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Problematic Screen Use in Parents and Children: Predictor of Parent-Child Relationship Quality

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Abstract

This study aimed to examine the influence of screen time and problematic screen use by parents and their children on parent-child relationships in early childhood. Data were collected from parents of 411 children aged 3–6 years through a survey questionnaire. Path analysis was conducted to investigate the associations between parent and child screen time, problematic screen use, and parent-child relationship quality. The findings indicated significant associations between parents' and children's screen time, as well as their problematic screen use. Parents' problematic screen use was a significant predictor of children's problematic screen use. Furthermore, problematic screen use by both parents and children accounted for 37% of the variance in parent-child relationship quality, highlighting its negative impact. These findings suggest that interventions aimed at improving family digital habits may help mitigate the negative effects of problematic screen use and support healthier parent-child relationships in early childhood.

Keywords Parents · Young children · Problematic screen use · Screen time · Digital technology

Introduction

The parent-child relationship plays a key role in children's development and well-being in the early childhood years (Blatt & Levy, 2003; Maccoby, 1992; O'Connor et al., 2018). Therefore, the quality of this relationship is recognized as critical for children's well-being (Oliva et al., 2008). Current research shows that children who have a strong relationship with their parents face fewer physical (Coe et al., 2024), psychological (Coe et al., 2018), and emotional problems (Ibabe & Bentler, 2016; Xu et al., 2018) throughout life. Besides, a strong parent-child relationship improves adaptive social and emotional skills in adolescence and adulthood (Knauth, 2000). Moreover, theoretical approaches emphasize the importance of the parent-child relationship for the child's development and acquisition of positive behaviors (Ainsworth, 1989; Bronfenbrenner, 1992).

In recent years, digital technologies have become deeply embedded in daily life, particularly in family environments. This trend became even more pronounced during the COVID-19 pandemic, which significantly altered daily routines within families. Lockdowns, remote education, and reduced access to outdoor and social activities led to an increased reliance on digital devices for both children and parents (Nagata et al., 2022). As a result, screen exposure surged in many households, raising concerns about potentially problematic screen use and its impact on family relationships (Ouyang et al., 2023). Current research shows that both parents and children spend excessive time with digital devices such as televisions, smartphones, and tablet computers (Choi et al., 2023; Hedderson et al., 2023; Mesce et al., 2022). Problematic screen use can be defined as the difficulties experienced by individuals in controlling their use of digital devices, the problems faced by individuals when they try to stay away from digital devices, and the negative

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effects of screen use on their physical, psychological, and social lives (Caplan, 2010; Young, 2011).

Problematic screen use by family members can have a negative impact on parent-child relationships (Domoff et al., 2020). It was reported that while most parents are spending time with digital technology, they decrease communication with children and leave them on their own, which can also lead to accompanying negative effects on parent-child relationships (Swider-Cios et al., 2023). According to Konca and Tantekin Erden (2021), during digital activity, while 54.9% of parent-child interactions involved conflicts, 45.1% of the interactions emerged as synchrony between the parent and child. This suggests that screen use can be an important factor affecting the relationships between parents and children. Therefore, this study examines the impact of screen time and problematic screen use by parents and young children on the parent-child relationship in early childhood.

Screen Time and Problematic Screen Use by Parents and Young Children

The use of screen-based technologies has increased significantly across all age groups in recent years (Bergmann et al., 2022; Statista, 2021). Specifically, children exhibit behaviors such as watching cartoons, playing games, following videos of content producers, and spending time on educational content with digital technological tools (Byrne et al., 2021). Research shows that children's use of digital technologies under adult control and in line with developmentally appropriate content has positive effects (Plowman et al., 2010; Yelland, 2011). In the position statement published by the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center (2012), it is recommended that children's passive and non-interactive screen use for children aged 2–5 should be limited to 2 hours per day. Similarly, the American Academy of Pediatrics (AAP, 2016) recommends avoiding screen exposure altogether for children under 18 months, and limiting screen time to one hour per day for those between 18 months and 5 years. However, many studies show that children's screen time is above these recommended limits (Konca et al., 2022; Przybylski & Weinstein, 2019). Increasing time spent with digital technological tools leads to an increased risk of problematic media use in children (Anitha et al., 2021; Lin et al., 2020; Mun & Lee, 2021). Importantly, this pattern is also observed among parents. Recent studies have shown that increased screen time among parents may contribute to a higher risk of problematic technology use. In this context, it is thought that both children's and parents' screen time can predict problematic screen use.

