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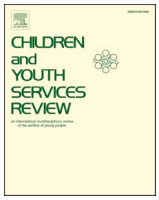

The parent–child relationship in the digital era: The mediator role of digital parental awareness

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ABSTRACT

The parent–child relationship was extensively reshaped during the infusion of digital technologies into families' daily lives. In this context, this research aims to investigate the relationship between the parent's time spent with the child and the parent–child relationship when digital parenting awareness including negative and positive roles is taken into consideration. A cross-sectional survey research method was employed. The data was collected by demographic information form, Child-parent Relationship, and Digital Parental Awareness scales. The data was analyzed from 285 parents with 3–6 years old children. In order to test the hypotheses, the Hayes-Process model was employed to determine the mediating effects of sub-dimensions of digital parental awareness between parent's time spent with the child and the parent–child relationship. The results revealed that being a negative digital role model, digital negligence, parents' effective use of technology, and protection from digital risks partially mediate the link between parent–child time and their relationship. An increase in negative role modeling and digital negligence are associated with a decrease in the positive parent–child relationship. Furthermore, parents' efficient use of and protection from risks from technology affects the parent–child relationship positively.

1. Introduction

The digital area in which childhood, child relationships, and parent–child relationships are reimagined is an important study area for researchers. In this context, we delve into revealing the parent–child relationship in the technological era in the current study. The parent–child relationship is determined by many factors, including the physiological, sociological, and psychological environment surrounding the parent and child (Bornstein & Lansford, 2010). However, a large body of research (Baumrind, 1991; Holden & Edwards, 1989) also emphasizes that parenting attitudes/skills play an important role in the parent–child relationship in its various dimensions. Therefore, it is crucial to look closely at the relationship between parents and children on the basis of today's parenting and to understand its ecology.

This study concentrating on digital parental awareness explains the mediation between digital childhood and parenthood. The results of this study can contribute to ensuring that parents' skills can navigate their children on digital platforms safely and positively. Furthermore, how to influence digital parenting skills their relationship with their children, as they can also affect the parent–child time spending and the quality of the time and activities (Erişti & Avcı, 2018; Kurtdede Fidan & Olur, 2023). Parents' activities on online platforms influence their children (Nichols & Selim, 2022), and children have different perceptions than their parents' time spent and activities on digital platforms (Erişti & Avcı, 2018). Konok, Bunford, and Miklósi (2020) suggest that digital parenting styles have prevention and treatment roles in this context. This study also put forward some evidences how to improve children's well-being in their homes in terms of interaction with technology. Hence, this research takes place to unearth the connection between parents and their children in digital familyhood concerning child-parent time spent together by aiming to extend the knowledge of Parental Mediation Theory in a digital age (Clark, 2011).

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2. Parenting and parent-child relationship

Research on parenting defines parenting as supporting children's developmental tasks and meeting their physical needs (Coleman & Karraker, 1998). The quality of the rich, stimulating environment provided to the child to support the child's development is directly proportional to parental competence. Similarly, providing the appropriate health, physical care, and nutrition, which are considered the physical needs of the child, is also related to parenting competence (Collins et al., 2000). Parenting competencies, which are determined by many factors such as economic conditions, educational status, cultural background, parental age, and number of children, play a crucial role in the quality of the parent–child relationship. Additionally, Baumrind states that (1991) parenting attitudes also play an important role in the parent–child relationship and parenting competence. The parent–child relationship is determined not only by parenting but also by the environment in which the child lives and demographic factors (Kulaksız & Toran, 2023). This environment is the peer, family, cultural, and educational environment to which the child is exposed, as described by Bronfenbrenner (1979) in the micro-system of ecological systems theory. The parent–child relationship can be influenced positively or negatively by all factors in this environment.

The parent–child relationship is a complex concept and many factors such as parent–child communication, emotional attachment between parent and child, parental attitudes, individual characteristics of the child, parents' educational level, socioeconomic and cultural level, and family structure can have impacts on this relationship. A positive parent–child relationship supports the child's emotional well-being and resilience, self-confidence, effective use of social skills, stress management, self-esteem and self-respect, healthy relationships, academic success, and effective use of problem-solving skills. On the other hand, a negative parent–child relationship leads to emotional and behavioral problems, social isolation and emotional neglect, aggressive behavior, feelings of worthlessness, and an inability to cope with difficulties. In addition to these factors, the amount of time that parents and children spend together is also crucial in determining the direction of the parent–child relationship. The study of Li and Guo (2023) found that the amount of time parents spent with their children had a positive effect on the children's well-being and was also a determinant of the child's academic performance. Similarly, Güngör et al. (2021) found that fathers' time spent with their children is a predictive factor of children's aggression. Similarly, Kalenkoski and Foster's (2008) research showed that parents' educational level also determines the amount of time parents spend with their children. Another study found that the age of the children determines the amount of time parents spend with them (Toran & Özden, 2022). This study found that children whose parents spent more time with them were better able to express themselves. The aforementioned studies demonstrate that there are many factors that determine the quality of the parent–child relationship, except for the digital factors that have surrounded the child in the last 20 years. Digitalization has not only changed our lives but also the way we communicate and relate to each other, leading to the development of new habits.

3. Digital parenting

When we examine the parent–child relationship in the digital era, the first concept we encounter is digital parenting and the other relevant term is digital childhood. Digital parenting and digital childhood are important concepts that are not only interrelated to each other but also influence each other. Parents' and children's attitudes toward each other are thought to be explained by these concepts. In this context, we need to define digital parenting and digital childhood. Benedetto and Ingrassia (2021) define digital parenting as parents' efforts and practices to understand, support, and regulate children's activities in digital environments, while MacBlain et al. (2017) describe digital childhood as children living in a culture and time when digital technologies are readily available and widely used in everyday life, including communication, education, and entertainment. These definitions allow us to rethink how we should posit parenting and childhood in the digital environment. Since parenting has evolved into digital parenting, attitudes and behaviors have transmitted from "classical" parenting to digital parenting as well. Therefore, it can be said that digital parenting attitudes may also be determinant in the parent–child relationship.

