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Review Article

The impact of social media and smartphone use on the social and emotional learning of children aged 6–12

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Highlights

- Nighttime use and exposure to blue light suppress melatonin release, shortening children's sleep duration by an average of 40–45 minutes and negatively affecting executive functions.
- Even witnessing cyberbullying is directly associated with depressive symptoms (β=0.25) and social anxiety (β=0.30) in children.
- Active and parent-supported digital use can transform technology from being a threat into a complementary learning environment where SEL competencies are built.

Abstract

Purpose: This review aims to examine the effects of smartphone and social media use on the Social and Emotional Learning (SEL) competencies of children aged 6–12.
Design and methods: Based on Bronfenbrenner's Ecological Systems Theory and Bandura's Social Learning Theory, the literature was systematically reviewed; findings were synthesized within the framework of the five core competency areas of the CASEL model.
Results: Excessive and passive screen use negatively impacts the development of the prefrontal cortex and weakens self-awareness and self-management skills. While social comparison mechanisms lower self-esteem, the absence of non-verbal communication cues in the digital environment restricts empathy development. Cyberbullying, sleep disorders, and algorithmic guidance emerge as critical risk factors. Conversely, active and moderate use carried out under parental supervision contributes to the strengthening of prosocial skills and social bonds.
Conclusion: The factor determining the impact of technology on SEL is not screen time, but the quality of content, purpose of use, and parental mediation. The integration of digital literacy into the SEL curriculum is mandatory to create a holistic protective ecosystem.
Practice implications: Parents and educators should guide purposeful technology use and integrate digital literacy into SEL to support empathy and prosocial skills. Monitoring content and promoting active engagement can reduce risks and foster healthy social-emotional development.
Keywords: Social and Emotional Learning, Smartphone and Social Media, Middle Childhood, Screen Time

Introduction

With the digitalization process, the age at which children are introduced to technology is rapidly decreasing worldwide, and the average age of smartphone ownership has fallen to around 10 (Gerosa et al., 2024; Sun et al., 2023). In particular, the age of first interaction with mobile devices has dropped to 4–5 years old in some regions, while research in Türkiye shows that the median age of first encounter with mobile devices has fallen to as early as 12 months, and approximately 30.7% of children under the age of five own their own device (Kılıç et al., 2019). This situation results in approximately 40% of children aged 8–12 actively using social networks despite the official age limits of social media platforms (Moreno et al., 2019).

Screen time has also increased in parallel with these digital ownership rates. It is reported that individuals aged 8–18 spend an average of 7 hours and 38 minutes per day in front of media (Rideout et al., 2010). Current data show that children in the 6–12 age group spend an average of 4 to 6 hours in front of screens on a typical day (Qi et al., 2023). In Türkiye, it is known that 67% of the population is connected to the internet and that social media usage rates are above the world average (Macit et al., 2018). These high exposure rates demonstrate that children spend a significant portion of their waking hours in the digital world and that their social interactions are largely shaped through these platforms (Sarman & Tuncay, 2023). This situation may affect children's social and emotional learning.

Social and Emotional Learning (SEL) is a lifelong process in which individuals acquire the skills to understand and manage their emotions, set and achieve positive goals, feel empathy for others, establish and maintain healthy relationships, and make responsible decisions (Collaborative for Academic, Social, and Emotional Learning, 2021a; Weissberg et al., 2015). According to the CASEL framework, this concept consists of five core competency areas: self-awareness, which refers to the recognition of one's own emotions and values; self-management, which is the capacity to regulate emotions and behaviors to achieve goals; social awareness, which

includes the ability to empathize with individuals from diverse backgrounds; relationship skills, which involve social interaction tools such as cooperation and conflict resolution; and responsible decision-making, which is the ability to make constructive choices based on ethical standards (Frye et al., 2024; Ross & Tolan, 2017).

SEL competencies not only enhance students' social adjustment but also have a direct and positive correlation with academic achievement indicators such as math and reading scores (Corcoran et al., 2018; Ha et al., 2025). These skills are critical for reducing emotional stress, maintaining mental health, and improving overall quality of life in adulthood (Jones & Kahn, 2017; Lim et al., 2024). The 6–12 age group (middle childhood) is particularly sensitive to acquiring these skills, as children transition from a family-focused world to one centered on peer interaction and school responsibilities (Rzechowska, 2025). Self-regulation skills and healthy social interactions acquired during this critical period help children maintain psychological resilience and adapt to their academic journey amid the complexities of the digital world (Cerniglia et al., 2021; Ha & Cipriano, 2025). For this reason, children's digital environments and their use of technology should be examined.

In the technology use of digital native children, instant messaging and social media applications such as YouTube, TikTok, Instagram, and WhatsApp play a central role as both a means of socialization and information acquisition (Gerosa et al., 2024; Moreno et al., 2019). Especially in the 6–12 age group, online games have become one of the most common forms of entertainment and have been incorporated into children's daily routines (Tuncay & Sarman, 2023). These digital activities are divided into two main categories: passive use, which involves only watching content (such as watching TV or videos), and active use, which requires reciprocal interaction such as social interaction, playing games, or creating content (Cerniglia et al., 2021). It is stated that active use requires input and cognitive participation from the child, whereas passive use may be associated more with social isolation and static consumption (Lissak, 2018).