H_1. Children's and parents'screen time significantly predicts their own levels of problematic screen use.

Parents play a key role in mediating children`s screen use (McDaniel & Radesky, 2018a, 2018b). According to social learning theory (Bandura, 1977), children tend to imitate behaviors that are observed in significant others, particularly parents. Various research studies have been made with regard to how children's screen use is shaped. Stating that children use screens for different purposes in different contexts, Johnson (2010) emphasized that the factors involved in children's environments can have an impact on their use of screens. In the context of digital technologies, children may develop behavioral patterns regarding screen use by observing their parents' screen-related behaviors. In a study that presents a model for the problematic screen use of young children within the framework of interactional theory, it is emphasized that children's problematic screen use can be affected by several factors. Among these factors, it has been seen that parents' use of screens, problematic screen use situations, and the relationships they establish with their children have a significant role (Domoff et al., 2020). It can be said that when parents exhibit problematic screen use behaviors, children may internalize and display similar behaviors (Eyimaya & Irmak, 2021; Gong et al., 2022; Lauricella et al., 2015; Lee & Lee, 2017; Mun & Lee, (Mun, and Lee, 2021). Thus, children's problematic screen use behaviors also can be explained by parents' problematic screen use behaviors.

H_2. Parents'levels of problematic screen use significantly influence children's levels of problematic screen use.

The Effect of Problematic Screen Use on the Parent-Child Relationship

Problematic screen use has emerged as a growing concern for family dynamics. In parent-child relationships, the quality of interaction is largely shaped by shared time, emotional satisfaction, and mutual responsiveness. However, when either parents or children are preoccupied with screens, opportunities for communication and emotional bonding are significantly reduced. As a matter of fact, the effect of parents' problematic use of screen on their interactions with their children has been the subject of various studies by evaluating it within the framework of the "technoference" concept (McDaniel, 2015). Parental technoference is defined as the frequent disruption of real-time, face-to-face communication, interactions, or shared time among family members due to parents' use of technology (Mackay et al., 2022). It is thought that while parents are spending time with their families, they

take more interest in their children when not using screens (Blackwell et al., 2016). However, McDaniel (2019) stressed that while parents are together with their children, the use of screens affects parenting behaviors and by extension, the children. It was reported that parents' problematic screen usage increased the frequency of technoference, and that this had a negative impact on the interaction between parents and children (Hiniker et al., 2016; Radesky et al., 2015; Sundqvist et al., 2020). Moreover, according to the Displacement Hypothesis Theory, extensive utilization of screens can supplant face-to-face social interactions, leading to diminished engagement and satisfaction in relationships (Hong et al., 2019). Based on this theory, it can be argued that problematic screen use can replace meaningful parent-child interactions and thus negatively affect the parent-child relationship (Mun & Lee, 2021).

Parents who become stressed due to behavioral and emotional problems experienced by children avoid parent-child interaction by steering them towards screens more (McDaniel & Radesky, 2018a). Notably, when parents experience difficulties in interacting with their children while using screens, they are unable to respond to their wishes and behaviors, and they sometimes reply angrily (Radesky et al., 2014, 2016). Therefore, parents' problematic screen use may lead to behavior problems in children and reduce family interactions (Norouzi et al., 2021). Studies have shown that problematic screen use by family members can reduce family communication and negatively impact the parent-child relationship. In a study, the way infants (under 12 months) reacted to parents' screen use was examined using the still-face paradigm, a widely used experimental procedure in which a caregiver suddenly becomes unresponsive to observe infants' emotional and behavioral reactions (Tronick et al., 1978). While infants had negative reactions to their parents' screen use, they made greater efforts to attract their parents' attention (Myruski et al., 2018). In a study conducted by Rideout and Robb (2018), some children (aged 13–17) expressed that they perceived their parents as addicted to screens and wished they would spend less time on them. Therefore, it can be said that children's and parents' problematic screen use behaviors may negatively affect the parent-child relationship.

H_3. The level of problematic screen use by children and parents has a significant impact on the level of the parent-child relationship.

