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Digital Parenting and Socio-Emotional Development in Early Childhood: Evidence from Palu City, Indonesia

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Abstract
Digital technology has become increasingly embedded in young children's everyday lives, yet research on its developmental implications has often focused more on screen exposure than on the parental practices that shape children's digital experiences. This study examined the relationship between digital parenting practices and the socio-emotional development of children aged 5 to 6 years in Palu City, Indonesia. Using a quantitative cross-sectional survey design, data were collected from 100 parents or primary caregivers selected through purposive sampling. The study employed structured questionnaires to measure digital parenting and children's socio-emotional development, and the data were analysed using simple linear regression. The findings showed that digital parenting was positively and significantly associated with children's socio-emotional development. The regression model produced an unstandardized coefficient of 0.583 and a standardized coefficient of 0.424, with the predictor reaching statistical significance at $p < .001$. The model explained 17.9% of the variance in socio-emotional development, indicating that digital parenting was relevant within the model but did not provide an exhaustive account of the outcome. These findings suggest that parental mediation in children's digital lives may matter not only in terms of supervision and control, but also as part of the relational conditions through which children encounter digital media. The study contributes to the global literature by extending evidence on digital parenting and early childhood development into an underrepresented non-Western context, while also showing the need for more robust designs, more differentiated measures of mediation, and broader explanatory models in future research.

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Introduction
Digital technology now shapes a substantial part of young children's everyday lives and the routines of the families around them. Smartphones, tablets, and internet-based media are no longer peripheral to childhood; they increasingly structure how children play, communicate, and encounter information. Recent research shows that digital exposure begins early and continues to expand across a wide range of settings, making digital environments an influential part of early childhood development (McArthur et al., 2022; Mallawaarachchi et al., 2024). Alongside the educational and recreational opportunities it offers, this growing presence has also raised concern about children's developmental wellbeing and the changing texture of family interaction.

A growing body of research has linked excessive or poorly regulated screen exposure to a range of developmental difficulties in early childhood, including internalizing and externalizing problems, weaker emotion regulation, and lower social competence (Eirich et al., 2022; Fitzpatrick et al., 2024; Kar et al., 2025). Concern has also grown over the use of digital devices to calm or distract children, often described as a digital pacifier, because this practice may reduce opportunities for face-to-face interaction and guided co-regulation, both of which

are important for the development of intrinsic emotional regulation (Coyne et al., 2021; Porter et al., 2024). At the same time, recent scholarship makes clear that the developmental implications of digital media cannot be understood through screen duration alone. They are also shaped by the social conditions in which media use occurs, especially the forms of parental involvement, mediation, and guidance that surround it (Modecki et al., 2022; Tan et al., 2025).

Parents therefore remain central to how children encounter and make sense of digital media. As the primary actors in the family microsystem, they guide, supervise, and regulate children's media use while also shaping the relational climate in which that use unfolds (Bronfenbrenner, 1979). Both international and Indonesian discussions describe digital parenting as more than setting limits on device use. It also involves protecting children, accompanying them during media use, clarifying digital content, balancing screen-based engagement with real-world interaction, selecting appropriate applications, and monitoring online activities (Budi, 2021; Maisari & Purnama, 2019). Understood in these terms, digital parenting is less about control in isolation than about the quality of parental mediation within everyday family life.

Parental Mediation Theory provides a useful lens for understanding this process because it explains how parents shape children's media experiences through active mediation, restrictive mediation, and co-use mediation (Valkenburg et al., 2013; Nagy et al., 2023). Active mediation involves discussion and explanation, restrictive mediation centres on rules and limits, and co-use refers to shared engagement with digital media between parents and children. Recent studies suggest that the quality of mediation may matter more for child development than screen time alone, with active mediation and co-use often offering more supportive conditions than restriction by itself (Modecki et al., 2022; Tan et al., 2025; Taylor et al., 2024; Harverson et al., 2025). Related research has also drawn attention to parental technoference, namely interruptions in parent-child interaction caused by parents' own device use. Such interruptions may weaken responsiveness, reduce sensitivity, and erode the relational exchanges on which children depend in the early years (Meeus et al., 2021; Braune-Krickau et al., 2021; Linder et al., 2021; Toledo-Vargas et al., 2025).