Digital parenting attitudes are directly related to parents' competence in using digital tools and digital literacy (Gür & Türel, 2022). Because the relationship that parents can have with their children in the digital areas is directly related to these parenting skills. In a *meta*-analysis conducted by Modecki and colleagues (2022), digital parenting was discussed, and they found that some new parenting attitudes emerged with digital parenting. The attitudes that emerged in these quantitative and qualitative studies were restriction and rulemaking, parental monitoring, parental communication and support (mediation), parent–child negotiation, social ecologies of support, and appreciation of technology (Modecki et al., 2022; p. 1684). In addition, there are discussions about digital parenting awareness which also explains digital parenting attitudes. In the study conducted by Manap and Durmuş (2020) on digital parental awareness, efficient usage, protection from risks, being a negative role model, and digital negligence were determined as part of parents' emerging attitudes.

Although no direct research came across on the impact of digital parenting on the parent–child relationship, it is thought that parents' attitudes in the digital age may impact the parent–child relationship. The study by Shin et al. (2021) found that the level of development of technology and communication resources available to parents and children, age-appropriate shared content, and simultaneous media use facilitated parent–child relationships. Similarly, Kurtdede Fidan and Olur (2023) found that parents' time spent in digital environments with their children positively influenced their self-efficacy and digital attitudes. Furthermore, Konok et al. (2019) found that digital parenting styles are determinants of children's use of digital tools, and depending on the style adopted by parents, parents are either involved or not involved in their children's digital environments actively. Therefore, it is possible to say that this determines the quality of the parent–child relationship. In addition, a *meta*-analysis reveals that limited research indicates that parental use of a smartphone may have a positive effect on parent–child interaction (Knitter & Zemp, 2020). It was also found that digital parenting was associated with access to digital tools and had an impact on digital parenting self-efficacy. This digital parenting self-efficacy positively affects the parent–child relationship (Huang et al., 2018).

Another *meta*-analysis study found that parents' mediating role is critical to children's use of digital tools and that parents' knowledge and experience with ICT positively influence parents' mediation behaviors (Nichols & Selim, 2022). Gür and Türel (2022) reported that parents were positive about their relationships with their children in the digital platforms when digital tools were used for educational purposes, while they were restrictive/concerned about the potential problems that children might encounter in the virtual environment. It was found that the duration of parental digital media use is positively related to children's digital media usage and that parents' positive attitudes toward digital media use are also important predictors of children's digital media use (Lee, Kim, & Kim, 2022). In parallel with these studies, digital parenting may differ depending on the parents' and children's demographic variables, and these have some crucial implications for understanding the parent–child relationship (Kulaksız & Toran, 2023). As noted above, a limited number of studies show that digital parenting affects or mediates the parent–child relationship. While increasing the frequency with which parents use digital tools can positively support digital parenting skills, it can also limit the time they spend with their children. At the same time, this is likely to impact the parent–child relationship or vice versa negatively.

4. Research aim

This study concentrates on the mediating effect of digital parenting skills on the relationship between the time parents and children spend together and the parent–child relationship. With this focus, this research aims to investigate the relationship between the parent's time spent with the child and the parent–child relationship when digital parental awareness (being a negative model, digital negligence, efficient usage, protection from risks subdimensions) is taken into consideration. So, the following hypotheses are tested:

1. Being a negative model mediates the relationship between the parent's time spent with the child and the parent–child relationship.
2. Digital negligence mediates the relationship between the parent's time spent with the child and the parent–child relationship.
3. Efficient usage mediates the relationship between the parent's time spent with the child and the parent–child relationship.
4. Protection from risks mediates the relationship between the parent's time spent with the child and the parent–child relationship.

5. Method

Cross-sectional survey method following a quantitative approach was used in this study. This survey research method allows researchers to gather data from a large number of people at the same period without influencing them (Fraenkel et al., 2012) which perfectly fits to test our hypotheses.

5.1. Participants

The sample of the study was composed of parents who have 3 to 6-year-old children, using the convenience sample method. The data was collected from 310 participants, however, the final sample included 285 people due to missing data and outliers (Table 1). Social media platforms were preferred to disseminate the survey and collect the data. All participants consent to join the study voluntarily. The ethics committee approval was obtained from the Ethics Committee of Istanbul Kultur University.

Table 1
Demographics of the participants.

	Groups	f	%
Age of Parents	20–25	7	2,5
	26–30	60	21,1
	31–35	93	32,6
	36–40	81	28,4
	41–45	38	13,3
	46–50	5	1,8
	51–55	1	0,4
Gender of Parents	Female	253	88,8
	Male	32	11,2
Parent's time spent with the child (in hour)	1–5	198	69,5
	6–10	71	24,9
	11–15	10	3,5
	16–20	2	0,7
	21–25	4	1,4
Children's time spent on the internet (in minute)	0–30	102	35,8
	31–60	102	35,8
	61–90	16	5,6
	91–120	48	16,8
	121–180	12	4,3
	181–240	3	1,1
	241–300	2	0,7
Daily internet usage duration of the parents (in hour)	1–3	209	73,3
	4–6	60	21,1
	7–9	11	3,9
	10–12	5	1,5
	Total	285	100

Parents' ages vary between 20 and 55. 88,8% of the participants was female (N = 253). Parent's time spent with the child diverse as 1–5 h 69,5% (N = 198), 6–10 h 24,9% (N = 71), the rest spend more than 11 h. Children's time spent on the internet daily mostly maximum 30 min (35,8%, N = 102) and between 30–60 min (35,8%, N = 102), the rest spent time more than 1 h. Daily internet usage durations of the parents are 73,3% up to 3 h (N = 209), between 4–6 h 21,1% (N = 60), and the minority of the participants spent more than 7 h.

5.2. Data collection tools

Demographic Information Form, Child-parent relationship scale, and Digital Parental Awareness Scale as data collection instruments were administered in this study.

Demographic Information Form: The form was developed by researchers to collect related to parents' ages, genders, daily internet use, daily time spent with their children, and children's time spent on the internet.

Child-parent Relationship Scale: Two-factor-24-item scale was developed by Pianta (1992) and translated to Turkish by Akgün and Yeşilyaprak (2010). Factor analysis showed that the scale is adaptive to the Turkish context. Also, reliability studies for the scale provide good evidence for each dimension as conflict (α = .85), positive relationship (α = .73), and total (α = .73). The total score ranges from a high of 120 to a low of 24. Eight items belonging to the second factor were coded reversely. A high score on the scale indicates a negative relationship, while a low score indicates a positive relationship. However, in this study, the items were reverse-coded to make interpretation easier. Therefore, a high score is an indicator of a positive relationship. In this study, the total score of the child-parent relationship was used (α = .73).

