Check for updates

Received: 18 October 2023 | Revised: 6 September 2024 | Accepted: 9 January 2025

DOI: 10.1111/fare.13179

RESEARCH

Family Relations
Interdisciplinary Journal of Applied Family Science

Navigating the digital age: Children's self-regulatory skills and technoference in parent–child interactions

Ezgi Yıldız[1] | **Dilara Keşşafoğlu**[2] | **Merve Nur Altundal**[3] | **Gizem Akel**[4] | **Berna A. Uzundağ**[4]

[1]Department of Psychology, Boğaziçi University, Istanbul, Turkey

[2]Department of Psychology, Koç University, Istanbul, Turkey

[3]Department of Psychology, Özyeğin University, Istanbul, Turkey

[4]Department of Psychology, Kadir Has University, Istanbul, Turkey

Correspondence
Ezgi Yıldız, Boğaziçi University, Bebek, 34342, Beşiktaş, İstanbul.
Email: ezgi.yildiz@std.bogazici.edu.tr

Abstract

Objective: This study aimed to examine the pathways connecting child effortful control with technoference while considering the roles of parenting stress and mothers' problematic smartphone use, characterized by an inability to regulate compulsive smartphone use.

Background: Interruptions caused by technology use, commonly referred to as *technoference*, have significant implications for child development and parent–child interactions. Despite previous studies indicating a link between technoference and child effortful control, the directionality of this relationship remains ambiguous.

Method: A total of 199 mothers with children aged 3 to 7 years living in Türkiye participated in an online survey, providing data on the frequency of technoference in parent–child interactions, parenting stress, parental problematic smartphone use, and their children's effortful control.

Results: A significant mediation model, $F(6, 187) = 10.73$, $R^2 = .26$, $p < .001$, indicated that parents of children with lower effortful control reported heightened levels of parenting stress, subsequently resulting in increased problematic smartphone use and a greater incidence of technoference in parent–child interactions (standardized indirect effect coefficient = −.04, $SE = .02$, 95% bias-corrected and accelerated confidence interval [−.13, −.08]).

Conclusion: Overall, increased parenting stress related to children's poorer effortful control may drive parents to seek solace in smartphone use, resulting in more interruptions in parent–child interactions.

Implications: By identifying a pathway from children's effortful control skills to technoference in parent–child interactions, the study emphasizes the significance of

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2025 The Author(s). *Family Relations* published by Wiley Periodicals LLC on behalf of National Council on Family Relations.

recognizing the role of mobile devices in contemporary family life.

KEYWORDS

effortful control, mobile device use, parental problematic phone use, parenting stress, technoference

In today's digital era, the phenomenon of *technoference*, characterized by interruptions in parent–child interactions due to technology use, is increasingly affecting family dynamics. Though technoference is associated with challenges in children's self-regulatory skills (Carson & Kuzik, 2021), the direction of this relationship remains unclear. This study aims to examine the link between technoference in mother–child interactions and children's effortful control, a key aspect of self-regulation, while considering the influence of mothers' problematic smartphone use and parenting stress.

Self-regulation involves adjusting behaviors, emotions, and thoughts to changing contexts (Karoly, 1993) and is often measured by *effortful control*, which corresponds to the ability to regulate emotions and actions (Cole et al., 2019; Rothbart & Bates, 1998). Previous studies have shown that when parents engage in positive control behaviors and are more attentive to their children, those children tend to develop stronger effortful control skills (Cipriano & Stifter, 2010; Karreman et al., 2008). These findings highlight the importance of parent–child interactions in developing a child's ability to manage their behavior and emotions.

Bronfenbrenner's bioecological model (Bronfenbrenner, 1995) supports this idea by emphasizing that parent–child interactions are among the most influential factors in a child's immediate environment. However, recent studies suggest that screen media use can disrupt these crucial interactions. For example, when parents are absorbed in their smartphones, they tend to be less responsive to their children, as seen in observational studies (e.g., Abels et al., 2018; Kildare & Middlemiss, 2017; Vanden Abeele et al., 2020). These interruptions in parent–child interactions caused by technology use, known as technoference (McDaniel & Coyne, 2016; Qiao & Liu, 2020), interrupts the flow of the communication between parents and children. Consider a child attempting to share a story or play a game, only to be met with a parent's divided attention due to screen media use. Such interruptions can hinder the child's development of effortful control, potentially leading to less-than-optimal outcomes.

When parents are frequently distracted by devices like smartphones, they tend to respond less quickly and appropriately to their children's needs. This lack of attention provides children less opportunity to practice important skills such as self-regulation. For example, a parent might miss the opportunity to help a child manage frustration or to follow instructions—situations that are important in developing effortful control skills. When these parent–child interactions are inconsistent, it may become harder for children to learn and internalize self-regulation behaviors. Expanding on Bronfenbrenner's model and previous studies that have connected parenting behaviors to children's effortful control (Cipriano & Stifter, 2010; Karreman et al., 2008; Valiente et al., 2007), it can be suggested that children who frequently experience interruptions caused by technology during their interactions with parents might experience difficulties in developing these self-regulation abilities. Moreover, recent studies indicate that children who experience higher levels of technoference are also at an increased risk of developing behavioral problems, such as externalizing or internalizing problems (McDaniel & Radesky, 2018a, 2018b; Sundqvist et al., 2020).

Alternatively, children's effortful control may also predict the likelihood of technoference in parent–child interactions. Belsky's (1984) model suggests that various factors, including parents' social networks and child characteristics, influence parenting. According to this model, certain child characteristics, such as having a difficult temperament, can significantly impact

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

parental behaviors. Expanding on this model, Abidin (1992) suggested that children's behaviors can influence parenting through the stress they create. This framework recognizes that daily hassles, life events, the quality of marital relationship, and child characteristics all contribute to parenting stress–stress that specifically comes from the demands of parenting. This stress, in turn, can affect how parents behave, depending on the resources they have, like social support.

For example, parents of children who are more demanding, have trouble adjusting, or are more active may experience higher stress levels because of these traits. Supporting this view, previous studies have shown that mothers of children with low effortful control report higher levels of parenting stress (Bayly & Gartstein, 2013; Pettit & Arsiwalla, 2008; Sanson et al., 2011; Scher & Sharabany, 2005). More negative parenting behaviors may then result from this increased stress. In line with this model, higher parenting stress has been associated with harsher parenting practices (Jackson & Choi, 2018), behaviors like punishment, inconsistency, coldness, sensitization, and rejection (Rodgers, 1998), and authoritarian parenting style (Mak et al., 2020). Therefore, we can suggest that parents of children with lower effortful control may experience higher levels of parenting-related stress.