This issue matters because socio-emotional development is one of the central developmental domains of early childhood. Broadly speaking, it refers to children's capacity to relate to others, adjust to social expectations, and participate meaningfully in social life (Khairiah, 2018; Rogamelia et al., 2022; Talango, 2020). It includes early forms of cooperation, competition, generosity, the desire for social acceptance, sympathy, empathy, dependence, friendliness, selflessness, imitation, and attachment behaviour, all of which emerge through repeated interaction with significant others (Dtakiyyatuddaaimah, 2021). Work on emotional competence further shows that socio-emotional development involves recognising and regulating emotions, developing empathy, building social competence, and forming positive relationships, all of which are important for school readiness and broader developmental adaptation (Denham, 2006).

These capacities do not develop in isolation. They are cultivated through responsive, consistent, and emotionally attuned interaction with caregivers. When parent-child relationships provide sensitivity and stable emotional feedback, children are more likely to develop emotional security, empathy, self-regulation, and healthy interpersonal skills. When such interactions are repeatedly disrupted, that developmental foundation becomes more fragile (Linder et al., 2021; Merkaš et al., 2021). This is one reason digital contexts warrant closer attention. Unmanaged screen exposure has been associated with greater internalizing and externalizing problems, while digital pacifier practices may heighten emotional reactivity when they are not accompanied by supportive guidance (Kar et al., 2025; Swider-Cios et al., 2023; Porter et al., 2024). Even so, much of the literature still treats screen time as the main explanatory factor, narrowing children's digital experience to exposure and leaving parental mediation underexamined as a relational developmental process (Swider-Cios et al., 2023; Swit et al., 2023).

The evidence base remains uneven. Much of what is currently known comes from Western settings shaped by more individualistic assumptions, whereas parenting in collectivist societies such as Indonesia may organise supervision, family involvement, and everyday interaction differently. Those differences matter because they may shape not only how digital parenting is enacted, but also how its developmental significance should be understood. More empirical work is therefore needed on the relationship between digital parenting and socio-emotional development in underrepresented non-Western early childhood contexts. By focusing on children aged 5 to 6 years in Palu City, Indonesia, this study extends current debate beyond a narrow screen-time logic and treats digital parenting as a relational and culturally situated practice. Specifically, the study examines the relationship between digital parenting practices and the socio-emotional development of young children. Based on this objective and the regression model employed, the hypotheses are stated as follows:

H_0: Digital parenting practices do not significantly predict the socio-emotional development of children aged 5 to 6 years in Palu City, Indonesia.

H_1: Digital parenting practices significantly and positively predict the socio-emotional development of children aged 5 to 6 years in Palu City, Indonesia.

Methods

Research Design

This study used a quantitative cross-sectional survey design to examine the relationship between digital parenting practices and the socio-emotional development of young children. A cross-sectional design was selected because the study aimed to analyse the association between the two variables at a single point in time rather than to establish temporal or causal effects (Creswell & Poth, 2018). This design was considered appropriate for the study objective because the research focused on identifying the statistical relationship between variables as they were observed during the data collection period. The analytical model was based on simple linear regression in order to test whether variation in digital parenting practices was statistically associated with variation in children's socio-emotional development. Accordingly, the design was intended to provide an empirical snapshot of the relationship under investigation rather than to support causal claims or developmental change over time.

Study Setting and Participants

The study was conducted in Palu City, Indonesia, and involved 100 parents or primary caregivers of children aged 5 to 6 years. Participants were selected through purposive sampling, with recruitment limited to respondents who met the study inclusion criteria (Musa et al., 2016). To be eligible, respondents had to be parents or primary caregivers of a child aged 5 to 6 years and reside in Palu City. The respondent unit in this study was therefore the adult caregiver, while the child's socio-emotional development was assessed through caregiver report. This age group was selected because early childhood represents an important developmental period for emotional regulation, social competence, and attachment formation (Denham, 2006).

The use of purposive sampling was aligned with the study objective because the research required respondents who were directly involved in children's day-to-day digital exposure and socio-emotional observation. Parents and primary caregivers were therefore considered the most relevant informants for both variables measured in this study. This sampling approach did not aim to produce statistical representativeness of the wider population of caregivers in Palu City, but to obtain responses from participants who matched the specific characteristics required by the research design. For the same reason, the study should be read as based on criterion-based respondent selection rather than probability sampling. Given that the analytical model included a single independent variable and a single dependent variable, the final sample size of 100 was sufficient for estimating the planned simple regression model, although it does not remove limitations related to generalisability.