The Present Study

The negative effects of parents' problematic screen use on parent-child interactions and children's prosocial behaviors have been revealed in various studies (McDaniel & Radesky, 2018b; Sundqvist et al., 2020). The aim of this research is to examine screen time and the levels of problematic screen use in parents and children as predictors of the level of parent-child relationships. In addition, as young children can learn by observing the behavior of adults around them (Bandura & McClelland, 1977), children's screen time and problematic screen use were linked to parents' problematic screen use. Therefore, it was sought to address the role of screen time and problematic screen use of parents and children in parent-child relationships. This study focuses on the parent-child relationship in terms of problematic screen use among parents and children. On the other hand, examining the complex relationship between screen time, problematic screen use, and parent-child relationships can help us better understand family well-being.

The data for this study were collected during the later stages of the COVID-19 pandemic in Turkey, when families were still experiencing the residual effects of lockdowns, remote education, and restricted social mobility. This context offers a valuable opportunity to explore how pandemic-related lifestyle changes may have influenced digital habits and family dynamics. In this regard, the present study contributes to the literature in several important ways. First, it focuses on preschool-aged children (3–6 years), a group that is increasingly exposed to digital environments but often underrepresented in digital behavior research. Second, rather than examining parents' and children's problematic screen use as separate factors, the study investigates them simultaneously within a single model. Third, by drawing on data collected in Turkey, the study provides insights from a non-Western cultural context and contributes to expanding cross-cultural understanding. Based on this perspective, the hypotheses (H_1, H_2, H_3) stated above were examined.

Method

Research Design

The research design adopted in this study is cross-sectional, characterized by data collection from a specified population at a single point in time. This approach is pertinent as it allows the collection of data from a diverse range of participants in a relatively short time frame, as described by Fraenkel et al. (2023), despite the actual data gathering process potentially spanning a few days to several weeks.

Participant and Procedure

This study employed the cluster random sampling method to select its participants from six preschools in Türkiye and the participants, who voluntarily took part in the study, were administered self-determined scales to gather relevant data.

Table 1 Participants' demographics

Variable	Frequency (n)	%
Gender of child		
Girl	200	51.3
Boy	211	48.7
Age of child		
36-48 months	11	2.7
49-60 months	53	12.9
61-72 months	208	50.6
73 months and over	139	33.8
Gender of parent		
Female	375	91.2
Male	36	8.8
Education level of parent		
Primary school	95	23.1
High school	101	24.6
University	215	52.3

A total of 500 parents were randomly chosen to participate in the study. However, 89 of these parents either declined participation or were unable to complete the data collection tools in a suitable time frame. As a result, data were collected from a total of 411 parents (91.2% female). Data were collected between April and June 2021 in Turkey, during the later stages of the COVID-19 pandemic. At the time, public health measures such as remote education, partial lockdowns, and weekend curfews were still in effect. These contextual conditions are important to consider, as they may have influenced families' daily routines, technology usage patterns, and parent-child interactions.

The participants ranged in age from 23 to 52, with a mean age of 33.55 years (SD=5.17). Most of the participants were mothers (91.2%). Of the children, 51.3% were girls and 48.7% were boys. Notably, 84.4% of the children were older than 60 months, and 33.8% were over 73 months, indicating that the majority of the sample consisted of preschool-aged children approaching school entry age. Additionally, over half of the parents (52.3%) were university graduates, suggesting a relatively high educational profile among participants. Detailed demographic information of these participants can be found in Table 1.

Printed versions of the data collection form were sent to the parents via children's preschool teachers. Following their completion, the forms were returned by parents to the children's teachers, and then forwarded to the researcher. Participation was voluntary, and no payment was made to the participants.

Ethical Considerations

In the data collection process, the ethical issues were taken into consideration in accordance with the EECERA Ethical Code for Early Childhood Researchers (Bertram et al., 2016). The ethical approval for the research was obtained from the Social and Human Sciences Ethics Committee of Erciyes University (No:2020/176). Parents were informed about the research by reading and signing the informed consent form. The issue of data confidentiality was taken into consideration by using the gathered data only for the purpose of the research.

