

The Impact of Digital Technology Use on Early Childhood Social-Emotional Development: A Systematic Literature Review

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ABSTRACT

Digital devices have become deeply embedded in the daily lives of young children, raising ongoing questions about their influence on social-emotional development during a developmentally sensitive period. This study aims to systematically review empirical literature on the impact of digital technology use on the social-emotional development of children aged 3–6 years. Following a PRISMA-informed procedure, articles published between 2015 and 2026 were identified through Google Scholar, ScienceDirect, PubMed/PMC, and Indonesian national journal portals, using keyword combinations such as "screen time social-emotional preschool", "gadget perkembangan sosial emosional anak usia dini", and "parental mediation digital media young children". After screening for relevance, population, and outcome measures, a set of qualitative, quantitative, and review studies was retained for thematic synthesis. The review finds that the relationship between digital technology and social-emotional development is not uniformly negative or positive but is substantially moderated by usage duration, content type, and most consistently the quality of parental mediation. Uncontrolled or passive screen exposure is repeatedly associated with reduced verbal communication, lower-quality peer interaction, and emotion-regulation difficulties, whereas active parental co-viewing and mediation of educational content is associated with gains in empathy and emotion recognition. The review concludes that digital technology's impact on early social-emotional development is best understood as conditional rather than deterministic, and recommends that Indonesian parents and early childhood educators prioritize active mediation strategies and content curation over blanket restriction or unrestricted access alone.

Keywords: Digital technology; Screen time; Social-emotional development; Early childhood; Parental mediation.

ABSTRAK

Perangkat digital kini telah menjadi bagian yang melekat dalam keseharian anak usia dini, sehingga terus memunculkan pertanyaan mengenai pengaruhnya terhadap perkembangan sosial-emosional pada periode yang sensitif secara perkembangan ini. Penelitian ini bertujuan untuk melakukan kajian literatur sistematis terhadap literatur empiris mengenai dampak penggunaan teknologi digital terhadap perkembangan sosial-emosional anak usia 3-6 tahun. Dengan mengikuti prosedur yang berpedoman pada PRISMA, artikel yang diterbitkan antara tahun 2015 hingga 2026 ditelusuri melalui Google Scholar, ScienceDirect, PubMed/PMC, serta portal jurnal nasional Indonesia, menggunakan kombinasi kata kunci "screen time social-emotional preschool", "gadget perkembangan sosial emosional anak usia dini", dan "parental mediation digital media young children". Setelah dilakukan penyaringan berdasarkan relevansi, populasi, dan ukuran luaran, sejumlah studi kualitatif, kuantitatif, dan tinjauan literatur dipertahankan untuk disintesis secara tematik. Hasil kajian menemukan bahwa hubungan antara teknologi digital dan perkembangan sosial-emosional tidak bersifat seragam negatif maupun positif, melainkan sangat dimoderasi oleh durasi penggunaan, jenis konten, dan yang paling konsisten kualitas mediasi orang tua. Paparan layar yang tidak terkontrol atau bersifat pasif berulang kali berasosiasi dengan menurunnya komunikasi verbal, kualitas interaksi teman sebaya yang lebih rendah, dan kesulitan regulasi emosi, sementara pendampingan aktif orang tua (co-viewing) dan mediasi terhadap konten edukatif berasosiasi dengan peningkatan empati dan pengenalan emosi. Kajian ini menyimpulkan bahwa dampak teknologi digital terhadap perkembangan sosial-emosional anak usia dini lebih tepat dipahami sebagai bersifat kondisional, bukan deterministik, dan merekomendasikan agar orang tua dan pendidik anak usia dini di Indonesia memprioritaskan strategi mediasi aktif serta kurasi konten dibandingkan sekadar pembatasan total atau akses tanpa batas.

Kata Kunci: Teknologi digital; Durasi layar; Perkembangan sosial-emosional; Anak usia dini; Mediasi orang tua.