Previous studies demonstrated that mobile devices, which are easily accessible and multifunctional, offer parents an escape and coping mechanism (Wolfers, 2021). Online resources like parenting blogs and social media provide social and informational support, helping parents alleviate feelings of anxiety, boredom, and loneliness (Bernhardt & Felter, 2004; Coyne et al., 2017; Daneback & Plantin, 2008; Drentea & Moren-Cross, 2005; Dworkin et al., 2013; Lupton et al., 2016; McDaniel et al., 2012; Radesky et al., 2016). Interviews with parents of young children reveal that they turn to mobile devices to reduce stress (Radesky et al., 2016; Wolfers, 2021). However, excessive device use for coping may lead to problematic usage patterns, contributing to increased interruptions in parent–child interactions, as seen in studies linking stress levels and parenting stress to technology-based interruptions (McDaniel, 2021; McDaniel & Radesky, 2018a, 2018b; Uzundağ et al., 2022b). Overall, these findings highlight the significant role of parenting stress in influencing problematic mobile device use and its impact on parent–child interactions.

The current study aims to clarify the relationship between technoference and child effortful control by testing two different models, taking into account the role of parenting stress and problematic smartphone use. Based on the models proposed by Belsky (1984) and Abidin (1992), it can be anticipated that children's effortful control abilities will be linked to parenting stress and behaviors. The first model to be tested assumes that parents of children with weaker effortful control skills are likely to experience higher levels of parenting stress (Briegel et al., 2008; McQuillan & Bates, 2017; Neece et al., 2012; Shin et al., 2021; Tharner et al., 2012; Vaughan et al., 2013). In turn, these parents may exhibit more problematic smartphone use, such as struggling to resist checking their phones frequently and resorting to mobile devices during interactions (McQuillan & Bates, 2017; Nakamura, 2015). This problematic smartphone use may then lead to increased technoference in parent–child interactions (McDaniel & Radesky, 2018b). In summary, the first model suggests the following sequence: poorer child effortful control leads to higher parenting stress, which in turn contributes to more problematic smartphone use by parents. This, in turn, results in more frequent technoference (poorer child effortful control → higher parenting stress → more parental problematic use of smartphones → more frequent technoference).

Based on Bronfenbrenner's model and the importance of parent–child interactions in child development, it can be suggested that technoference can predict children's effortful control. There is evidence showing that parents who experience higher levels of stress tend to use mobile technology more problematically and experience more technoference when interacting with their children (McDaniel, 2021; McDaniel & Radesky, 2018a, 2018b; Uzundağ et al., 2022b). Given that parental sensitivity is positively linked to children's effortful control (Eisenberg et al., 2003; Finch et al., 2015), and high-quality parent–child interactions are related to

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

children's developmental outcomes—such as improvements in language skills, self-regulation, mental health, school readiness, and social competence (Anderson et al., 2021; Branje et al., 2010; Connell & Prinz, 2002; Golinkoff et al., 2015; Hoff, 2003; Kelly et al., 1996; Kochanska et al., 2009; Masur & Gleason, 1980; Tamis-LeMonda et al., 2001)—it is expected that technoference could negatively impact children's effortful control. The second model therefore tests the hypothesis that parents under higher stress are more prone to problematic smartphone use (McQuillan & Bates, 2017; Nakamura, 2015). This, in turn, is likely to lead to increased technoference in parent–child interactions (McDaniel, 2021; McDaniel & Radesky, 2018a, 2018b; Uzundağ et al., 2022b), which could result in poorer effortful control in children (higher parenting stress → more problematic smartphone use → more frequent technoference → weaker effortful control).

To test these models, we conducted an online survey targeting mothers of 3- to 7-year-old children in Türkiye. Similar to many European countries and the United States, Türkiye exhibits high rates of screen time for both mothers and young children (Gökçe et al., 2021; Uzundağ et al., 2022a). In terms of labor force participation for women, Türkiye has a lower participation rate compared to other OECD countries (OECD, n.d.-a), especially for mothers with younger children (TurkStat, 2022). Furthermore, for 3- to 5-year-old children, participation in preschool education is lower in Türkiye compared to other OECD countries (OECD, n.d.-b). Lower preschool participation rates and lower labor force participation rates of women suggest that mothers are generally the primary caregivers of young children (94.4% according to TurkStat, 2022), underscoring the significance of mothers' technology use within the household.

METHOD

Participants

The inclusion criteria for the study were as follows: Participants had to be residing in Türkiye, identified as mothers, and have a child aged between 3 to 7 years. Participants were recruited through various methods, including social media announcements and advertisements, as well as through announcements to kindergartens. The analysis was conducted using data from 199 mothers who fully completed the survey. Data from 401 mothers who only partially completed the survey were excluded from the analysis. Excluded and included participants were comparable in terms of maternal education, $\chi^2(12) = 9$, $p = .21$; household income, $\chi^2(15) = 12$, $p = .24$; and parenting stress, $t(598) = 1.9$, $p = .06$. The average age of the mothers was 33.9 years ($SD = 5.2$), and their children (52% girls) were aged between 36.3 and 86.3 months, with a mean age of 55.9 months ($SD = 12.5$).

The majority of the mothers in our study (66%) were not employed, which is consistent with population-based statistics showing that 73% of mothers in Türkiye fall into this category (TurkStat, 2022). To assess socioeconomic status (SES), we utilized the SES index developed by Berzofsky et al. (2014), which incorporated standardized summary metrics of maternal education, maternal employment status, and household income. Maternal education was categorized on a 4-point scale ranging from 0 to 3 (0 = *less than high school*; 1 = *high school, some college, two-year degree*; 2 = *bachelor's degree*; 3 = *master's or doctorate degree*). Maternal employment status was coded as 0 for unemployed and 1 for employed. Household income was measured on a 5-point scale ranging from 0 to 4 (0 = less than 1,600 TL [Turkish lira]; 1 = 1,600 TL–4,000 TL; 2 = 4,000 TL–5,500 TL; 3 = 5,500 TL–11,500 TL; 4 = more than 11,500 TL). In 2021, the minimum wage in Türkiye was 3,577 TL. The poverty line for a family of four was set at 13,073 TL, and the hunger threshold was determined to be 4,013 TL. The average SES index score was 3.9, with a standard deviation of 2.0. Table 1 provides additional demographic information.