Data Collection Tools

As well as demographic information, three measurement tools were utilized to collect data in the research process (see Table 2). The scales used in the study were aimed at measuring children's problematic screen use, parents' problematic screen use, and the relationship between parents and children. The Problematic Internet Use Questionnaire-Short Form-6 (PIUQ-SF-6) was utilized to assess parents' problematic screen time by focusing on common cognitive and behavioral symptoms observed in adults. For children, the Problematic Technology Use Scale for Young Children (PTUS-YC), specifically designed for preschool-aged

Table 2 Data collection tools

Scale	Type of the items	Number of items
Child-Parent Relationship Scale		24
Conflict *"My child and I always seem to be struggling with each other."*	5-point Likert	14
Positive Relationship *"It is easy to be in tune with what my child is feeling."*		10
PIUQ-SF-6		6
Obsession *"How often do you feel tense, irritated, or stressed if you cannot use the Internet for as long as you want to?"*	5-point Likert	2
Neglect *"How often do you spend time online when you'd rather sleep?"*		2
Control Disorder *"How often do you try to conceal the amount of time spent online?"*		2
PTUS-YC		26
Continuity of Use "My child exceeds the time limit we have set for technology use."	5-point Likert	8
Resistance to Control "My child spends time on technological tools by playing games or watching movies that are not suitable for his/her age."		6
Effect on Development "My child's technology use makes him lonely."		5
Deprivation-Escape "My child prefers playing games on technological tools to playing games in real life."		7

children and completed by their parents, was used. To evaluate the quality of parent-child interactions, the Child-Parent Relationship Scale was administered alongside the screen use measures.

Child-Parent Relationship Scale

To determine the relationship levels of parents with children, the "Child-Parent Relationship Scale", which was adapted to Turkish by Akgün and Yeşilyaprak (2010), was used. The scale was prepared as a 5-point Likert-type scale, and consists of 24 items in 2 subdimensions, namely conflict and positive relationship. An increased score obtained from the scale indicates that parents' positive relationships with their children are decreased while their conflicts are increased. In the current study's reliability analysis conducted on the research study group, the Cronbach alpha value came out as 0.70. Akgün and Yeşilyaprak (2010) provided Cronbach alpha values for each dimension of the scale in their research. These were 0.85 for the conflict dimension, 0.73 for the positive relationship dimension, and 0.73 for the total score. These values provide a measure of the internal consistency of the tool.

Problematic Internet Use Questionnaire-Short Form-6 (PIUQ-SF-6)

In order to determine parents' levels of problematic screen use, the "Problematic Internet Use Questionnaire-Short Form-6", which was adapted to Turkish by Göktaş et al. (2018) was used. The questionnaire consists of three subdimensions and 6 items, and was prepared as a 5-point Likert-type scale. An increase in scores obtained from the scale indicates an increase in individuals' levels of problematic internet use. In the reliability study that was carried out again on the study group of this research, a Cronbach alpha value of 0.80 was calculated. Göktaş et al. (2018) determined a reliability value of 0.82 for the scale, which was in close alignment with the current findings.

Problematic Technology Use Scale for Young Children (PTUS-YC)

To determine levels of problematic screen use in children in the preschool period, the "Problematic Technology Use Scale for Young Children" developed Konca et al. (2022) was used. The 5-point Likert-type scale consists of 26 items under four subdimensions (continuity of use, resistance to control, effect on development, deprivation-escape). The scale is completed by parents who have children in the preschool period and information is obtained by parents. An increase in scores obtained from the scale indicates an increase in children's problematic use of technology. For the current study, both Cronbach's alpha and McDonald's omega coefficient were calculated to ascertain the reliability of the measurement tool and were found to be 0.93 and 0.92, respectively. It is worth noting that within the scope of the research by Konca et al. (2022), both the Cronbach Alpha and McDonald Omega values were calculated to verify the reliability of the scale and were found to be 0.94, thus demonstrating high reliability.

Data Analysis

Statistical analyses were performed with the aid of SPSS and AMOS software. The analysis approach was comprised of two steps, as proposed by Anderson and Gerbing (1988), employing maximum likelihood estimation. In the first step, a confirmatory factor analysis (CFA) was carried out to estimate a measurement model, followed by the use of structural equation modeling (SEM) to evaluate the proposed model and verify the hypotheses. Indicators of a well-fitting model were evident from the first step of analysis, with a comparative fit index (CFI) of 0.91, goodness of fit index (GFI) of 0.85, normed fit index (NFI) of 0.87, Tucker-Lewis Index (TLI) of 0.89, standardized root mean squared residual (SRMR) of 0.07, and root mean square error of approximation (RMSEA) of 0.08.