INTRODUCTION

Social-emotional development in early childhood (3-6 years) includes the ability of children to recognize and manage emotions, build relationships with peers and adults, and develop empathy and communication skills capacities that are foundational for children's psychological well-being and social readiness in the future. This period coincides with the increasing exposure of children to digital devices, ranging from televisions, gadgets, educational applications, to digital games and social media that are accessed directly or through parental supervision.

This phenomenon has given rise to an ongoing debate about whether digital technology has a generally detrimental impact or can actually support children's social-emotional development, depending on how it is used. On the one hand, a number of studies have linked the use of uncontrolled gadgets to various developmental problems; As reported in a qualitative study in an orphanage, <CITE index="35-1">uncontrolled use of gadgets has the potential to reduce the quality of children's social interactions, inhibit verbal communication skills, and cause disturbances in emotional regulation</CITE>. On

the other hand, more controlled research shows that the impact of technology depends largely on the type of content and the way it is mentored, rather than on the existence of the technology itself.

The concept of parental mediation, including active/instructive mediation, restrictive mediation, and co-viewing has long been researched as an important determinant factor in determining whether exposure to digital media has a positive or negative impact on children. An experimental study by Rasmussen and colleagues, as summarized in a ScienceDirect review, found that <cite index="44-1">watching educational programs was associated with higher levels of empathy in preschoolers, but only for children who received frequent active mediation from their parents</cite> a finding that educational content alone is not enough without active parental involvement.

In Indonesia, studies on the impact of gadgets on early childhood social-emotional development are also developing quite rapidly, mostly in the form of descriptive qualitative studies or literature studies in certain communities or locations. Some studies reported bidirectional impacts; As concluded in a national literature review, <CITE index="37-1">Gadget use in early childhood has a significant impact on their social-emotional development, both positive and negative, depending on the duration of use</CITE>. However, most of the existing national studies are still small-scale descriptive-qualitative and rarely explicitly dissect the role of parental mediation as a determinant variable, as has been extensively researched in the international literature.

Based on this description, this systematic literature review aims to: (1) synthesize empirical evidence on the impact of digital technology use on early childhood social-emotional development; (2) identify factors that moderate whether the impact is positive or negative, in particular the role of parental mediation; and (3) identify gaps between international literature and Indonesian national literature as a basis for recommendations for parents, educators, and subsequent research.

METHODS

This study uses a systematic literature review approach that adapts the PRISMA flow, including the stages of identification, screening, eligibility, and inclusion of articles.

The research questions prepared are: RQ1 What is the impact of the use of digital technology on early childhood social-emotional development (3–6 years)? RQ2 What factors moderate whether the impact is positive or negative? RQ3 What is the gap found between international literature and Indonesian national literature on this topic?

The identification stage was carried out through a search of Google Scholar, ScienceDirect, PubMed/PMC, ResearchGate, and Indonesian national journal portals (Jurnal Obsesi, Garuda, Sinta), using a combination of keywords "screen time preschool social-emotional development", "parental mediation digital media young children", "gadgets of early childhood social-emotional development", and "impact of early childhood digital technology". The year range of publication is limited to 2015 to 2026.

Inclusion criteria include: (1) articles in Indonesian or English; (2) the study population is early childhood/preschool (3–6 years), with the exception of studies covering adjacent age ranges (e.g. 2–3 years or up to early primary school age) if data for the early age group are reported separately; (3) the focus of the study is in the form of the

use of digital technology (gadgets, television, educational applications, digital games, social media) and/or the role of parental media; (4) report outputs related to social-emotional development, emotion regulation, social interaction, or related behaviors; and (5) is a fully accessible scientific journal article, literature review, or meta-analysis. Exclusion criteria include articles that focus purely on the impact of technology on cognitive/language development without any connection to social-emotional aspects, as well as opinion articles that are not based on empirical data or literature reviews.

The filtering process is carried out by reading the title and abstract to set aside irrelevant articles, followed by reading the full text of the article that passes the initial filter. Articles that pass both stages are mapped into a matrix sheet containing the author's columns, year, research design, technology/mediation focus, and key findings, as the basis for a thematic analysis that adapts data reduction, presentation, and verification models (Miles & Huberman).