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 1 Demographic information.

Characteristic	%
Maternal education	
Less than high school	13.7
High school	41.1
College degree	38.6
Graduate degree	6.6
Monthly household income[a]	
< 1,600 TL	6.1
1,600 TL–4,000 TL	27.4
4,000 TL–5,500 TL	26.9
5,500 TL–11,500 TL	26.9
More than 11,500 TL	12.7

Note. TL = Turkish lira.
[a]Income categories were based on the data provided by TurkStat (2021). The lowest category represented the bottom 20% of income earners, and the highest category represented the top 20%.

Procedure

Data were collected anonymously using the Qualtrics platform, an online survey administration tool, during the period from February to June 2021. Informed consent was obtained from each participating mother at the outset of the survey. In cases where mothers had multiple children within the specified age range (3 to 7 years), they were instructed to complete the survey for their oldest child. The study received ethical approval from Kadir Has University's ethical review board.

Materials

Parenting stress

To measure the stress experienced by parents as a result of their parenting responsibilities, the Parenting Stress Scale developed by Özmen and Özmen (2012) was used. This scale, developed in Turkish, comprises 16 items that evaluate various aspects of parenting stress (e.g., "It is very difficult to make my child happy," "I consider myself guilty when my child makes a mistake"). Participants were required to rate each item on a 4-point Likert scale ranging from 1 (*never*) to 4 (*always*), indicating the frequency at which they experienced each statement. The average score across all items was calculated and used as the outcome variable, with higher scores indicating greater levels of parenting stress. Similar to the reliability value of the original scale (.85), the scale demonstrated good internal consistency, as evidenced by a Cronbach's alpha coefficient of .85.

Mothers' problematic smartphone use

Mothers' problematic smartphone use was assessed using a set of three items adapted from the study by McDaniel and Radesky (2018a). These items were "I often think about calls or messages I might receive on my mobile phone," "when my mobile phone alerts me to indicate new

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

messages, I cannot resist checking them," and "I feel like I use my mobile phone too much." The Turkish translations of these items were used in a previous study (Uzundağ et al., 2022b). In the current study, participants rated each of these translated items on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), indicating the extent to which they agreed with each statement. The responses were averaged to obtain an overall score, with higher scores indicating a higher degree of problematic smartphone use. The internal consistency of this measure was assessed using Cronbach's alpha, yielding a value of .73, which is comparable to the internal consistency (.74) reported by McDaniel and Radesky (2018a).

Technoference

Previous studies have explored technoference in parent–child relationships by gauging the frequency of interruptions during conversations or activities with children. They typically evaluated technoference for each technological device individually, including cellphones and smartphones, television, computers, tablets, iPods, and video game consoles, using six items in total (McDaniel & Radesky, 2018a, 2018b). To assess the occurrence of technoference in mother–child interactions in the current study, mothers were presented with a single item to rate on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). The item was as follows: "Technological devices may interrupt the conversations and activities that you are engaged in with your children. For instance, children may turn their attention to the television, or you may check your mobile phone while talking with your child. How often do you have similar experiences?"

Child effortful control

Children's effortful control was assessed using the short form of the Children's Behavior Questionnaire, originally developed by Putnam and Rothbart (2006), yielding a reliability score over .70 for every subscale and adapted for Turkish-speaking parents by Sarı et al. (2012), yielding a reliability score of .78. The questionnaire measures temperamental characteristics in children aged 3 to 7 years. The mothers were presented with items from the three subscales: inhibitory control, perceptual sensitivity, and attentional focusing, and their responses on these subscales were used to evaluate children's effortful control. A total of 18 items were included in the questionnaire, assessing inhibitory control (e.g., "my child can wait before entering into new activities if s/he is asked to"), perceptual sensitivity (e.g., "my child comments when a parent has changed his/her appearance"), and attentional focusing (e.g., "when drawing or coloring in a book, shows strong concentration"). Mothers rated each item on a 7-point scale ranging from 1 (*completely false*) to 7 (*completely true*). The Cronbach's alpha coefficients were calculated to assess the internal consistency of each subscale, resulting in values of .70 for attentional focus, .68 for inhibitory control, and .73 for perceptual sensitivity. One item from the attentional focus subscale ("sometimes becomes absorbed in a picture book and looks at it for a long time") was removed from the analysis due to its very low correlation ($r = .01$) with the other items in the same subscale. The overall Cronbach's alpha for the effortful control scale was computed as .82, indicating good internal consistency.

Control variables

The control variables included the duration of mothers' daily smartphone use, children's daily screen time, and SES of the family. Mothers' daily smartphone use was included as a control

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

variable due to significant relations reported in previous studies between the duration of mothers' digital technology use, problematic use of digital technology, parenting stress, and technoference (McDaniel, 2021; Uzundağ et al., 2022b). This variable was assessed by asking participants to report the average duration of their smartphone use on a typical day. They selected one of the provided options ranging from 0–1 hour, 1–2 hours, 2–3 hours, 3–4 hours, 4–5 hours, 5–6 hours, to more than 6 hours. To calculate a numerical score, the midpoint of each response category was taken. For example, a value of 1.5 hours was assigned to the option "1–2 hours." For the "more than 6 hours" option, a duration of 6.5 hours was used in the analysis.

As children's screen time was found to significantly correlate with technoference in parent–child interactions and parents' problematic use of digital technology (McDaniel & Radesky, 2018a), it was incorporated as a control variable into the analyses. To assess children's daily screen time, mothers were asked to indicate the amount of time their children spend with various electronic devices such as TVs, smartphones, tablets, computers, and video game consoles on both weekdays and weekends. The average weekday screen time was multiplied by five, and the average weekend screen time was multiplied by two. These two values were then summed, and the sum was divided by seven to calculate children's screen time on a typical day.

Finally, families' SES was included as a control variable due to evidence linking lower SES with longer durations of smartphone use and weaker effortful control in children (e.g., Lecheile et al., 2020; Uzundağ et al., 2022b). By including these control variables, the model aimed to account for the potential influence of SES, mothers' smartphone use, and children's screen time on the relationship between parenting stress, problematic smartphone use, children's effortful control, and technoference in parent–child interactions.