Data consistency was investigated through Cronbach's alpha (α) and composite reliability. The results showcased α values for each variable surpassing the advised value of 0.07, and all composite reliability values ranging from 0.80 to 0.88, which is above the suggested value of 0.6 (Bagozzi & Yi, 1988). Moreover, construct validity was evaluated by checking convergent validity and discriminant validity (Hair et al., 2017; Kline, 2015). The construct validity results revealed that all the average variance extracted (AVE) values were beyond the recommended value of 0.5 (Hair et al., 2017), affirming convergent validity. Discriminant validity was also established, as all the values of the square root of the AVE exceeded the correlation coefficients of constructs (Hair et al., 2017).

Subsequently, to assess the potential impact of common method bias, Harman's single-factor test was conducted. The analysis revealed that the first factor accounted for 24.56% of the total variance, which is below the recommended threshold of 50%. This result suggests that common method bias is not a significant concern in the present study (Aguirre-Urreta & Hu, 2019). To facilitate interpretation and group comparisons, the continuous variables (problematic screen use and parent-child relationship scores) were categorized into low, medium, and high levels based on their percentile distributions. In addition to percentile-based groupings for psychometric variables, children's daily screen time was

categorized according to AAP (2016) guidelines into appropriate (≤60 min), borderline (61–120 min), and excessive use (≥121 min). Parental screen time was also divided into low, medium, and high use based on established ranges in the literature (e.g., <3 h, 3–5 h, >5 h per day).

Findings

Preliminary Analyses

The correlations of the children's screen time, parents' screen time, children's problematic screen use, parents' problematic screen use and parent-child relationship variables, and the descriptive statistics, are presented in Table 3.

Significant and positive correlations with children's screen time were seen for parents' screen time (r=.403, p<.001), children's problematic screen use (r=.301, p<.001), parents' problematic screen use (r=.202, p<.001), and the parent-child relationship (r=.151, p<.001). While significant correlations with parents' screen time were not found for children's problematic screen use (r=.090, p>.05) or the parent-child relationship (r=.015, p>.05), a positive, significant correlation was determined between parents' screen time and parents' problematic screen use (r=.193, p<.001). In addition, there was a moderate positive correlation of parents' problematic screen use (r=.433, p<.001) and the parent-child relationship (r=.609, p<.001) with children's problematic screen use. Furthermore, a significant and positive correlation was found between parents' problematic screen use and the parent-child relationship (r=.462, p<.001).

Table 4. provides an overview of the categorized levels of screen time, problematic screen use, and the parent-child relationship, based on frequency and percentage distributions.

Descriptive analysis showed that the majority of children (64.0%) had excessive daily screen time (more than 120 min), while only 7.5% fell within the appropriate range (0–60 min) based on AAP guidelines (AAP, 2016). Among parents, 43.6% reported low daily screen time (<3 h), 32.4% medium (3–5 h), and 24.1% high screen time (>5 h). Regarding problematic screen use, 50.4% of children and 46.2% of parents were classified as having medium levels, while 25.1% of children and 32.6% of parents fell into the low category. Additionally, nearly one-quarter of both children (24.6%) and parents (21.2%) exhibited high levels of problematic screen use. In terms of the parent-child relationship, 47.0% of parents reported a medium-quality relationship, 28.2% reported low levels, and 24.8% reported high levels of perceived relationship quality.

Table 3 Descriptive Statistics, and correlations for the study variables

Variable	1	2	3	4	5
1. Child screen time (CST)	-				
2. Parent screen time (PST)	0.403**	-			
3. Child-problematic screen use (CPSU)	0.301**	0.090	-		
4. Parent-problematic screen use (PPSU)	0.202**	0.193**	0.433**	-	
5. Parent-child relationship (PCR)	0.151**	0.015	0.609**	0.462**	-
Mean	194.91	248.18	65.60	10.47	42.37
SD	119.09	148.43	21.94	4.51	8.60
Minimum	30	35	26	6	23
Maximum	880	840	126	30	78
AVE	0.86	0.81	0.80	0.82	0.80
CR	0.60	0.55	0.57	0.54	0.60