Measures

Data were collected through structured questionnaires measuring two main variables: digital parenting practices and children's socio-emotional development. The digital parenting variable was operationalised with reference to Parental Mediation Theory, which frames parental management of children's media use in terms of active mediation, restrictive mediation, and co-use mediation. In this study, the construct was represented through indicators such as parental monitoring, content supervision, shared use of digital media, and the modelling of appropriate digital behaviour. Taken together, these indicators were used to capture how parents manage, accompany, supervise, and regulate children's engagement with digital devices in everyday settings. The questionnaire format allowed the conceptual discussion of digital parenting to be translated into structured response categories suitable for quantitative analysis.

Children's socio-emotional development was measured through indicators reflecting emotional regulation, empathy, social interaction, and cooperative behaviour. These indicators were selected to represent core aspects of socio-emotional competence in early childhood as reflected in the study's conceptual framework. The measurement of this variable relied on caregiver assessments of children's observable behavioural and emotional tendencies in daily life. All questionnaire items were rated on a five-point Likert scale ranging from strongly disagree to strongly agree. The use of a uniform response scale was intended to maintain response consistency across both variables and to enable the conversion of responses into quantitative scores for subsequent statistical analysis.

Instrument Quality

Before the main analysis, the questionnaires were subjected to validity and reliability testing in order to examine their adequacy as measurement instruments. Item validity was assessed using item-total correlation, with a minimum coefficient of 0.30 used as the criterion for item adequacy (Hair et al., 2019). Internal consistency was assessed using Cronbach's alpha, with a value of 0.70 or above treated as acceptable for social science research (Taber, 2018). These procedures were used to ensure that the instruments met minimum standards of measurement quality before hypothesis testing. In methodological terms, this step was necessary to confirm that the questionnaire items functioned adequately as indicators of the constructs under study before the regression model was applied.

Within the limits of the available data, instrument quality in this study was established through internal item performance and scale consistency rather than through more advanced construct validation procedures. The validity test was used to examine whether each item was sufficiently aligned with the overall construct score, while the reliability test was used to assess whether responses to the items were internally consistent. This approach provided a basic empirical basis for retaining the questionnaire as the measurement instrument for the study variables. At the same time, the procedures reported here should be read as evidence of minimum measurement adequacy rather than as a full demonstration of construct validity. The resulting interpretation of the findings therefore remains tied to the scope and precision of the instrument as reported in the study.

Data Analysis

The data were analysed using SPSS version 21. The analysis began with assumption testing to evaluate the suitability of the regression model. Residual normality was examined using the Kolmogorov-Smirnov test with a Monte Carlo significance approach. Linearity was assessed through analysis of variance for linearity, and homoscedasticity was examined through the distribution of residuals in a scatterplot. After the assumptions had been checked, simple linear regression was used to test the study hypothesis regarding the relationship between digital parenting practices and children's socio-emotional development. Statistical significance was determined at $p < 0.05$. This sequence of analysis was used to ensure that the regression results were interpreted only after the basic model assumptions had been examined.

The choice of simple linear regression was consistent with the structure of the research question and the hypothesis tested in this study. Because the model focused on one predictor

variable, digital parenting practices, and one outcome variable, children's socio-emotional development, a single-predictor regression model was considered analytically appropriate. This model allowed the study to estimate the direction, magnitude, and statistical significance of the association between the two variables without introducing additional predictors that were not part of the original design. The analysis was therefore intended to test the central hypothesis in a direct and parsimonious manner. At the same time, the use of a simple model means that the findings should be interpreted as limited to the association captured by the variables included in the analysis.

Ethical Considerations

Participants were informed about the purpose of the study before data collection took place, and participation was voluntary. Respondents provided consent prior to completing the questionnaire. The confidentiality and anonymity of participants were maintained throughout data collection, data handling, and analysis. Personal information was not disclosed in the reporting of the findings. These procedures were followed to align the study with general ethical principles for research involving human participants.

Result

Before estimating the regression model, the data were examined to determine whether the core assumptions of linear regression were reasonably met. This stage was not treated as a separate analytical goal, but as a necessary step for judging whether the estimated coefficients could be interpreted with confidence. Three assumptions were considered in sequence: the distribution of residuals, the linear form of the relationship between the variables, and the spread of residual variance across the fitted model. The results of these checks are presented below.