Data analysis

Before conducting the analyses, outliers (mean ± 3*SD) were identified and removed from the data. This resulted in the removal of two outliers on the effortful control measure. There were no missing data. The common method bias was assessed using Harman's single-factor test. As one factor accounted for 27% of the variance, falling below the threshold value of 50%, it was concluded that the data were not significantly influenced by common method bias. To examine the bivariate relations between the variables, Pearson correlation analyses were conducted. Subsequently, two distinct mediation models sharing the same variables but featuring different relationships among them were used. These models were tested with serial mediation analyses using the Process Macro extension (Version 3.5.3) in R (R Core Team, 2022). These analyses involved a bootstrap procedure with 5,000 resamplings and a 95% confidence interval, following the methodology outlined by Preacher and Hayes (2008). The constructed serial mediation models incorporated two mediators and controlled for covariates such as the SES index, parents' daily smartphone usage, and children's daily screen time.

RESULTS

Descriptive statistics for the variables and correlations among them are presented in Table 2 and Table 3, respectively.

As expected, results revealed a significant positive association between parenting stress and mothers' problematic smartphone use. Furthermore, problematic smartphone use was significantly positively linked to the incidence of technoference in parent–child interactions. Additionally, children's effortful control exhibited a significant negative relationship with both parenting stress and technoference.

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 2 Descriptive statistics.

Variable	Range	Mean	*SD*	Min	Max
Parenting stress	16–64	29	5.9	16	47
Mothers' problematic use of smartphones	1–5	2.8	1.1	1	5
Technology-based interruptions	1–5	2.7	0.9	1	5
Children's effortful control	1–7	5.3	0.7	3.4	6.6
Socioeconomic status index	0–8	3.9	2.0	0	8.0
Mothers' daily smartphone use (in hours)	0–24	2.2	1.5	0	6.5
Children's daily screen time (in hours)	0–24	3.7	1.7	0	8.7

Note. Values next to the variable names indicate the possible range of values whereas the min and max columns indicate the lowest and highest values they took in our sample.

TABLE 3 Correlations among variables.

Variable	1	2	3	4	5	6	7
1. Parenting stress	—						
2. Mothers' problematic use of smartphones	.22***	—					
3. Technology-based interruptions	.22***	.33***	—				
4. Child effortful control	−.23***	−.15**	−.18**	—			
5. Socioeconomic status index	.02	.06	.06	.12*	—		
6. Mothers' daily smartphone use	.10	.33***	.22***	−.08	−.04	—	
7. Children's daily screen time	.01	.08	.18**	−.08	−.05	.14**	—
8. Child age	−.06	−.09	.06	.06	−.01	−.01	.15**

Note. Kendall's tau values, two-tailed.
*$p < .05$.**$p < .01$.***$p < .001$.

Model testing

The first model posited that mothers of children with lower levels of effortful control would report higher levels of parenting stress. Consequently, this elevated parenting stress was expected to be associated with increased problematic smartphone use by mothers and a higher occurrence of technoference in their interactions with their children. The results of the mediation analysis indicated that the tested model was statistically significant, $F(6, 187) = 10.73$, $R^2 = .26$, $p < .001$. As illustrated in Figure 1, the indirect effects of child effortful control on technoference were mediated by parenting stress and problematic smartphone use (standardized indirect effect coefficient = −.04, $SE = .02$, 95% bias-corrected and accelerated confidence interval [BCa CI] [−.13, −.08]).

The second model proposed that mothers facing elevated stress levels would engage in more problematic smartphone use (see Figure 2). Subsequently, this increased problematic smartphone use was expected to correlate with a greater frequency of technoference in mother–child interactions, ultimately leading to lower effortful control in children. Although the model was significant, $F(6, 190) = 6.70$, $R^2 = .17$, $p < .001$, the indirect effect was not, indicating no significant mediation by problematic smartphone use (standardized indirect effect coefficient = −.0003, $SE = .0003$, 95% BCa CI [−.001, .0002]).

DISCUSSION

The primary objective of this study was to investigate the relationships among technoference, mothers' problematic smartphone use, parenting stress, and preschool-aged children's effortful

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Family Relations
Interdisciplinary Journal of Applied Family Science

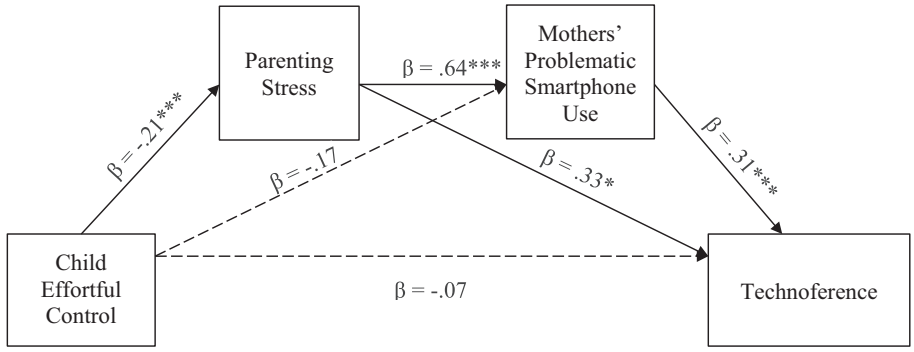

FIGURE 1 First model: Mothers' parenting stress and problematic smartphone use mediate the relationship between child effortful control and technoference. *$p < .05$. **$p < .01$. ***$p < .001$.

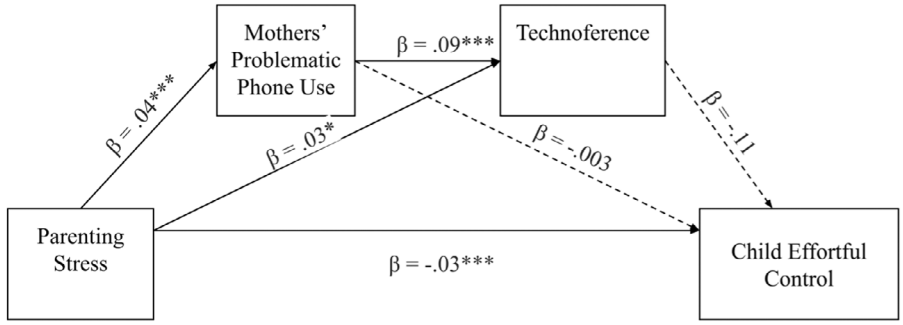

FIGURE 2 Second model with a nonsignificant indirect effect. *$p < .05$. **$p < .01$. ***$p < .001$.

control by testing two distinct models grounded in the models proposed by Bronfenbrenner (1995), Belsky (1984), and Abidin (1992), which emphasize the critical role of parent–child interactions and the influence of child characteristics on parenting behaviors and stress. The first model, based on Belsky's (1984) and Abidin's (1992) models, hypothesized that parents of children with lower effortful control would experience higher levels of parenting stress, which would then result in increased problematic smartphone use by mothers and in turn more frequent technoference. We found significant indirect effects in this first model, suggesting a pathway from child effortful control to technoference, mediated by parenting stress and mothers' problematic smartphone use. This finding aligns with Belsky's (1984) theory, which posits that child characteristics, such as low effortful control, can significantly impact parenting stress and behaviors. Our findings also support Abidin's (1992) model, which emphasizes the role of parenting stress as a mediator between child characteristics and parental behaviors. The results suggest that lower effortful control in children is indeed associated with higher parenting stress, which subsequently is related to mothers' tendency to use smartphones problematically, resulting in greater technoference during parent–child interactions.