Digital Parental Awareness Scale: Sixteen-item-4 factor scale was developed by Manap and Durmuş (2020). The scale has a 5-Likert-response-types. The factors named efficient usage, protecting from risks, being a negative role model, and digital negligence demonstrate acceptable validity and reliability values. Alpha scores vary between.634 and.785. Cronbach's alpha internal consistency coefficients were.463-.683 in this study. Each factor's scores are a minimum of 4 and a maximum of 16 points. While each factor is computed separately, lower scores from being a negative role model and digital neglect factors, and higher points from efficient usage and protecting from risk factors, show that parents are more conscious of digital parenting.

5.3. Data analysis

SPSS Hayes-Process model number 4 was employed in order to determine the mediating effect of four dimensions of digital parental awareness (Being negative role model, Digital negligence, Efficient usage and Protecting from risks) (M) on the relationship between parent–child time spent together (X) and parent–child relationship (Y). Before the analysis, the following prerequisites for mediator variable analysis were questioned (Karagöz, 2019):

- X must have a significant effect on Y: Simple linear regression was performed and presented in the preliminary results.
- X must have a significant effect on M: Simple linear regression was performed and presented in the preliminary results.
- Considering the combined effect of X and M on Y, M must have an effect on Y: Multivariate regression analysis was performed and presented in the model results.
- All variables should show normal distribution: According to Tabachnick and Fidell (2013), it shows normal distribution if kurtosis and skewness values are between −1.5 and + 1.5. It was found that the skewness values for the variables were between −.685 and.473 and the kurtosis values were between −.728 and −.235. Therefore, it can be said that the data showed a normal distribution.
- There must be a meaningful relationship between the variables: The relationship between the variables was determined by correlation analysis and presented in the preliminary results.

- There must be a linear relationship between the variables: It was determined using scatter plots that there was a linear relationship between the variables.
- There should be no multicollinearity between variables: VIF values of the variables were calculated and presented in the results. There was no multicollinearity between variables as VIF values are 4 and below (Hair et al., 2010).

6. Results

6.1. Preliminary results

Initially, preliminary analyses were conducted before testing the hypotheses. The results of Pearson correlation analysis and descriptive statistics were calculated (N = 285). The parent's time spent with the child and the parent–child relationship showed a significant relationship with all sub-dimensions of digital parenting awareness (negative role model, digital negligence, efficient usage and protecting from risks) ($p > .050$).

The mean of the parent–child relationship in the study ($X = 96{,}312$) show that the participants have a positive parent–child relationship. At the same time, parents participating in the study spent an average of 5 hours a day with their children ($X = 4.930$). While the parents have higher averages in the digital parental awareness dimensions of "efficient usage" and "protecting from risks" ($X = 17{,}260$; X=15.712), digital negligence ($X = 7.225$) and being negative role model ($X = 8.014$). There appears to be a significant relationship between child-parent relationship and parents' time spent with the child ($r = .187$; $p < .05$). There is also a significant relationship between child-parent relationship and the sub-dimensions of parental digital parental awareness ($r_{\text{Negative Role Model}}$=-,327, $r_{\text{Digital Negligence}}$=-,287, $r_{\text{Efficient Usage}}$=,238, $r_{\text{Protecting from Risks}}$=,303; $p < .050$).

Secondly, the time parents and children spend together has a significant impact on the parent–child relationship or not were tested via regression analysis. There is a significant relationship between parents' relationship with their children and the time they spend together ($r = .187$; $p < .050$). Furthermore, as shown in Fig. 1 and Table 2, the parent's time spent with child is a positive predictor for the relationship between parent and child (c; $\beta = .187$; $p < .050$; LLCI = .193; ULCI = .802). As the time parents and children spend together increases, the relationship between parents and children develops positively.

6.2. Model analysis results

Digital parental awareness dimensions as mediators, the parent's time spent with the child as an independent variable, and the parent–child relationship as a dependent variable served in the hypotheses of this study shown in the figures.

Hypothesis 1: Being a negative model (M) mediates the relationship between the parent's time spent with child (X) and the parent–child relationship (Y).

In Table 2 and Fig. 1, it was found that the time parents and children spent together was a negative predictor of the variable of being a negative model (a; $\beta = -.119$; $p < .050$; LLCI = -.160; ULCI = -.002) and that being a negative model was a negative predictor of the parent and child relationship (b; $\beta = -.309$; $p < .001$; LLCI = -1.637; ULCI = -.777). Based on these results, as the time the parent and child spend together increases, the level of being a negative role model in digital parental awareness decreases, and as the level of being a negative role model increases, the positive relationship between the parent and the child decreases. When being a negative model and the parent's time spent with child variables are taken into consideration together, it is seen that the time spent by parent and child variable is still a positive predictor for the relationship between parent and child (c'; $\beta = .151$; $p < .050$; LLCI = . 108; ULCI = .692). However, the coeff (β) value of the variable of the parent's time spent with the child decreases (c-model, $\beta = .187$; $p < .050$; c'-model, $\beta = .151$; $p < .050$). Therefore, it can be considered that