Normality of Residuals

Residual normality was considered first because the regression model assumes that residuals are distributed without marked deviation from normality. The SPSS output reported both an asymptotic significance value and a Monte Carlo significance estimate for the Kolmogorov-Smirnov test. In the present analysis, the interpretation followed the Monte Carlo estimate reported in the output. Table 1 presents the result.

Table 1. One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			100
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		5.05321654
Most Extreme Differences	Absolute		.124
	Positive		.055
	Negative		-.124
Test Statistic			.124
Asymp. Sig. (2-tailed)			.001[c]
Monte Carlo Sig. (2-tailed)	Sig.		.083[d]
	99% Confidence Interval	Lower Bound	.076
		Upper Bound	.090

The Monte Carlo significance value was .083, which exceeded the .05 threshold. This result was taken to indicate that the residuals did not show a statistically meaningful departure from normality under the criterion used in this analysis. The residual mean was close to zero, and the residual standard deviation was reported at 5.05321654, which is consistent with the residual-based output presented in the table. Although the asymptotic significance value was lower, the interpretation in this study followed the Monte Carlo estimate reported by SPSS. On that basis, the normality assumption was considered

acceptable for the regression analysis used in this study.

Linearity

The next step was to determine whether the relationship between digital parenting and socio-emotional development could be represented adequately by a linear model. This mattered because the planned regression analysis assumed that changes in the predictor were associated with proportional change in the outcome. The assessment was conducted through analysis of variance for linearity. The result is shown in Table 2.

Table 2. ANOVA Test

Coefficients[a]

			Sum of Squares	Df	Mean Square	F	Sig.
Sosio_ Emotional Digital_ Parenting	Between Groups	(Combined)	979.621	15	65.308	2.611	.003
		Linearity	553.025	1	553.025	22.107	.000
		Deviation from Linearity	426.595	14	30.471	1.218	.278
	Within Groups		2101.369	84	25.016		
	Total		3080.990	99			

The linear component was significant, whereas the deviation from linearity was not. The significance value for deviation from linearity was .278, which was above .05. This result suggests that the relationship between digital parenting and socio-emotional development did not deviate significantly from a linear form. The significant linearity row further indicates that the observed pattern between the two variables can be represented within a linear model. Taken together, these results support the use of simple linear regression in the next stage of the analysis.

Homoscedasticity

The final assumption check addressed the spread of residual variance across the fitted values. Rather than relying on a numerical threshold, this step was based on visual inspection of the residual scatterplot to see whether the points were distributed in a reasonably even way or instead clustered in a systematic pattern. Figure 1 presents the resulting plot.

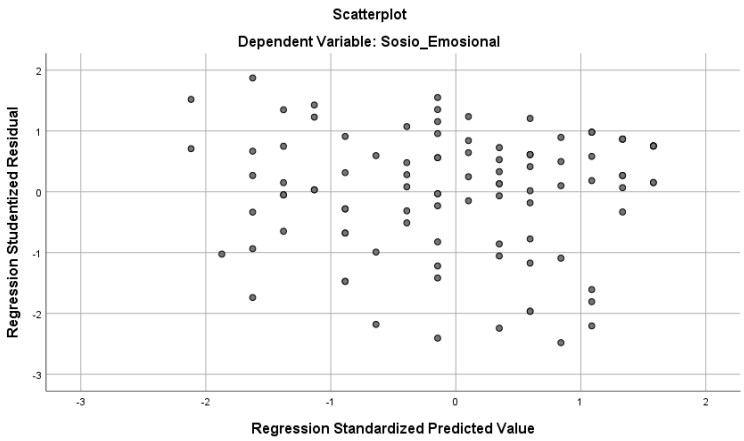

Figure 1. Scatterplot of Variables X and Y

The residuals did not form a clear funnel shape, concentration band, or other visible pattern that would suggest non-constant variance. Instead, the points appeared to be dispersed across the plot without a regular directional structure. No obvious clustering at one end of the plot was visible, nor did the points show a systematic widening or narrowing trend across the fitted values. This visual distribution suggests that the variance of the residuals remained reasonably stable across the observed range. On that basis, the assumption of homoscedasticity was treated as sufficiently met for the present model.