Abidin's (1992) model aiming to explain the determinants of parenting behavior posits that child characteristics are one of the factors associated with parenting stress, which, in turn, is associated with parental behaviors. Our findings align with this theoretical model and previous studies (Bayly & Gartstein, 2013; Pettit & Arsiwalla, 2008; Sameroff, 2009; Sanson et al., 2011;

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Scher & Sharabany, 2005), demonstrating a link between lower effortful control in children and higher levels of parenting stress. The current study extends these previous findings and contributes to the literature by linking child characteristics to mothers' use of mobile technology via parenting stress. Even though previous research has shown that technoference is associated with negative developmental outcomes for children, our results show that the connection between technoference and children's self-regulation skills, especially effortful control, may be more complicated and depend on how parents perceive their children. The data specifically show that parents who perceive their children as having lower effortful control may experience higher levels of stress, which in turn results in increased technoference. This finding emphasizes the importance of considering not only the direct effects of technology, but also how parental perceptions and stress levels contribute to the dynamics of parent–child interactions.

The second model, which hypothesized that higher parenting stress would lead to more problematic smartphone use by mothers, resulting in increased technoference and ultimately lower effortful control in children, did not yield significant indirect effects. This lack of significant results could mean that although parental stress does affect problematic smartphone use and technoference, the direct effect on children's effortful control may be more complicated and mediated by other factors that this model does not account for. For example, Bronfenbrenner's bioecological model (Bronfenbrenner, 1995) suggests that multiple layers of environmental influences, including family dynamics and social support systems, play a critical role in child development. It is possible that these broader environmental factors could buffer or increase the effects of technoference on children's self-regulation skills.

The positive correlation between parenting stress and mothers' problematic smartphone use is consistent with previous research, which suggests that higher stress levels are linked to more frequent technology use and problematic mobile device use among parents (McDaniel, 2021; Uzundağ et al., 2022b). Stress disrupts attentional and cognitive control mechanisms and is considered a predictor of impulsive behavior in adults (Arnsten, 2009; Moustafa et al., 2017). Consequently, parents experiencing higher stress levels may struggle to resist the urge to respond to calls, texts, and notifications on their mobile devices, particularly due to the demands of parenting. Moreover, mobile devices may offer a temporary escape from stressful situations, providing relief from the demands of parenting (Coyne et al., 2017; Lupton et al., 2016; McDaniel et al., 2012; Radesky et al., 2016). Thus, parents may turn to their mobile devices as a means of taking a break and seeking relief from stress.

Our findings align with previous research that has established connections between parents' problematic use of mobile technology and technoference (Newsham et al., 2020; Uzundağ et al., 2022b; Yang et al., 2023). Parents who engage in problematic phone use often struggle to disconnect from their devices, keep their phones close at hand, and are easily distracted by incoming notifications (Cho & Lee, 2017; McDaniel & Radesky, 2018b; Newsham et al., 2020; Sundqvist et al., 2020). Feeling the need to be constantly available on their mobile phones, parents have reported difficulties in meeting their children's needs (Radesky et al., 2016). Consequently, the use of mobile devices by parents interrupts the time they spend with their children and diminishes their responsiveness to their children's cues and interactions (Abels et al., 2018; McDaniel & Radesky, 2018a).

Limitations

The current study has several limitations that should be taken into consideration. First, its cross-sectional design restricts establishing causal relationships. Additionally, reliance on parental reports for all variables introduces potential biases and inaccuracies, including social desirability biases or memory recall errors. Moreover, technoference was measured using a single-item measure, possibly overlooking its complexity. It is important to note that the item

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

included instances of technoference occurring due to either the child's or parent's use of technology. Lastly, the study predominantly focused on mothers in Türkiye, limiting the generalizability of the findings to fathers, other caregivers, or broader family dynamics.

Future directions

Future studies could address these limitations in several ways. Longitudinal research, employing cross-lagged panel analysis, is needed to better understand these relationships over time. Future studies could also employ objective measures or multiple informants for a more reliable assessment of the variables. Using multi-item scales or qualitative approaches that differentiate the source of technoference may offer a more comprehensive understanding. Additionally, future research should include fathers and other caregivers to explore caregiver–child dynamics and provide a more holistic understanding of family interactions.

Practical implications

This study holds important implications for parents, caregivers, and clinical practice. First, it suggests the need for practical guidelines to help caregivers manage mobile device use during interactions with children, emphasizing the importance of setting limits. Second, it underscores the importance of raising parental awareness about the impact of technology use on family interactions. For example, families may set limits on mobile device use and create "tech-free" zones or times, such as during meals or bedtime, to ensure more focused interactions with their children. On the other hand, app developers can introduce "family mode" features that restrict certain app functions during family time. For example, a family mode feature might turn off social media alerts or pause gaming apps during family dinners, allowing everyone to be more present and engaged. Also, policymakers can create and support parenting programs that teach stress management techniques and help parents foster their children's self-regulation skills. They could also recommend guidelines that encourage parents to reduce smartphone use during interactions with their children, especially when they are feeling stressed, to help prevent interruptions in parent–child interactions. Additionally, addressing parenting stress and providing support for managing challenging behaviors are highlighted as crucial. Parenting interventions could equip parents with coping strategies and effective techniques. One way to help reduce technoference when parents are stressed may be to encourage them to engage in mindfulness practices or be more present with their children. By focusing on the moment, especially during challenging times or when children are acting out, parents can stay connected with their kids rather than turning to technology as a way to cope. Moreover, educators should be aware of technoference's impact on child behavior and learning, involving caregivers in managing technology use. Social workers and professionals working with families could offer counseling focused on technoference and stress management, alongside interventions to address these issues.