RESEARCH RESULTS

The screening process produced a number of relevant articles, including descriptive qualitative studies, survey/correlational studies, experimental studies on parental mediation, and literature reviews from national and international contexts. A summary of the main article on which the synthesis is based is presented as follows:

Descriptive qualitative study in orphanage environment (2026, Journal of Early Childhood Education) Qualitative study, daily gadget use Uncontrolled use of gadgets has the potential to reduce the quality of social interaction, inhibit verbal communication, and cause disturbances in emotion regulation.

Literature review, Social-Emotional Development in Gadget Use (2024, ResearchGate) Literature study The impact of gadgets on early childhood social-emotional development is two-way (positive and negative), depending on the duration and type of use.

Gadget impact study, Oi Saja Hamlet, Bima, NTB (Kiddo Journal) Local case study, children aged 2–3 years The use of gadgets is associated with changes in early childhood social-emotional interaction patterns in rural environments.

Rasmussen et al., summarized in ScienceDirect (2023) Experiments, children's educational programs (Daniel Tiger's Neighborhood) Watching educational programs was associated with higher empathy, but only in children who received active parental mediation on a regular basis.

Frontiers (2023), parental mediation strategies and preschool screen duration Longitudinal survey, Canadian families Restrictive and instructive parental mediation is associated with children's adherence to screen duration recommendations; The effect interacts with the characteristics of the child's temperament (self-control).

Frontiers (2025), digital screen exposure and emotional symptoms Mediation-moderation study, preschoolers Digital screen exposure is positively associated with emotional symptoms; The relationship is mediated by the quality of the parent-child relationship and moderated by the quality of the relationship with peers.

PMC (2025), emotional reactivity and screen duration Structural equation modeling study, 754 children aged 2–5 years Emotional reactivity was the strongest

predictor of externalized behavior problems; The role of screen duration is weak but still significant, and some parents use screens as a coping strategy for parenting stress.

ScienceDirect (2024), Harsh parenting and screen duration Mediated-moderation study, preschoolers Harsh parenting is associated with higher child screen duration through deteriorating parent-child relationships, as a form of child coping mechanism against emotional distress.

Based on the synthesis of these articles, three major themes were found that answered the research questions asked.

First, the impact of the use of digital technology on social-emotional development. Studies consistently reviewed show that the impact of digital technology is not uniform. Passive and uncontrolled screen exposure was repeatedly associated with negative outcomes, as found in qualitative studies in orphanage settings that reported decreased quality of social interaction and impaired emotion regulation. Accordingly, a structural equation modeling study of 754 children aged 2–5 years found that <cite index="48-1">emotional reactivity was the strongest predictor of externalized behavior problems, while the role of screen duration was relatively weak but still significant, with most parents reporting using screens as a coping strategy</cite> suggesting that screen duration is not the only one. or even not the main factor, which affects the social-emotional output of children.

Second, the role of parental mediation as the main moderation factor. This theme appears most consistently across the international literature reviewed. An experimental study by Rasmussen and colleagues showed firsthand that the benefits of educational content on children's empathy depend on the existence of active parental mediation. A longitudinal survey of families in Canada also found that <cite index="43-1">parents' restrictive and instructive mediation strategies, as well as watching together, predicted preschoolers' adherence to screen duration recommendations, with restrictive mediation effects interacting with the child's self-control characteristics</cite>. Another study examining family relationships found that <cite index="46-1">exposure to digital screens was positively associated with emotional symptoms in preschoolers, with these relationships mediated by the quality of parent-child relationships and moderated by the quality of relationships with peers</cite> suggesting that the impact of technology on children's emotions could not be understood in isolation from the quality of social relationships around the child.