Regression Results

With the assumptions judged to be acceptable, the analysis then turned to the central relationship examined in this study. Simple linear regression was used to estimate whether digital parenting practices were statistically associated with children's socio-emotional development, as specified in the study hypothesis. The coefficient output is presented in Table 3.

Table 3. Regression Calculation Results Using SPSS

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.934	4.258		3.037	.003
	Digital_ Parenting	.583	.126	.424	4.630	.000

The estimated regression equation was Y = 12.934 + 0.583X. The coefficient for digital parenting was positive, indicating that higher digital parenting scores were associated with higher socio-emotional development scores in the sample. In unstandardized terms, a one-unit increase in the digital parenting score corresponded to a .583-point increase in the socio-emotional development score. The predictor was statistically significant, with $t = 4.630$ and $p < .001$. The standardized coefficient was $\beta = .424$, indicating a positive association of moderate magnitude within the fitted model.

Model Fit and Hypothesis Test

After establishing the direction and significance of the regression coefficient, the remaining question concerned the explanatory strength of the model. Model fit statistics help clarify how much of the variation in socio-emotional development was accounted for by digital parenting within the present sample. Table 4 reports the summary values.

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.424[a]	.179	.171	5.079

The correlation coefficient was .424, indicating a positive relationship between the two variables in the fitted model. The R square value was .179, which means that digital parenting accounted for 17.9% of the variance in children's socio-emotional development. The adjusted R square value was .171, indicating only a modest reduction after adjustment. Taken together, these results show that digital parenting was a statistically significant predictor of socio-emotional development in this sample. The findings therefore support H1 and do not support H0.

Discussion

The findings indicate that digital parenting was positively associated with children's socio-emotional development in the estimated model. This pattern is consistent with the study hypothesis and suggests that higher digital parenting scores tended to coincide with higher socio-emotional development scores in the present sample. At the same time, this result needs to be read with appropriate restraint. The model explained 17.9% of the variance in the outcome, which indicates that digital parenting was relevant within the model but far from exhaustive as an explanation of socio-emotional development. The result therefore supports the view that digital parenting matters, while also indicating that a substantial proportion of the variance remains tied to other factors not included in the study.

This pattern lends measured support to Parental Mediation Theory, which argues that the developmental significance of digital media depends not only on exposure itself but also on the ways in which parents mediate children's encounters with it (Modecki et al., 2022; Nagy et al., 2023). The present study does not disentangle the relative effects of active mediation, restrictive mediation, and co-use mediation, because the regression model treated digital parenting as a

composite predictor rather than as separate dimensions. Even so, the positive coefficient suggests that parental involvement in children's digital lives may be associated with more favourable socio-emotional outcomes than a view of digital media use based solely on duration or restriction. In that sense, the findings align with broader literature arguing that mediation quality matters for child outcomes. They do not, however, allow a direct conclusion that one form of mediation was more beneficial than another in this sample.

A similar point applies to the interpretation of relational processes around digital media use. Prior studies have suggested that parental practices such as monitoring, co-use, and modelling may shape how children understand and regulate their digital experiences, and that more active forms of parental involvement may be more supportive than strategies centred only on restriction (Tan et al., 2025; Taylor et al., 2024). The present findings are compatible with that line of argument, but they do not test those mechanisms directly. What the current model shows is narrower: a higher overall digital parenting score was associated with a higher socio-emotional development score. The study therefore supports a relational reading of digital parenting only at a general level and should not be taken as direct evidence about the comparative role of specific mediation strategies.

The association observed here can also be read alongside developmental literature that treats socio-emotional competence as emerging through guided interaction and repeated social experience. Earlier work has shown that the use of digital devices without meaningful parental involvement may reduce opportunities for children to develop emotional regulation, especially when devices are used to calm or divert children in place of interpersonal engagement (Coyne et al., 2021; Porter et al., 2024). From that perspective, the present finding is plausible: parental involvement around digital media may coincide with more supportive conditions for children's emotional and social learning. Yet the current data do not permit a direct test of whether such processes were actually operating in the households studied. The interpretation therefore remains inferential rather than confirmatory.

