Std: Standard

Table 5. PMUM scores multivariate linear regression analysis

Multivariate model	Std. beta	t	p	95% CI lower	95% CI upper	VIF
Gender	0.098	2.364	0.019*	0.026	0.286	1.039
Father's age	0.052	1.213	0.226	-0.005	0.02	1.102
Psychiatric disorder of the child	0.177	4.255	<0.001*	0.305	0.831	1.037
How much time does your child spend in front of a screen per day?	0.215	4.094	<0.001*	0.065	0.186	1.653
Do you monitor the content of your child's screen use?	-0.056	-1.318	0.189	-0.611	0.121	1.093
Do you use any screens when you eat meals as a family?	0.032	0.682	0.495	-0.057	0.117	1.295
Does your child use screens in the hour before sleep?	0.042	0.854	0.394	-0.061	0.155	1.460
Negative modelling	-0.075	-1.356	0.176	-0.058	0.011	1.849
Digital neglect	0.287	5.154	<0.001*	0.049	0.109	1.857
Efficient use	-0.057	-1.142	0.254	-0.051	0.014	1.474
Protecting from risks	0.04	0.8	0.424	-0.015	0.035	1.503
PPSES	-0.096	-1.998	0.047*	-0.017	0	1.377
MSAS	0.32	5.883	<0.001*	0.017	0.035	1.781

*p<0.05 statistically significant. Model R^2: 0,535. CI: Confidence interval, PMUM: Problematic Media Use Measure, PPSES: Perceived Parental Self Efficacy Scale, MSAS; Multiple Screen Addiction Scale, VIF: Variance inflation factor, Std: Standard

Our study also found that as screen use during meals increased, so did PMUM scores. Longer daily screen time increases the likelihood of children eating in front of screens.[30] Children who consume their meals in front of screens may exhibit prolonged daily screen usage, contributing to higher PMUM scores. The percentage of children who reported using screens within 1 hour before bedtime was 87.5%. As the frequency of screen use before bedtime increased, so did PMUM scores. Increased PMUM scores with higher pre-bedtime screen use suggest that screen usage, even close to bedtime, likely correlates with overall daily usage. High frequency of screen use may also indicate low-level parental awareness in this regard.

In the regression analysis, the child's gender (male) was a significant factor in the multivariate model. Husárová et al.[32] found that boys used screens more than girls in Slovak children. Another study also found that boys had higher rates of screen addiction.[33] Our findings are consistent with this literature. Our study also found that having a psychiatric disorder was associated with higher PMUM scores. A study in Türkiye found that children with psychiatric disorders had longer screen times than those without and that increased screen time may relate to impaired functionality.[34]

Another factor found to increase PMUM scores in the regression analysis was an increase in DN subscale scores. A study in Japan found that children's screen time was associated with their parents' digital media awareness.[35] Additionally, children from families with neglectful parenting styles are more likely to exhibit problematic internet use.[36] Increased parental DN or low digital parental awareness may indicate that parents allow their children to use digital devices instead of engaging with them, especially during challenging times. This may lead to higher problematic media use scores among children.

Our study also found that higher parental self-efficacy scores decreased PMUM scores. High parental efficacy is associated with meeting children's needs throughout childhood, exhibiting warm and compassionate parenting behaviors, and greater involvement in daily learning and play activities.[37] A review found that high task-specific self-efficacy in parents was associated with reduced screen time for children.[38] High parental self-efficacy may enable parents to effectively guide their children towards non-screen activities, such as learning and play, thereby reducing their PMUM scores.

Finally, our study found that an increase in parental MSAS scores increased PMUM scores. Nagata et al.[17] showed that parental screen usage correlated with prolonged screen time in adolescents. A study examining parental modeling effects on children's screen time revealed that children tend to emulate their parents' screen behaviors.[39] Our finding may be related to this modeling behavior.

The findings of this study can be interpreted within Bandura's social cognitive theory, which emphasizes the interplay between personal, behavioral, and environmental factors in shaping human behavior.[6] From an environmental perspective, our results highlight the importance of digital parenting practices-particularly DN-in influencing children's media habits. Parents with higher digital parenting awareness may exert a protective influence against problematic media use, consistent with social cognitive theories principle that environmental contexts and behavioral patterns mutually influence one another.[6] At the behavioral level, the relationship between parents' own screen use (i.e., multiple screen addiction) and children's problematic media use reflects the process of observational learning of social cognitive theory.[40] Children may tend to imitate screen-related behaviors modeled by their parents.[39] From a personal perspective, the link between parental self-efficacy and children's problematic screen use aligns with Bandura's assertion that perceived self-efficacy influences behavior through its effects on the selection of activities and environments.[41] Parents with higher self-efficacy may be better able to regulate their children's screen exposure and promote alternative, non-digital activities. Taken together, these findings offer insights into how personal (self-efficacy), behavioral (parental screen use), and environmental (digital parenting) factors dynamically interact to shape children's screen use patterns. Accordingly, interventions designed to prevent problematic media use in childhood may benefit from strategies that strengthen parental self-efficacy, promote mindful modeling of media behaviors, and foster consistent, informed digital parenting practices.

Study Limitations

Although our study contributes to the understanding of problematic screen use in children, it has some limitations. First, the use of a snowball sampling method may have limited the inclusion of families from lower socioeconomic backgrounds. Second, the cross-sectional design and the uncertainty regarding the data collection locations limit the generalizability of the findings. Third, as the study focused on children, only parents' opinions were sought. Reliance on parent-reported measures may have introduced social desirability bias, as parents could have underreported or overreported their own or their child's screen-related behaviors. Finally, children's psychiatric disorder status was based on parental reports without clinical verification, which should be considered when interpreting the observed associations.

Conclusion

Our study highlighted several factors associated with problematic screen use in children. These factors include being male, spending more time in front of screens, having a psychiatric disorder, higher DN scores, lower parental self-efficacy scores, and higher parental screen addiction scores. Parental factors especially stand out in relation to problematic screen use in children. Efforts to increase parental awareness and improve societal understanding would be beneficial. Parental involvement in children's daily activities and taking a more active role outside of screens could mitigate problematic screen use in children.

Ethics

Ethics Committee Approval: The Non-Interventional Clinical Research Ethics Committee of Pamukkale University approved the study with the decision dated October 18, 2022, and numbered E-60116787-020-279007.

Informed Consent: All participants provided informed consent, and the study was conducted in line with the Declaration of Helsinki.

Footnotes

Authorship Contributions

Concept: A.B., M.A.T., Design: A.B., M.A.T., Data Collection or Processing: A.B., M.A.T., H.Ş., Analysis or Interpretation: A.B., H.Ş., Literature Search: A.B., M.A.T., Writing: A.B., M.A.T., H.Ş.

Conflict of Interest: The authors declare no conflicts of interest.

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