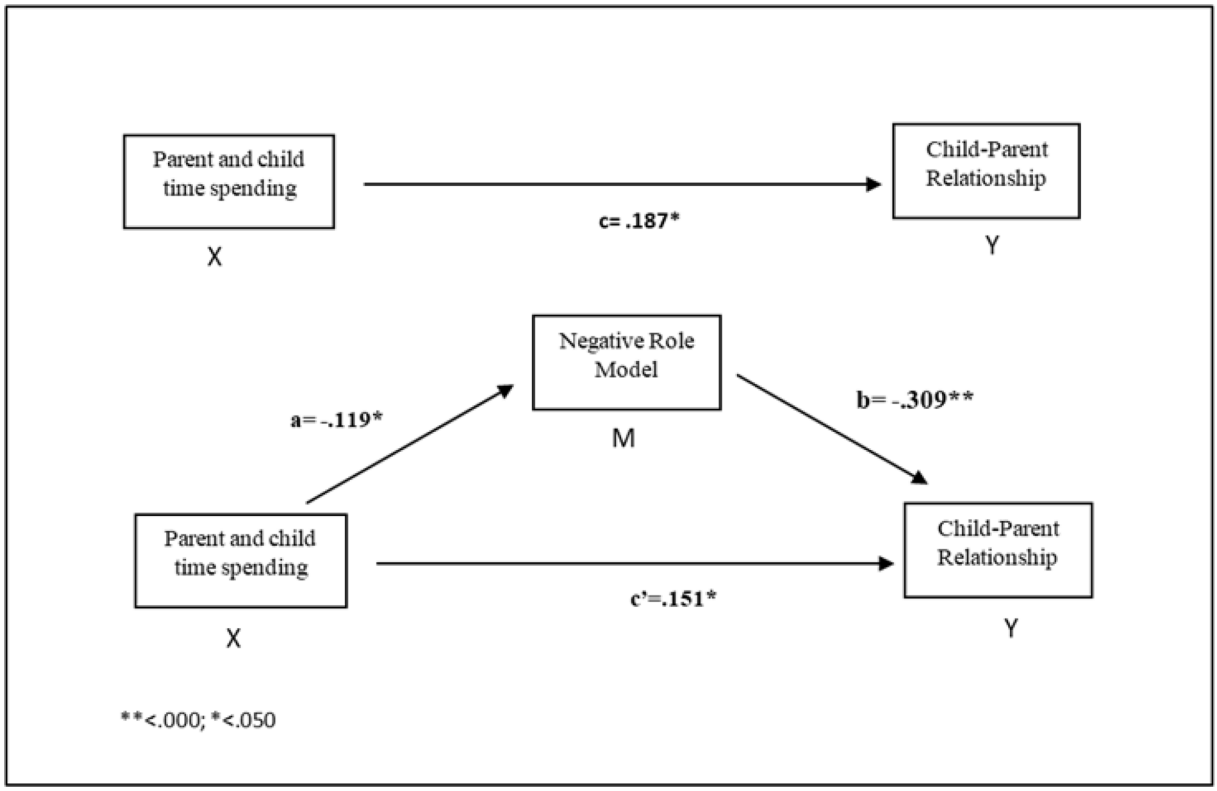

Fig. 1. Being Negative model variable as mediator model.

Table 2
Mediation analysis of Being Negative role model variable.

Child-Parent Relationship	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (c)	.187	.035	87.352	10.310	1.000	283.000	*	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	93.860	.943	99.494	**	92.003	95.7175	1.000	1.000
Parent and child time spending	.187	.155	3.211	*	.193	.802		
Negative Rol Model	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (a)	.119	.014	5.865	4.064	1.000	283.000	*	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	7.624	.244	31.187	**	7.142	8.105	1.000	1.000
Parent and child time spending	−.119	.040	−2.016	*	−.160	−.002		
Child-Parent Relationship	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (c')	.360	.130	79.086	20.983	2.000	282.000	**	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	103.062	1.891	54.508	**	99.340	106.784		
Parent and child time spending **(c')**	.151	.148	2.693	*	.108	.692	.986	1.014
Negative Rol Model **(b)**	−.309	.218	−5.530	**	−1.637	−.777	.986	1.014

Mediator variable analysis − effect level findings							
	Effect	**se**	**t**	**p**	**LLCI**	**ULCI**	**c_cs**
Total Effect of X on Y	.498	.155	3.211	*	.193	.802	.187
	Effect	**se**	**t**	**p**	**LLCI**	**ULCI**	**c'_cs**
Direct Effect of X on Y	.400	.148	2.693	*	.108	.692	.151
	Effect	**BootSe**	**BootLLCI**		**BootULCI**		
Indirect Effect(s) of X on Y	.098	.045	.018		.193		

*p < .05; **p < .001.

the negative role model variable is a mediator variable.

In Table 2, it is found that the total effect of the time spent between parent and child on the parent–child relationship is.498 (p < .050; LLCI = .193; ULCI = .802), and the direct effect is.400 (p < .050; LLCI = .108; ULCI = .692). The indirect effect between the two variables is.098 and this effect is significant (BootLLCI = .018; BootULCI = .193). Based on these findings, the time parents and children spend together has both a direct effect on the parent–child relationship and an indirect effect through the negative modeling variable. In other words, the negative modeling variable is a partial mediator variable that has a significant effect on the relationship between parent's time spent with child and the parent–child relationship.

Hypothesis 2: Digital negligence (M) mediates the relationship between the parent's time spent with child (X) and the parent–child relationship (Y).

In Table 3 and Fig. 2, the time parents and children spend together is a negative predictor of the digital negligence variable (a; β = -.124; p < .050; LLCI = -.183; ULCI = -.006) and digital negligience is a negative predictor of the parent and child relationship (b; β = -.267; p < .001; LLCI = -1.319; ULCI = -.542). The time parent and child spend together increases, the level of digital negligence in digital parental awareness decreases, and as the level of digital negligence increases, the positive

Table 3
Mediation analysis of digital negligence.

Child-Parent Relationship	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (c)	.187	.035	87.352	10.310	1.000	283.000	*	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	93.860	.943	99.494	**	92.003	95.7175	1.000	1.000
Parent and child time spending	.187	.155	3.211	*	.193	.802		
Digital Negligence	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (a)	.124	.015	7.361	4.436	1.000	283.000	*	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	8.481	.274	30.959	**	7.942	9.020	1.000	1.000
Parent and child time spending	−.124	.040	−2.016	*	−.160	−.002		
Child-Parent Relationship	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (c')	.360	.130	79.086	20.983	2.000	282.000	**	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	101.752	1.906	53.379	**	98.000	105.505		
Parent and child time spending **(c')**	.154	.151	2.718	*	.113	.706	.985	1.016
Digital Negligence **(b)**	−.267	.198	−4.712	**	−1.319	−.542	.985	1.016

Mediator variable analysis − effect level findings							
	Effect	**se**	**t**	**p**	**LLCI**	**ULCI**	**c_cs**
Total Effect of X on Y	.498	.155	3.211	*	.193	.802	.187
	Effect	**se**	**t**	**p**	**LLCI**	**ULCI**	**c'_cs**
Direct Effect of X on Y	.409	.151	2.718	*	.113	.706	.154
	Effect	**BootSe**	**BootLLCI**		**BootULCI**		
Indirect Effect(s) of X on Y	.089	.050	.001		.196		

*p < .05; **p < .001.