ORCID
Ezgi Yıldız https://orcid.org/0000-0001-5140-0889
Dilara Keşşafoğlu https://orcid.org/0000-0002-7356-0733
Merve Nur Altundal https://orcid.org/0000-0001-8043-4746
Gizem Akel https://orcid.org/0009-0004-2276-3452
Berna A. Uzundağ https://orcid.org/0000-0003-1192-691X

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

REFERENCES

Abels, M., Vanden Abeele, M. M. P., Van Telgen, T., & Van Meijl, H. (2018). Nod, nod, ignore: An exploratory observational study on the relation between parental mobile media use and parental responsiveness towards young children. In E. M. Luef & M. M. Marin (Eds.), *The talking species: Perspectives on the evolutionary, neuronal, and cultural foundations of language* (pp. 195–228). Uni Press Verlag.

Abidin, R. R. (1992). The determinants of parenting behavior. *Journal of Clinical Child Psychology*, *21*(4), 407–412. https://doi.org/10.1207/s15374424jccp2104_12

Anderson, N. J., Graham, S. A., Prime, H., Jenkins, J. M., & Madigan, S. (2021). Linking quality and quantity of parental linguistic input to child language skills: A meta-analysis. *Child Development*, *92*(2), 484–501. https://doi.org/10.1111/cdev.13508

Arnsten, A. F. (2009). Stress signalling pathways that impair prefrontal cortex structure and function. *Nature Reviews Neuroscience*, *10*(6), 410–422. https://doi.org/10.1038/nrn2648

Bayly, B., & Gartstein, M. (2013). Mother's and father's reports on their child's temperament: Does gender matter? *Infant Behavior and Development*, *36*(1), 171–175. https://doi.org/10.1016/j.infbeh.2012.10.008

Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*(1), 83–96. https://doi.org/10.2307/1129836

Bernhardt, J. M., & Felter, E. M. (2004). Online pediatric information seeking among mothers of young children: Results from a qualitative study using focus groups. *Journal of Medical Internet Research*, *6*(1), Article e7. https://doi.org/10.2196/jmir.6.1.e7

Berzofsky, M., Smiley-McDonald, H., Moore, A., & Krebs, C. (2014). *Measuring socioeconomic status (SES) in the NCVS: Background, options, and recommendations*. U.S. Department of Justice.

Branje, S. J., Hale, W. W., Frijns, T., & Meeus, W. H. (2010). Longitudinal associations between perceived parent-child relationship quality and depressive symptoms in adolescence. *Journal of Abnormal Child Psychology*, *38*, 751–763. https://doi.org/10.1007/s10802-010-9401-6

Briegel, W., Schneider, M., & Schwab, K. O. (2008). 22q11.2 deletion syndrome: Behaviour problems of children and adolescents and parental stress. *Child: Care, Health and Development*, *34*(6), 795–800. https://doi.org/10.1111/j.1365-2214.2008.00850.x

Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In P. Moen, G. H. Elder, Jr., & K. Lüscher (Eds.), *Examining lives in context: Perspectives on the ecology of human development* (pp. 619–647). American Psychological Association. https://doi.org/10.1037/10176-018.

Carson, V., & Kuzik, N. (2021). The association between parent–child technology interference and cognitive and social–emotional development in preschool-aged children. *Child: Care, Health and Development*, *47*(4), 477–483. https://doi.org/10.1111/cch.12859

Cho, K. S., & Lee, J. M. (2017). Influence of smartphone addiction proneness of young children on problematic behaviors and emotional intelligence: Mediating self-assessment effects of parents using smartphones. *Computers in Human Behavior*, *66*, 303–311. https://doi.org/10.1016/j.chb.2016.09.063

Cipriano, E. A., & Stifter, C. A. (2010). Predicting preschool effortful control from toddler temperament and parenting behavior. *Journal of Applied Developmental Psychology*, *31*(3), 221–230. https://doi.org/10.1016/j.appdev.2010.02.004

Cole, P. M., Ram, N., & English, M. S. (2019). Toward a unifying model of self-regulation: A developmental approach. *Child Development Perspectives*, *13*(2), 91–96. https://doi.org/10.1111/cdep.12316

Connell, C. M., & Prinz, R. J. (2002). The impact of childcare and parent–child interactions on school readiness and social skills development for low-income African American children. *Journal of School Psychology*, *40*(2), 177–193. https://doi.org/10.1016/S0022-4405(02)00090-0

Coyne, S. M., Radesky, J., Collier, K. M., Gentile, D. A., Linder, J. R., Nathanson, A. I., Rasmussen, E. E., Reich, S. M., & Rogers, J. (2017). Parenting and digital media. *Pediatrics*, *140*(Suppl. 2), S112–S116. https://doi.org/10.1542/peds.2016-1758N

Daneback, K., & Plantin, L. (2008). Research on parenthood and the internet: Themes and trends. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *2*(2), Article 2.

Drentea, P., & Moren-Cross, J. L. (2005). Social capital and social support on the web: The case of an internet mother site. *Sociology of Health & Illness*, *27*(7), 920–943. https://doi.org/10.1111/j.1467-9566.2005.00464.x

Dworkin, J., Connell, J., & Doty, J. (2013). A literature review of parents' online behavior. *Cyberpsychology*, *7*(2), Article 2. https://doi.org/10.5817/CP2013-2-2

Eisenberg, N., Zhou, Q., Losoya, S. H., Fabes, R. A., Shepard, S. A., Murphy, B. C., Reiser, M., Guthrie, I. K., & Cumberland, A. (2003). The relations of parenting, effortful control, and ego control to children's emotional expressivity. *Child Development*, *74*(3), 875–895. https://doi.org/10.1111/1467-8624.00573

Finch, J. E., Johnson, A. D., & Phillips, D. A. (2015). Is sensitive caregiving in child care associated with children's effortful control skills? An exploration of linear and threshold effects. *Early Childhood Research Quarterly*, *31*, 125–134. https://doi.org/10.1016/j.ecresq.2014.12.007

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Golinkoff, R. M., Can, D. D., Soderstrom, M., & Hirsh-Pasek, K. (2015). (Baby) talk to me: The social context of infant-directed speech and its effects on early language acquisition. *Current Directions in Psychological Science*, *24*(5), 339–344. https://doi.org/10.1177/0963721415595345

Gökçe, A., Arslan, İ., Öz, S. Ü., Mete, U., Taşçı, D., & Yengil Taci, D. (2021). Yedi Yaş Altı Çocuklarda Mobil Ekran Maruziyeti [Mobile screen exposure in children under seven years of age]. *Medical Journal of Ankara Training & Research Hospital*, *54*(2).