* p<.05, ** p<.01

Table 4 Distribution of screen time, problematic screen use, and parent-child relationship levels

Variable	Frequency (n)	%
Children Screen Time		
Appropriate	31	7.5
Borderline	117	28.5
Excessive	263	64.0
Parent Screen Time		
Low	179	43.6
Medium	133	32.4
High	99	24.1
Children problematic screen use		
Low	103	25.1
Medium	207	50.4
High	101	24.6
Parent problematic screen use		
Low	134	32.6
Medium	190	46.2
High	87	21.2
Parent-child relationship		
Low	116	28.2
Medium	193	47.0
High	102	24.8

Categories were based on percentiles for problematic screen use and parent-child relationship scores, and institutional guidelines and literature for children's screen time

Structural Equation Modeling

Figure 1 presents the model for prediction of the parent-child relationship by children's screen time, parents' screen time, children's problematic screen use, and parents' problematic screen use. The fit indices of the model were: $\chi 2$/df=3.47, CFI=0.92, NFI=0.90, IFI=0.93, GFI = 0.97, RMSEA=0.078, and SRMR=0.059. These indices reveal

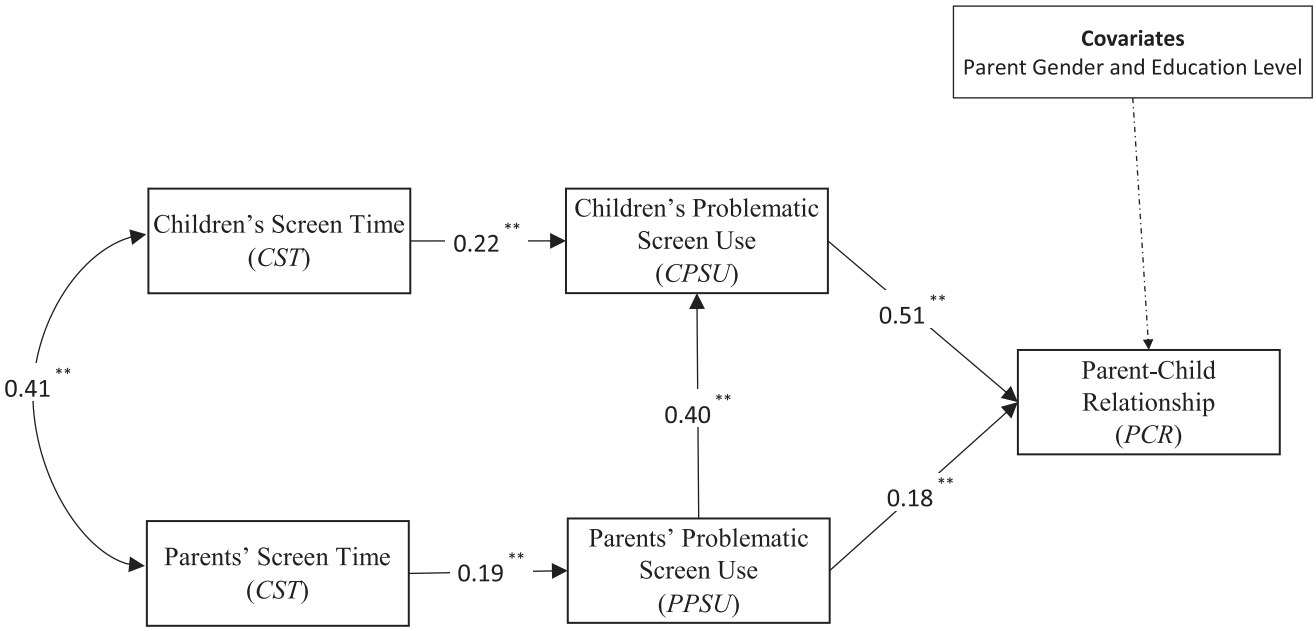

Fig. 1 Path model evaluating direct and indirect effects on the parent-child relationship, $^{**}p<.01$. *Note.* Values shown are standardized coefficients. Non-significant pathways are presented with dotted lines

Table 5 Regression estimates from path analysis

Estimated parameters	Direct effects (β)	Indirect effects (β)	Sig
PST on PPSU	0.188		0.000
CST on CPSU	0.217		0.000
PPSU on CPSU	0.396		0.000
PPSU on PCR	0.182		0.001
CPSU on PCR	0.508		0.001
PST on CPSU through PPSU		0.074	0.000
PST on PCR through PPSU		0.072	0.000
CST on PCR through CPSU		0.110	0.000
PPSU on PCR through CPSU		0.201	0.000

that the model demonstrates a good fit to the data. The results of the effects of the variables (beta values) and their significance values are given in Table 5.