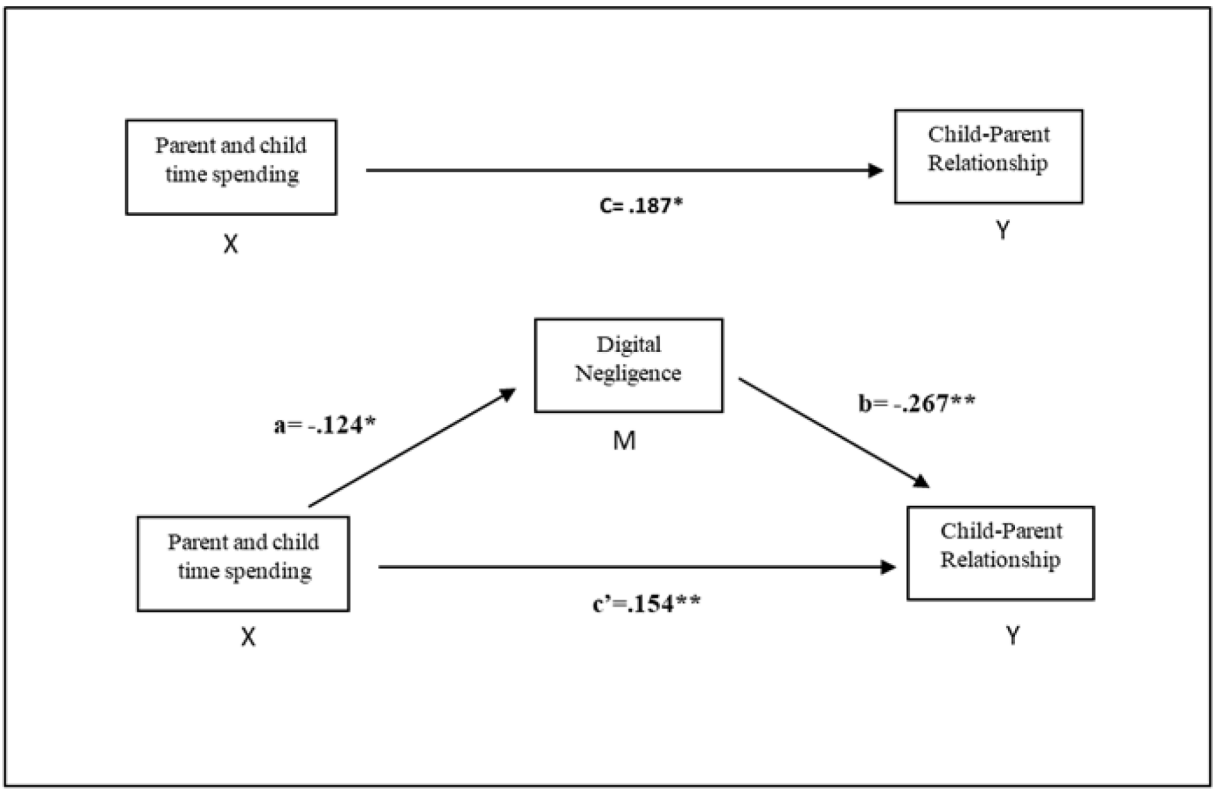

Fig. 2. Digital Negligence variable as mediator model.

relationship between parent and child decreases. When the variables of digital negligence and the parent's time spent with child are taken into consideration, the parent's time spent with child is still a positive predictor for the relationship of parent and child (c'; β = .154; p < .050; LLCI = .113; ULCI = .706). However, the coefficient (β) value of the variable of time spent by parent and child together decreases (c-model, β = .187; p < .050; c'-model, β = .154; p < .050). Therefore, it can be considered that the digital negligence variable is a mediator variable.

The total effect of the time spent between parent and child on the parent and child relationship is.498 (p < .050; LLCI = .193; ULCI = .802), while the direct effect is.409 (p < .050; LLCI = .802). 113; ULCI = .706). So, the indirect effect between the two variables is.089 and this effect is significant (BootLLCI = .001; BootULCI = .196). Based on these findings, the time parents and children spend together has both a direct

Table 4
Mediation analysis of efficient usage.

Child-Parent Relationship	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (c)	.187	.035	87.352	10.310	1.000	283.000	*	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	93.860	.943	99.494	**	92.003	95.7175	1.000	1.000
Parent and child time spending	.187	.155	3.211	*	.193	.802		
Efficient Usage	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (a)	.121	.015	5.623	4.173	1.000	283.000	*	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	16.864	.239	70.457	**	16.393	17.335	1.000	1.000
Parent and child time spending	.121	.039	2.043	*	.003	.158		
Child-Parent Relationship	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (c')	.287	.082	83.396	12.611	2.000	282.000	**	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	79.198	3.969	19.954	**	71.385	87.011		
Parent and child time spending **(c')**	.161	.153	2.804	*	.128	.728	.985	1.015
Efficient Usage **(b)**	.218	.229	3.798	**	.419	1.320	.985	1.015

Mediator variable analysis — effect level findings							
	Effect	**se**	**t**	**p**	**LLCI**	**ULCI**	**c_cs**
Total Effect of X on Y	.498	.155	3.211	*	.193	.802	.187
	Effect	**se**	**t**	**p**	**LLCI**	**ULCI**	**c'_cs**
Direct Effect of X on Y	.428	.153	2.804	*	.128	.728	.161
	Effect	**BootSe**	**BootLLCI**		**BootULCI**		
Indirect Effect(s) of X on Y	.070	.039	.002		.156		

*p < .05; **p < .001.

effect on the parent–child relationship and an indirect effect through the digital negligence variable. In other words, we can say that the digital neglect variable is a partial mediator variable that has a significant effect on the relationship between the parent's time spent with child and the parent–child relationship.

Hypothesis 3: Efficient usage (M) mediates the relationship between the parent's time spent with child (X) and the parent–child relationship (Y).

In Table 4 and Fig. 3, the parent's time spent with child is a positive predictor of the efficient usage variable (a; β = .121; p < .050; LLCI = .003; ULCI = .158) and efficient usage variable is a positive predictor of the parent–child relationship (b; β = .218; p < .001; LLCI = .419; ULCI = 1.320). The time spent by parents and children increases, the level of efficient usage in digital parental awareness increases, and as the level of efficient usage increases, the positive relationship between parents and children also increases. When the variables of efficient use and the time spent by the parent and child are taken into consideration together, the variable of the parent's time spent with child is still a positive predictor for the parent–child relationship (c'; β = .161; p < .050; LLCI = .128; ULCI = .728). However, the coefficient (β) value of the variable of time spent by parent and child together decreases (c-model, β = .187; p < .050; c'-model, β = .161; p < .050). Therefore, it can be considered that efficient usage serves as mediator variable.