The same caution is necessary when the findings are read through attachment-informed perspectives. Research on early parent-child relationships has repeatedly shown that responsive and consistent interaction supports emotional security and social competence, whereas disruption in those interactions may weaken those developmental foundations (Linder et al., 2021). Related work on parental technoference has further shown that parents' own digital distraction may undermine sensitivity and responsiveness in ways that could matter for young children's socio-emotional development (Toledo-Vargas et al., 2025; Braune-Krickau et al., 2021). These perspectives help make sense of why digital parenting may matter, but they were not directly measured in this study. The present findings therefore do not demonstrate attachment quality or technoference effects; they only suggest that the observed association can be interpreted in light of those broader relational frameworks.

The study also adds evidence from an Indonesian setting, which remains underrepresented in discussions of digital parenting and child development. That contribution should nonetheless be framed carefully. Although Indonesia is often described as shaped by collectivist social norms, the present data do not measure cultural values, obedience, or family ideology directly. It is therefore more defensible to say that the findings extend the evidence base into a non-Western context than to claim that they establish a specifically collectivist mechanism. Even so, the study remains useful in showing that the association between digital parenting and socio-emotional development is not confined to the Western settings that dominate much of the existing literature.

The practical implications of the findings are therefore suggestive rather than prescriptive. The results do not justify strong recommendations about a single ideal model of digital parenting, but they do indicate that parental involvement around children's digital media use deserves attention beyond the usual focus on screen duration alone. Guidance, supervision, and shared engagement may matter not simply as tools of control, but as part of the relational environment in which children encounter digital media. At the same time, the

modest explanatory power of the model indicates that digital parenting should not be treated as a stand-alone explanation of socio-emotional development. Any practical interpretation should therefore remain connected to the wider ecology of children's everyday development.

Several limitations need to be acknowledged when interpreting the results. The cross-sectional design does not allow causal inference, so the observed association cannot be read as evidence that digital parenting produces socio-emotional outcomes in a direct temporal sense. The sample was limited to 100 respondents selected through purposive sampling, which restricts generalisability beyond the study context. In addition, both the predictor and the outcome were reported by the same respondents, which raises the possibility of common method bias, shared-source inflation, and social desirability effects. The study also relied on a composite measure of digital parenting and did not include control variables such as socioeconomic status, parenting style, or family environment, all of which may bear on the outcome. Future research would benefit from larger samples, longitudinal designs, more differentiated measures of mediation practices, and models that incorporate additional explanatory variables relevant to children's socio-emotional development.

Conclusion

This study examined whether digital parenting practices were associated with the socio-emotional development of children aged 5 to 6 years in Palu City, Indonesia. The findings showed a positive and statistically significant association, indicating that higher digital parenting scores tended to coincide with higher socio-emotional development scores in the sample. At the same time, the explanatory power of the model remained modest, with digital parenting accounting for 17.9% of the variance in the outcome. For that reason, the findings are better understood as evidence that digital parenting is one relevant part of children's developmental environment rather than as a sufficient explanation of socio-emotional development on its own. What this study adds is a more contextually grounded indication that the significance of digital parenting extends beyond a narrow screen-time perspective and can be read as part of the relational conditions through which children encounter digital media.

The contribution of the study lies in extending the evidence base on digital parenting and child development into a non-Western early childhood setting that remains underrepresented in international literature. Rather than claiming a culturally specific mechanism that was not directly measured, the study more modestly shows that the association observed in Western-dominated research also warrants attention in Indonesian contexts. This position matters for broader global discussion because it suggests that questions of digital parenting cannot be treated as culturally uniform or analytically exhausted by exposure alone. Even so, the cross-sectional design, purposive sample, single-informant reporting, and limited model specification require the findings to be interpreted with caution. Future research needs to test these associations with more robust designs, more differentiated measures of parental mediation, and a wider set of explanatory variables so that the place of digital parenting in children's socio-emotional development can be understood with greater precision.

Declarations

Author Contribution Statement

M. Iksan Kahar: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – original draft. Nur Eka Wahyuningsih Riyadi: Conceptualization, Validation, Supervision, Writing – review & editing. Dewirini Anggraeni: Validation, Writing – review & editing. All authors read and approved the final manuscript.

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Data Availability Statement

The dataset generated and analyzed during the research is available from the corresponding author upon reasonable request.

Declaration of Interests Statement

All authors declare that they have no financial or personal interests that could influence the work presented in this manuscript.

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