The model presented in Fig. 1 reveals that parents' screen time has significant indirect effects on children's problematic screen use (β = 0.07, $p<.01$) and parent-child relationship (β = 0.07, $p<.01$) via parents' problematic screen use. Besides, children's screen time has a significant indirect effect on the parent-child relationship (β = 0.11, $p<.01$) via children's problematic screen use. The model shows a direct path from parents' problematic screen use (β = 0.18, $p<.01$) and children's problematic screen use (β = 0.50, $p<.01$) to the parent-child relationship. This means that 0.50 of children's problematic screen use and 0.18 of parents' problematic screen use have a significant direct impact on the parent-child relationship. Besides, parents' problematic screen use (β = 0.20, $p<.01$) has an indirect effect on the parent-child relationship via children's problematic screen use.

The R^2 value of the model was 0.37 which means that 37% of the variance in the parent-child relationship is explained by the relations in the path model.

Discussion

This study examined the screen time and the levels of problematic screen use in parents and children as predictors of the level of parent-child relationships. In this study, problematic screen use refers to excessive and uncontrolled screen-related behaviors that interfere with daily life. The measure includes indicators of emotional dependency, behavioral control, and developmental impact. However, content and context of use were not assessed, which may limit the interpretation of indirect effects. Within this framework, the key findings were as follows: (1) children's and parents' screen time significantly predicted problematic screen use levels, and (2) parents' problematic screen use levels significantly predicted children's problematic screen use levels, and (3) the level of problematic screen use by children and parents significantly predicts the parent-child relationship. Consequently, the research hypotheses were confirmed. The findings are discussed in more detail below.

The findings confirmed the first hypothesis of the present study (H_1). Specifically, children's and parents' higher screen time predicted increased levels of problematic screen use. Prolonged exposure to screens has been associated with an elevated risk of developing problematic screen behaviors over time (Przepiorka & Blachnio, 2016). Particularly for

young children, exceeding recommended screen time limits has been linked to various negative outcomes, including a greater likelihood of uncontrolled use (AAP, 2016). Prior studies have similarly shown that increased screen time raises the risk of problematic screen use (Günlü & Ceyhan, 2017; Özdemir et al., 2014). Consistent with these findings, our study revealed that both parents and children displayed moderate to high levels of problematic screen use. Therefore, the results are in line with and supported by existing literature, confirming the first hypothesis (H1).

Although the first hypothesis was supported overall, it is worth noting that parents' screen time showed a weak association with children's problematic screen use in the structural model. This may suggest that screen exposure alone is not sufficient to explain problematic use in children. Rather than the duration of screen use, it may be the nature of use, such as screen use during parent-child interactions or a lack of parental regulation, that plays a more influential role (Konca & Tantekin Erden, 2021). Future studies should consider examining screen use context and parental mediation styles to better understand these dynamics.

The findings of this study suggest that parents' problematic screen use levels significantly predicted children's problematic screen use levels. This result highlights the critical role that parents play in shaping their children's screen-related behaviors. Bandura (1977) emphasized that children can learn new behaviors by observing and imitating the adults. In addition to this perspecive, it is thought that while discussing the processes of children's psychosocial development, the Ecological Approach may have an important place in explaining children's problematic screen use (Johnson, 2010). In this approach, it is stressed that children's behaviours are affected not only by their own individual characteristics, but they can also be affected by their relationships with their families, friends, teachers and the whole of society (Bronfenbrenner, 1992). Therefore, it can be said that children's problematic screen usage behaviours can be affected by the relationships that they have with their families (Lauricella et al., 2015). Within this scope, the finding made in this study that the extent of parents' problematic screen use significantly affected children's levels of problematic screen use can be explained with these models of Bandura's (1977) and Bronfenbrenner's (1992), since parents' screen usage behaviours can affect children's screen use in the same way that many different behaviours can (Chakraborty et al., 2010; Lam & Wong, 2015). Empirical studies further support these theoretical perspectives. Multiple studies have reported strong associations between the screen habits of parents and those of their children (Domoff et al., 2020; Eyimaya & Irmak, 2021; Gong et al., 2022; McDaniel & Radesky, 2018a, 2018b; Mun & Lee, 2021). These results collectively confirm the second hypothesis (H_2) of the present study.