Third, technology is a response to family dynamics, not just a single cause of developmental problems. A number of recent studies are starting to reverse the commonly assumed direction of causality, showing that parenting and family stress can be the drivers of children's screen use, not the other way around. Studies on hard parenting have found that <cite index="47-1">harsh parenting can lead to deteriorating parent-child relationships, which in turn increases the duration of children's screen use as a coping mechanism to relieve emotional distress</cite>. Another study on parenting stress found that <cite index="42-1">responsive parenting significantly mediated the relationship between parenting stress and children's social-emotional competence, with the dimension of parent-child dysfunctional interactions having the highest predictive priority in influencing children's social-emotional competence</cite>. These findings indicate that high use of gadgets in children is often a symptom of more basic family

relationship challenges, rather than solely an independent cause of the child's social-emotional problems.

DISCUSSION

The results of the above literature synthesis show that the simple narrative "gadgets damage children's development" and "gadgets always support children's development" are both not fully supported by the empirical evidence examined. Conversely, the most consistent pattern emerges is that the impact of digital technology on social-emotional development is conditional on the duration, type of content, and most decisively, the quality of parental involvement in the process of using the technology by the child.

The consistency of the findings regarding the role of parental mediation has significant practical implications. Instead of focusing solely on limiting screen duration (which remains important as a general guideline), parents and early childhood educators need to be directed to develop active mediation skills accompanying the child while watching or playing, discussing the content being watched, and relating it to the child's real social-emotional experiences. This approach is in line with the finding that the benefits of educational content on children's empathy are only realized when accompanied by consistent active mediation, not just exposure to "quality" content.

The findings regarding the direction of reverse causality that parenting and family stress can encourage children's screen use, rather than the other way around, provide important nuances that often go unnoticed in public discourse about gadgets and children. Implicitly, interventions that only target gadget restrictions without addressing the root causes of family relationship problems and parenting stress risk being less effective, as high screen use in some children may be a response to more basic family conditions, rather than the sole cause of the child's social-emotional problems.

Compared to the international literature that has extensively examined the specific role of parental mediation, content types, and mediation-moderation mechanisms, most of Indonesia's national studies on this topic are still descriptive-qualitative and focus on an overview of the positive and negative impacts of gadgets without specifically dissecting the variables that moderate these impacts. This gap presents an important opportunity for early childhood research in Indonesia to adopt a research design that is better able to test mediation and moderation mechanisms, in line with the development of methodologies in the international literature.

However, this study has a number of limitations. First, as a systematic literature review based on secondary sources, this study does not produce new primary data and relies heavily on the quality and methodological transparency of the original studies reviewed. Second, most of the more detailed mediation-moderation studies come from family contexts in developed countries (Canada, China, and other Western countries), so the application of the findings to the context of parenting and family norms in Indonesia requires caution and further local research. Third, most of the national studies studied used a descriptive qualitative design with a small sample and limited location (e.g. one hamlet or one institution), so generalization of national findings needs to be done carefully.

CONCLUSION

Based on the systematic literature review conducted, it can be concluded that the impact of the use of digital technology on early childhood social-emotional development is conditional, not uniformly positive or negative. Passive and uncontrolled screen exposure was repeatedly associated with negative outcomes such as decreased quality of social interaction and difficulty in emotion regulation, while parental active mediation including watching together, discussing content, and limiting duration was consistently associated with more positive outcomes, including increased empathy and emotion recognition. In addition, evidence was found that family dynamics and parenting styles can be the drivers of children's screen use, not solely the result of screen use.

Based on these conclusions, it is recommended that parents prioritize an active mediation strategy of accompanying, discussing, and associating digital content with the child's social-emotional experience rather than simply applying a duration restriction without involvement. To educators and PAUD/Kindergarten managers, it is recommended to educate parents about the importance of active mediation through parenting programs, as well as integrate digital literacy as part of the parent involvement curriculum. To the Health and Education Office, it is recommended to consider the preparation of guidelines on the duration and type of contextual use of screens for Indonesian families, while still taking into account diverse socio-economic conditions. For the next researcher, it is highly recommended to conduct quantitative research with a mediation-moderation design on a larger and representative sample of Indonesian early childhood, in order to specifically examine the role of parental mediation and family dynamics in the context of Indonesian parenting culture.

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