Hoff, E. (2003). The specificity of environmental influence: Socioeconomic status affects early vocabulary development via maternal speech. *Child Development*, *74*(5), 1368–1378. https://doi.org/10.1111/1467-8624.00612

Jackson, A. P., & Choi, J. (2018). Parenting stress, harsh parenting, and children's behavior. *Journal of Family Medicine & Community Health*, *5*(3), 10–19.

Karoly, P. (1993). Mechanisms of self-regulation: A systems view. *Annual Review of Psychology*, *44*(1), 23–52. https://doi.org/10.1146/annurev.ps.44.020193.000323

Karreman, A., van Tuijl, C., van Aken, M. A. G., & Deković, M. (2008). Parenting, coparenting, and effortful control in preschoolers. *Journal of Family Psychology*, *22*(1), 30–40. https://doi.org/10.1037/0893-3200.22.1.30

Kelly, J. F., Morisset, C. E., Barnard, K. E., Hammond, M. A., & Booth, C. L. (1996). The influence of early mother-child interaction on preschool cognitive/linguistic outcomes in a high-social-risk group. *Infant Mental Health Journal*, *17*(4), 310–321. https://doi.org/10.1002/(SICI)1097-0355(199624)17:4%3C310::AID-IMHJ3%3E3.0.CO;2-Q

Kildare, C. A., & Middlemiss, W. (2017). Impact of parents mobile device use on parent-child interaction: A literature review. *Computers in Human Behavior*, *75*, 579–593. https://doi.org/10.1016/j.chb.2017.06.003

Kochanska, G., Philibert, R. A., & Barry, R. A. (2009). Interplay of genes and early mother–child relationship in the development of self-regulation from toddler to preschool age. *Journal of Child Psychology and Psychiatry*, *50*(11), 1331–1338. https://doi.org/10.1111/j.1469-7610.2008.02050.x

Lecheile, B. M., Spinrad, T. L., Xu, X., Lopez, J., & Eisenberg, N. (2020). Longitudinal relations among household chaos, SES, and effortful control in the prediction of language skills in early childhood. *Developmental Psychology*, *56*(4), 727–738. https://doi.org/10.1037/dev0000896

Lupton, D., Pedersen, S., & Thomas, G. M. (2016). Parenting and digital media: From the early web to contemporary digital society. *Sociology Compass*, *10*(8), 730–743. https://doi.org/10.1111/soc4.12398

Mak, M. C. K., Yin, L., Li, M., Cheung, R. Y. H., & Oon, P. T. (2020). The relation between parenting stress and child behavior problems: Negative parenting styles as mediator. *Journal of Child and Family Studies*, *29*, 2993–3003. https://doi.org/10.1007/s10826-020-01785-3

Masur, E. F., & Gleason, J. B. (1980). Parent–child interaction and the acquisition of lexical information during play. *Developmental Psychology*, *16*(5), 404–409. https://doi.org/10.1037/0012-1649.16.5.404

McDaniel, B. T. (2021). The DISRUPT: A measure of parent distraction with phones and mobile devices and associations with depression, stress, and parenting quality. *Human Behavior and Emerging Technologies*, *3*(5), 922–932. https://doi.org/10.1002/hbe2.267

McDaniel, B. T., & Coyne, S. M. (2016). Technology interference in the parenting of young children: Implications for mothers' perceptions of coparenting. *The Social Science Journal*, *53*(4), 435–443. https://doi.org/10.1016/j.soscij.2016.04.010

McDaniel, B. T., Coyne, S. M., & Holmes, E. K. (2012). New mothers and media use: Associations between blogging, social networking, and maternal well-being. *Maternal and Child Health Journal*, *16*(7), 1509–1517. https://doi.org/10.1007/s10995-011-0918-2

McDaniel, B. T., & Radesky, J. S. (2018a). Technoference: Parent distraction with technology and associations with child behavior problems. *Child Development*, *89*(1), 100–109. https://doi.org/10.1111/cdev.12822

McDaniel, B. T., & Radesky, J. S. (2018b). Technoference: Longitudinal associations between parent technology use, parenting stress, and child behavior problems. *Pediatric Research*, *84*(2), 210–218. https://doi.org/10.1038/s41390-018-0052-6

McQuillan, M. E., & Bates, J. E. (2017). Parental stress and child temperament. In J. E. Bates (Ed.), *Parental stress and early child development* (pp. 75–106). Springer. https://doi.org/10.1007/978-3-319-55376-4_4

Moustafa, A. A., Tindle, R., Frydecka, D., & Misiak, B. (2017). Impulsivity and its relationship with anxiety, depression and stress. *Comprehensive Psychiatry*, *74*, 173–179. https://doi.org/10.1016/j.comppsych.2017.01.013

Nakamura, T. (2015). The action of looking at a mobile phone display as nonverbal behavior/communication: A theoretical perspective. *Computers in Human Behavior*, *43*, 68–75. https://doi.org/10.1016/j.chb.2014.10.042

Neece, C. L., Green, S. A., & Baker, B. L. (2012). Parenting stress and child behavior problems: A transactional relationship across time. *American Journal of Intellectual and Developmental Disabilities*, *117*(1), 48–66. https://doi.org/10.1352/1944-7558-117.1.48

Newsham, G., Drouin, M.,& McDaniel, B. T. (2020). Problematic phone use, depression, and technology interference among mothers. *Psychology of Popular Media*, *9*(2), 117–124. https://doi.org/10.1037/ppm0000220

OECD. (n.d.-a). *Annual labour force statistics* [Database]. Retrieved February 28, 2024, from https://stats.oecd.org/Index.aspx?DataSetCode=LFS_SEXAGE_I_R

OECD. (n.d.-b). *Enrolment in childcare and pre-school* [Database]. Retrieved February 28, 2024, from https://www.oecd.org/els/family/database.htm

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Özmen, S. K., & Özmen, A. (2012). Anne baba stres ölçeğinin geliştirilmesi [Parent stress scale development]. *Milli Eğitim Dergisi*, *196*(42), 20–35.