Finally, the third hypothesis of the present study was confirmed (H3). The results indicated that the level of problematic screen use by both children and parents significantly predicted the quality of the parent-child relationship. Moreover, it was found that the periods of technology use and levels of problematic technology use among parents and children together explained 37% of the variance in the parent-child relationship. This finding reveals that the use of digital technologies needs to be discussed as a crucial factor affecting the parent-child relationship. Research on the concept of "technoference" highlights how parents' screen use during interactions with their children can disrupt parenting practices and diminish responsiveness (McDaniel & Radesky, 2018a). Consistent with this finding, prior studies have shown that excessive and problematic screen use may negatively impact parent-child interactions (Chi et al., 2020). Furthermore, during the COVID-19 period, both children and parents spent more time on screens, which may have further intensified the negative effects of problematic screen use on the parent-child relationship.

Limitations and Recommendations

There are several limitations to the research. First, the study was limited to 411 parents in Turkey who had children in the preschool period and who voluntarily agreed to participate in the research. Additionally, the data were collected towards the end of the COVID-19 period (April to June 2021). Since this study employed a cross-sectional design, it is not possible to establish causal relationships among the variables of screen time, problematic screen use, and the parent-child relationship. To clarify the directionality and potential causality of these relationships over time, longitudinal studies are recommended. Moreover, the research results are limited to the characteristics measured by the measurement tools used to determine the durations of parents' and children's use of screen, their levels of problematic screen use, and the effects of these on the level of the parent-child relationship. It should be noted that while the scale used in the study captures multidimensional aspects of problematic screen use, such as behavioral control, emotional impact, and developmental effects, it does not assess the specific content or context of use. This may limit the interpretation of certain findings, particularly indirect effects. Furthermore, there are certain limitations stemming from the measurement tool used to determine children's levels of problematic screen use in the research. This measurement tool is answered by parents who have children of preschool age, and parents evaluate the items by considering their own children's use of screen. Considering the developmental characteristics of children in the preschool period,

it does not appear possible for them to evaluate themselves with a measurement tool. In this respect, it is quite natural for the measurement tool to be completed by parents. However, there may be certain concerns regarding parents' objectivity here. Therefore, this case can constitute a limitation of the study. Various recommendations have been made based on the findings obtained and the limitations.

In the study, it was seen that the duration of screen use and problematic screen use had a negative impact on the parent-child relationship. Moreover, it was revealed that parents' problematic screen use created an effect on children's problematic screen use. Within this scope, it can be said that conducting guidance services aimed at parents related to the appropriate use of screen by family members may be important in terms of creating a healthy parent-child relationship. Apart from children's and parents' problematic screen use, different factors may have an impact on the parent-child relationship. Therefore, in future studies, other factors (such as the mental health of parents and children, screen use habits) that may affect the parent-child relationship can be investigated. Finally, this research was carried out with a quantitative research method. In terms of obtaining in-depth information about the role of screen in interaction of parents with their children, it is thought that research conducted with a qualitative research design with parents can contribute significantly to the literature.

Conclusion

In this study, the parent-child relationship was discussed in the context of the screen. In the study, it was seen that the interaction established by parents with their children was significantly affected by their use of digital technologies. The reciprocal effect of the durations of parents' and children's screen use and the positive relationship of these periods with their levels of problematic screen use show that these periods could be problematic. The significant direct effect of parents' levels of problematic screen use on children's levels of problematic screen use may demonstrate the validity of the Social Learning Model in this area. The hypothesis that children learn many behaviours by observing their parents was tested by the fact that this can also be seen in screen usage. Moreover, it was seen in the study that the duration of screen use was a very important factor affecting the parent-child relationship. It is believed that these findings can make a significant contribution to the literature related to the parent-child relationship, knowledge of the factors that can affect this relationship can have an impact on future prevention and intervention studies on families.

Declarations

Competing interest The authors declare that they have no competing interests.

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