The total effect of the parent's time spent with child on the parent–child relationship is.498 (p < .050; LLCI = .193; ULCI = .802), while the direct effect is.428 (p < .050; LLCI = .802). 128; ULCI = .728). The indirect effect between the two variables is.070 and this effect is significant (BootLLCI = .002; BootULCI = .156). Based on these findings, the parent's time spent with child has both a direct effect on the parent–child relationship and an indirect effect through the efficient usage variable. In other words, the efficient usage variable is a partial mediator variable that has a significant effect on the relationship between the parent's time spent with child and the parent–child relationship.

Hypothesis 4: Protection from risks (M) mediates the relationship between the parent's time spent with child (X) and the parent–child relationship (Y).

In Table 5 and Fig. 4, the time parents and children spend together is a positive predictor of the protection from risks variable (a; β = .143; p < .050; LLCI = .025; ULCI = .239) and the protection from risks variable is a positive predictor of the parent and child relationship (b; β = .282; p < .001; LLCI = .488; ULCI = 1.128). Based on these results, as the time the parent and child spend together increases, the level of protection against risks in digital parental awareness increases, and as the level of protection against risks increases, the positive relationship between parent and child increases. When the variables of protection from risks and the parent's time spent with child are taken into consideration together, it is seen that the variable of the parent's time spent with child is still a positive predictor for the parent–child relationship (c'; β = .147; p < .050; LLCI = .095; ULCI = .687). However, it is seen that the coeff (β) value of the variable of time spent by parent and child together decreases (c-model, β = .187; p < .050; c'-model, β = .147; p < .050). Therefore, it can be considered that protection from risks variable is a mediator variable.

The total effect of the time spent between parent and child on the parent and child relationship is.498 (p < .050; LLCI = .193; ULCI = .802), while the direct effect is.391 (p < .050; LLCI = .802). 095; ULCI = .687). The indirect effect between the two variables is.107, which is significant (BootLLCI = .017; BootULCI = .232). Based on these findings, the time parents and children spend together has both a direct effect on the parent–child relationship and an indirect effect through the protection from risks variable. In other words, we can say that the protection from risks variable is a partial mediator variable that has a significant effect on the relationship between the time the parent and child spend together and the parent–child relationship.

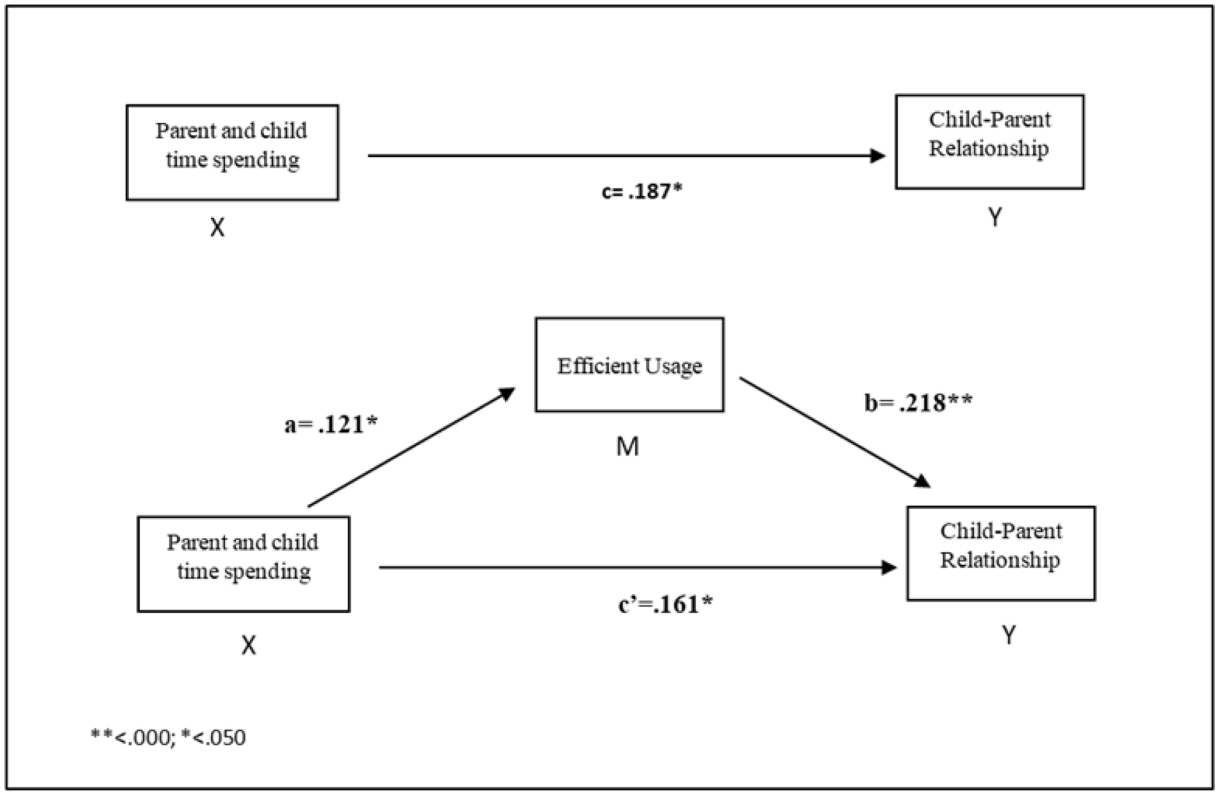

Fig. 3. Efficient Usage variable as mediator model.

Table 5
Mediation analysis of protecting from risks.

Child-Parent Relationship	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (c)	.187	.035	87.352	10.310	1.000	283.000	*	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	93.860	.943	99.494	**	92.003	95.7175	1.000	1.000
Parent and child time spending	.187	.155	3.211	*	.193	.802		
Protecting from Risks	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (a)	.143	.020	10.773	5.908	1.000	283.000	*	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	15.060	.331	45.459	**	14.408	15.712	1.000	1.000
Parent and child time spending	.143	.0354	2.0431	*	.025	.239		
Child-Parent Relationship	**R**	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**	
Model Summary (c')	.336	.113	80.599	17.943	2.000	282.000	**	
Model	**coeff**	**se**	**t**	**p**	**LLCI**	**ULCI**	**Collinearity Statistics**	
							Tolerance	**VIF**
Constant	81.687	2.611	31.286	**	76.548	86.827		
Parent and child time spending **(c')**	.147	.150	2.598	*	.095	.687	.980	1.021
Protecting from Risks **(b)**	.282	.163	4.971	**	.488	1.128	.980	1.021
Mediator variable analysis- effect level findings								
	Effect	**se**	**t**	**p**	**LLCI**	**ULCI**	**c_cs**	
Total Effect of X on Y	.498	.155	3.211	*	.193	.802	.187	
	Effect	**se**	**t**	**p**	**LLCI**	**ULCI**	**c'_cs**	
Direct Effect of X on Y	.391	.150	2.589	*	.095	.687	.147	
	Effect	**BootSe**	**BootLLCI**	**BootULCI**				
Indirect Effect(s) of X on Y	.107	.055	.017	.232				

*p < .05; **p < .001.