Pettit, G. S., & Arsiwalla, D. D. (2008). Commentary on special section on "bidirectional parent-child relationships": The continuing evolution of dynamic, transactional models of parenting and youth behavior problems. *Journal of Abnormal Child Psychology*, *36*, 711–718. https://doi.org/10.1007/s10802-008-9242-8

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879–891. https://doi.org/10.3758/BRM.40.3.879

Putnam, S. P., & Rothbart, M. K. (2006). Development of short and very short forms of the Children's Behavior Questionnaire. *Journal of Personality Assessment*, *87*(1), 102–112. https://doi.org/10.1207/s15327752jpa8701_09

Qiao, L., & Liu, Q. (2020). The effect of technoference in parent-child relationships on adolescent smartphone addiction: The role of cognitive factors. *Children and Youth Services Review*, *118*, Article 105340. https://doi.org/10.1016/j.childyouth.2020.105340

R Core Team. (2022). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. https://www.R-project.org

Radesky, J. S., Kistin, C., Eisenberg, S., Gross, J., Block, G., Zuckerman, B., & Silverstein, M. (2016). Parent perspectives on their mobile technology use: The excitement and exhaustion of parenting while connected. *Journal of Developmental & Behavioral Pediatrics*, *37*(9), 694–701. https://doi.org/10.1097/DBP.0000000000000357.

Rodgers, A. Y. (1998). Multiple sources of stress and parenting behavior. *Children and Youth Services Review*, *20*(6), 525–546. https://doi.org/10.1016/S0190-7409(98)00022-X

Rothbart, M. K., & Bates, J. E. (1998). Temperament. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional and personality development* (5th ed., pp. 105–176). Wiley.

Sameroff, A. (2009). The transactional model. In A. Sameroff (Ed.), *The transactional model of development: How children and contexts shape each other* (pp. 3–21). American Psychological Association. https://doi.org/10.1037/11877-001

Sanson, A., Hemphill, S. A., Yagmurlu, B., & McClowry, S. (2011). Temperament and social development. In P. K. Smith & C. H. Hart (Eds.), *Wiley-Blackwell handbook of childhood social development* (2nd ed., 227–245). Wiley-Blackwell.

Sarı, B. A., İşeri, E., Yalçın, Ö., Aslan, A. A., & Şener, Ş. (2012). Çocuk Davranış Listesi Kısa Formunun Türkçe Güvenilirlik Çalışması ve Geçerliliğine İlişkin Ön Çalışma [Reliability study of Turkish Version of Children's Behavior Questionnaire Short Form and a validity pre-study]. *Klinik Psikiyatri Dergisi*, *15*(3), 135–143.

Scher, A., & Sharabany, R. (2005). Parenting anxiety and stress: Does gender play a part at 3 months of age? *The Journal of Genetic Psychology*, *166*(2), 203–214. https://doi.org/10.3200/GNTP.166.2.203-214

Shin, E., Choi, K., Resor, J., & Smith, C. L. (2021). Why do parents use screen media with toddlers? The role of child temperament and parenting stress in early screen use. *Infant Behavior and Development*, *64*, Article 101595. https://doi.org/10.1016/j.infbeh.2021.101595

Sundqvist, A., Heimann, M., & Koch, F. S. (2020). Relationship between family technoference and behavior problems in children aged 4–5 years. *Cyberpsychology, Behavior, and Social Networking*, *23*(6), 371–376. https://doi.org/10.1089/cyber.2019.0512

Tamis-LeMonda, C. S., Bornstein, M. H., & Baumwell, L. (2001). Maternal responsiveness and children's achievement of language milestones. *Child Development*, *72*(3), 748–767. https://doi.org/10.1111/1467-8624.00313

Tharner, A., Luijk, M. P., van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., Jaddoe, V. W., Hofman, A., Verhulst, F. C., & Tiemeier, H. (2012). Infant attachment, parenting stress, and child emotional and behavioral problems at age 3 years. *Parenting*, *12*(4), 261–281. https://doi.org/10.1080/15295192.2012.709150

TurkStat. (2021). Income and Living Conditions Survey, 2021. https://data.tuik.gov.tr/Bulten/Index?p=Income-and-Living-Conditions-Survey-2021-45581&dil=2

TurkStat. (2022). Women statistics, 2022. https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Kadin-2022-49668

Uzundağ, B. A., Oranç, C., Keşşafoğlu, D., & Altundal, M. N. (2022a). How children in Turkey use digital media: Factors related to children, parents, and their home environment. In H. H. Şen & H. Selin (Eds.), *Childhood in Turkey: Educational, sociological, and psychological perspectives* (Science across cultures: The history of non-Western science, Vol. 11, pp. 137–149). Springer. https://doi.org/10.1007/978-3-031-08208-5_10

Uzundağ, B. A., Oranç, C., Keşşafoğlu, D., & Altundal, M. N. (2022b). Relations among self-reported maternal stress, smartphone use, and mother-child interactions. *Journal of Child and Family Studies*, *31*(11), 3058–3068. https://doi.org/10.1007/s10826-022-02371-5

Valiente, C., Lemery-Chalfant, K., & Reiser, M. (2007). Pathways to problem behaviors: Chaotic homes, parent and child effortful control, and parenting. *Social Development*, *16*(2), 249–267. https://doi.org/10.1111/j.1467-9507.2007.00383.x

Vanden Abeele, M. M., Abels, M., & Hendrickson, A. T. (2020). Are parents less responsive to young children when they are on their phones? A systematic naturalistic observation study. *Cyberpsychology, Behavior, and Social Networking*, *23*(6), 363–370. https://doi.org/10.1089/cyber.2019.0472

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Vaughan, E. L., Feinn, R., Bernard, S., Brereton, M., & Kaufman, J. S. (2013). Relationships between child emotional and behavioral symptoms and caregiver strain and parenting stress. *Journal of Family Issues*, *34*(4), 534–556. https://doi.org/10.1177/0192513X12440949

Wolfers, L. N. (2021). Parental mobile media use for coping with stress: A focus groups study. *Human Behavior and Emerging Technologies*, *3*(2), 304–315. https://doi.org/10.1002/hbe2.252

Yang, X., Jiang, P., & Zhu, L. (2023). Parental problematic smartphone use and children's executive function: The mediating role of technoference and the moderating role of children's age. *Early Childhood Research Quarterly*, *63*, 219–227. https://doi.org/10.1016/j.ecresq.2022.12.017

How to cite this article: Yıldız, E., Keşşafoğlu, D., Altundal, M. N., Akel, G., & Uzundağ, B. A. (2025). Navigating the digital age: Children's self-regulatory skills and technoference in parent–child interactions. *Family Relations*, 1–15. https://doi.org/10.1111/fare.13179

17413729, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/fare.13179 by Koc University, Wiley Online Library on [22/08/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License