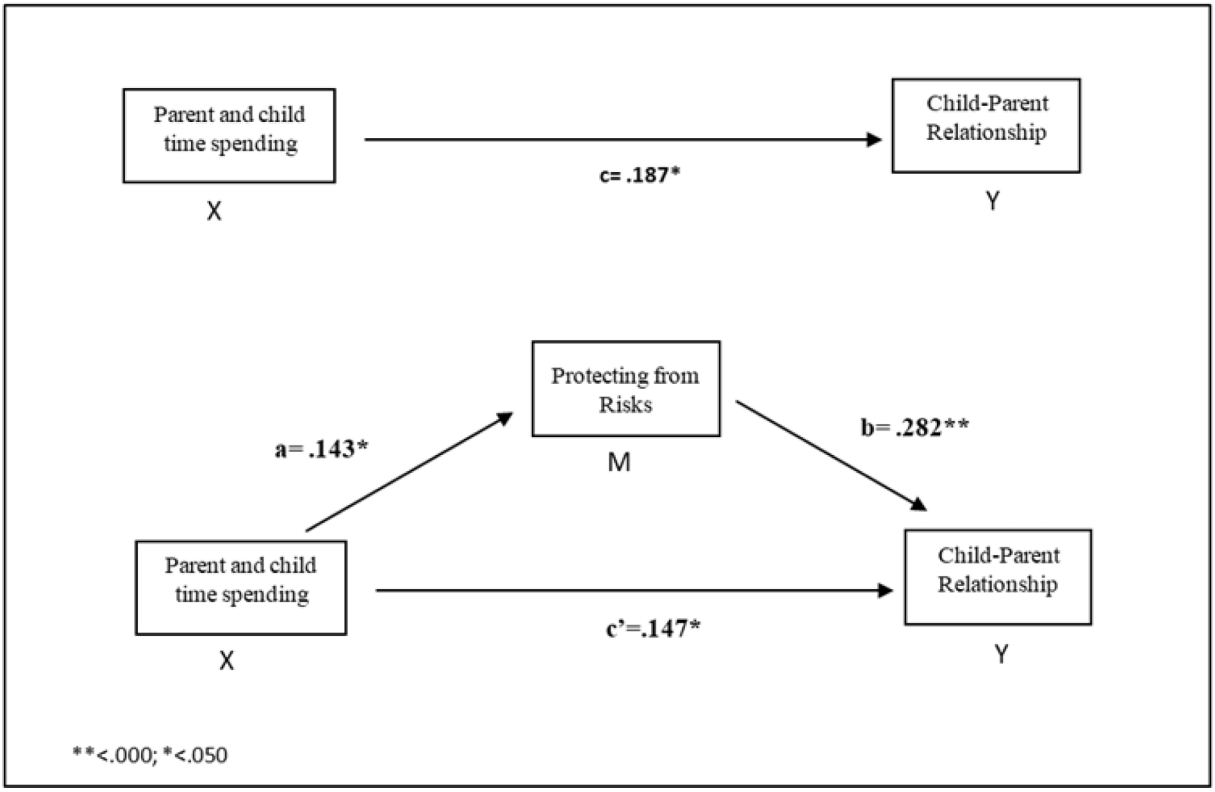

Fig. 4. Protecting from risks variable as mediator model.

7. Discussion and implications

Focusing on the mediating effect of digital parenting awareness on the relationship between the time parents and children spend together and the parent–child relationship, this research aimed to reveal the relationship between the parent's time spent with the child and the parent–child relationship when digital parenting awareness is taken into consideration. With this focus, four hypotheses were tested to understand how digital parenting awareness (being a negative model, digital negligence, efficient usage, and protection from risks subdimensions) mediates the association between the parent's time spent with the child and the parent–child relationship.

As a result of the analysis conducted to test the first hypothesis, it was found that the negative role modeling of digital parental awareness is a

partial mediating variable between the time the parent spends with the child and the parent–child relationship. In other words, it was found that as the time spent by the parent and the child together increases, the level of being a negative role model in digital parental awareness decreases, and as the level of being a negative role model increases, the positive relationship between parent and child decreases. When the variables of negative role modeling in digital parental awareness and the time spent by the parent with the child were considered together, it was found that the time spent by the parent with the child variable was a positive predictor of the parent–child relationship. Dubas and Gerris (2002) found that the amount of time parents spend with their children is an important determinant of the parent–child relationship. Additionally, Zhao et al. (2023) found that parents who spent time with their children were less concerned about digital risks and more open to new technologies. It was also found that parental involvement in the child's digital area allows for accessibility to children and that shared activities have a positive impact on the parent–child relationship (Warren et al., 2002). Furthermore, Yang et al. (2022) found that there is a negative relationship between children's use of digital devices and parent–child relationships, while parents' active mediation has a positive effect on this parent–child relationship. As can be seen, research shows that the mediating reliable role of parents is crucial in the parent–child relationship and that time spent together also supports this.

By testing second hypothesis of the study, it was found that parental digital neglect is a partial mediating variable that has a significant effect on the time the parent spends with their child and the parent–child relationship. In other words, it was found that as the time spent by the parent with their child increases, the level of parental digital negligence decreases, and also as the level of parental digital negligence increases, the positive relationship between parent and child decreases. When the variables of digital negligence and the time spent by the parent and the parent with the child were considered together, it was found that the time spent by the parent with the child variable was also a positive predictor of the parent–child relationship. In the study conducted by Beyazıt and Ayhan (2019), it was found that there is a positive relationship between parents' neglect and children's digital addiction. Xie et al. (2020) found that parental neglect during childhood was positively associated with adolescent internet gaming disorder and that parental phubbing and depression played a mediating role in this relationship. Additionally, Paus-Hasebrink et al. (2013) identified four different types of parent–child relationships, which can be interpreted as creating different social contexts for children's internet experiences. After analyzing the variables that explained these family types, they found that the frequency of the child's internet usage determined the parent–child relationship.

At the third hypothesis of the study, it was found that parents' efficient use of digital tools is a partial mediating variable that has a significant effect on the time parents spend with their children and the parent–child relationship. In other words, it was found that as the time spent by the parent with their child increases, the level of efficient use of digital parenting awareness also increases, and as the level of efficient use increases, the positive relationship between parent and child also increases. When the variables of efficient use of digital tools and time spent by the parent with the child were considered together, it was found that time spent by the parent and child together was a positive predictor of the parent–child relationship. In an interesting ethnographic study, Toh and Lim (2023) identified three different parent–child interactions in parent–child co-play videos: parent-directed, parent–child negotiated, and child-directed, and inferred that each style provides unique opportunities for children to learn. They also observed that parents were able to switch styles during play when appropriate to facilitate their children's learning. Similarly, Musick et al. (2021) found that playing digital games together affected the parent–child relationship by strengthening family relationships through friendship, serving as a tool to break down relationship barriers, and facilitating more quality time. Additionally, Johnson and Rogers (2023) examined the use of social media and digital communication by on-duty parents to maintain and strengthen parent–child relationships while on duty and found that social media and digital communication tools strengthen parent–child relationships. In a systematic review study (Knitter & Zemp, 2020), it was determined that some studies found that parents' smartphone use had a positive effect on the parent–child relationship. Similarly, Shin et al. (2021) found that the level of sophistication of technology and communication resources available to parents and children, age-appropriate shared content, and simultaneous media use supported parent–child relations.

The fourth hypothesis of the study revealed that the protection of children from digital risks is a partial mediating variable that has a significant effect on the time the parent spends with their child and the parent–child relationship. In other words, it was found that as the amount of time parents spend with their children increases, the level of protection from digital risks also increases, and as the level of protection from risks increases, the positive relationship between parents and children also increases. When the variables of children's protection from digital risks and the time spent by the parent with the child were considered together, it was found that the time spent by the parent and the child together was a positive predictor of the parent–child relationship. Rodríguez-de-Dios et al. (2018) found that parents' restrictive mediation behaviors reduce children's digital skills and therefore reduce digital risks. Similarly, research by Livingstone et al. (2017) found that the restrictive mediating role of parenting is associated with digital risks and that this occurs when the child has low digital skills. Additionally, parental mediation has been found to be associated with children's online time, parental concerns, and attitudes (Sciacca et al., 2022), and particularly restrictive parental mediation has been associated with preschool children's risky digital media use (Fitzpatrick et al., 2022). In the research conducted by İnan-Kaya et al. (2018), parents reported that they were most concerned about the risk of sharing personal information. This was followed by addiction, cyberbullying, and the possibility of becoming a perpetrator or victim of cybercrime.

8. Limitations

There are some limitations of this research. The data collected for this study via social media platforms, clearly demonstrates that we were only able to access the parents using them. Therefore, the study results may not reflect the parents' digital parenting skills who do not use social media but the internet. It is recommended to have face-to-face interviews and/or paper/pencil-style data collection to reach out to wider participant groups for future studies. Convenience sampling was applied in this research due to the data collection method overlapping the time span of the earthquake in Türkiye in 2023, which made it difficult to prefer different sampling strategies. It is highly recommended for future studies to design research by administering different sampling methods to make possible covariation the demographic variables' effects from dependent variables. Finally, it is worth highlighting that parents' self-reported parent–child time in hours used. Some parents could be biased in interpreting the actual time, and there might be some additional reasons to prevent them from spending time with their children (e.g. long working hours, chronic sicknesses, and other viable liabilities). Therefore, these limitations should be considered potential influential factors to be included in the upcoming research topics.

9. Conclusion

This research aimed to explore how digital parenting awareness influences the association between parent–child time and their relationship. It investigated the impact of various aspects of digital parenting—like setting negative examples, neglect, efficient usage, and risk protection—on the relationship when considering how much time parents spend with their children. Four hypotheses were tested to understand how these digital parenting skills mediate the link between

parent–child time and the quality of their relationship. The current research revealed that being negative digital role model and digital neglect, which are considered adverse sides of digital parenting, partially mediate the link between parent–child time and their relationship. When parents and children spend more time together, negative digital role modeling and digital negligence decrease. However, an increase in negative role modeling and digital negligence are associated with a decrease in the positive parent–child relationship. Yet, when considering both dimensions of parent–child time individually, the time spent together by the parent and child positively predicts the quality of their relationship. Therefore, supervising and accompanying children while they play digital games or videos on their mobiles are indispensable. But also, screen time should not replace traditional plays at home and outdoor activities. Hence, digital and non-digital time should be allocated to collaborative and interactive family time for the children's sake.

Furthermore, the analysis demonstrated that parents' effective use of digital tools and protection from digital risks separately, which are considered affirmative roles of digital parenting, partially mediate the link between parent–child time and their relationship. As parents spend more time with their children, their proficiency in using digital tools in favor of their children and digital risk protection behaviors also improve. These proficiencies, in turn, correspond to a stronger parent–child relationship. When considering both effective digital tool use and protection from risks with the parent–child time, the time spent together by the parent and child positively predicts the quality of their relationship. So, parental time with children and protection from digital risks – it was evident that the time spent together positively predicted a better parent–child relationship. Therefore, it is strongly recommended that mothers and fathers and but also carers of the children use parental control applications on their technological devices, e.g. smartphones. Monitoring the children during their screen time is essential. Parents' playing or watching videos with children can help to teach them how to use digital tools at home effectively. Collectively, the findings underscore the complex interplay of these factors, revealing that parent–child time consistently positively predicts the quality of the parent–child relationship, even when considering the mediating influences of digital behaviors and risks.

Data availability statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Ethics approval

Ethics committee approval was obtained from the ethics committee of İstanbul Kültür University.

CRediT authorship contribution statement

Mehmet Toran: Conceptualization, Writing – original draft, Writing – review & editing. **Taibe Kulaksiz:** Conceptualization, Methodology, Writing – original draft, Writing – review & editing. **Bülent Özden:** Methodology, Writing – original draft.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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