The COVID-19 pandemic has permanently affected screen time patterns among children worldwide, leading to a significant increase in screen time (Dee, 2024). Systematic reviews reveal that school-aged children's screen time has shown an upward trend in the post-pandemic period, with a significant portion of their waking hours shifting to digital platforms (Qi et al., 2023). This trend is driven by digital devices becoming not only a means of entertainment but also a tool for essential education and maintaining social connections. Technology has therefore become a dominant force in children's lives and developmental processes (Cerniglia et al., 2021; Qi et al., 2023).

This review aims to examine the impact of smartphone and social media use on the Social and Emotional Learning competencies of children aged 6–12 years.

Conceptual and Theoretical Framework

Social and emotional learning: The CASEL model

Social and emotional learning is a lifelong process in which individuals acquire the skills to understand and manage their emotions, set positive goals, empathize with others, build healthy relationships, and make responsible decisions (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2021a; Ross & Tolan, 2017). The CASEL model, the most widely accepted framework in this field, identifies five core competency areas that support individual development: self-awareness, which refers to the recognition of one's own emotions and values; self-direction, which includes the capacity to regulate emotions and behaviors to achieve goals; social awareness, which encompasses the ability to empathize with individuals from diverse backgrounds; relationship skills, which include social interaction tools such as cooperation and conflict resolution; and responsible decision-making, which is the ability to make constructive choices based on ethical standards (Frye et al., 2024; Ross & Tolan, 2017). These skills are considered essential tools that help children navigate the complexities of both school and social life (Jones & Kahn, 2017).

Extensive meta-analyses on the effects of SEL programs implemented in schools demonstrate that these interventions provide empirically significant benefits. A systematic review conducted by Corcoran et al. (2018), covering 50 years of research, revealed that SEL programs have significant and positive effects on students' reading and mathematics achievement. Similarly, a recent meta-analysis by Ha et al. (2025) confirmed that universal SEL programs significantly improved both standardized test scores and grade point averages (GPA) in students from grades 1–12. This strong relationship between SEL and academic achievement stems from the fact that social and emotional development is inseparable from cognitive learning processes (Ha & Cipriano, 2025; Lim et al., 2024). These competencies, particularly when acquired during middle childhood, support the cognitive capacity necessary for academic performance by reducing emotional stress and problem behaviors, and positively predict overall quality of life in adulthood (Jones & Kahn, 2017; Lim et al., 2024).

Developmental characteristics of the 6–12 age period

The 6–12 age range, defined as middle childhood, is a critical stage in which structural changes occur in the way children perceive the world and interact with their social environment. According to Jean Piaget's theory of cognitive development, this age group is in the Concrete Operations Period (7–11 years), in which logical thinking takes precedence over appearance (Ghazi & Ullah, 2015; Kumbar et al., 2023). During this stage, children grasp the reversibility of operations and develop the ability to decenter, gaining perspective-taking, which is the capacity to understand the viewpoints, feelings, and motivations of others (Rzechowska, 2025).

At the same time, as described in Erik Erikson's psychosocial theory, children experience the Industry–Inferiority crisis, during which they focus on learning new skills and being productive, driven by the desire to be perceived as competent and respected by their environment (Fischer, 1987; Rzechowska, 2025). The motivation for success gained during this period and the perception of self-efficacy shaped by the judgments of others form the basis of the child's psychological resilience in their academic journey (Erikson, 1963; Rzechowska, 2025).

Socially, this stage represents the period in which children move away from a family-centered life and begin

to make peer relationships and the school environment the primary means of socialization. The need to belong to a group peaks particularly around the age of nine (Rzechowska, 2025). Face-to-face interactions with peers provide a "sensitive developmental window" for acquiring executive functions such as emotional regulation and impulse control, which are fundamental to social competencies (Hosokawa & Katsura, 2018; Lissak, 2018).

It is important not to directly equate the characteristics of middle childhood with findings from adolescence, because children in the 6–12 age group have not yet fully developed abstract thinking abilities, and the "dual-system" imbalance (emotional–motivational system versus control system) commonly observed during adolescence has not yet emerged with the same intensity in this age group (Marciano et al., 2021; Moreno et al., 2019). Due to these developmental differences, children's responses to the digital world and their social learning processes exhibit unique sensitivities and limitations (Gerosa et al., 2024; Moreno et al., 2019).

Digital media theories

Bronfenbrenner's Ecological Systems Theory and Bandura's Social Learning Theory provide fundamental theoretical frameworks for understanding children's complex relationship with the digital world. According to Bronfenbrenner's model, development is the result of interactions between the individual and the interrelated systems within their environment (Bronfenbrenner, 1983a). Digitalization has profoundly transformed the microsystem in which the child directly interacts. Smartphone use has led to a state of "absent presence" in parent–child interactions, reducing both the quality and quantity of face-to-face communication (Komanchuk et al., 2023; Radesky et al., 2015).

At the mesosystem level, technology has created "virtual microsystems" among family, school, and peer groups, causing these environments to overlap and leading to a digital transformation of traditional boundaries (Navarro & Tudge, 2022). The algorithms and content policies implemented by digital platforms function as an exosystem layer that shapes children's experiences even though children are not directly involved in their design or control (Ahmmad et al., 2025). These algorithmic systems may restrict the diversity of information to which children are exposed by creating "filter bubbles," indirectly influencing the development of social awareness through these external structures (Ahmmad et al., 2025).

Bandura's Social Learning Theory explains children's tendency to model behaviors they observe in digital media (Bandura, 1965). Social media can be considered a vast environment in which imitative behaviors are both encouraged and rewarded; children may learn both positive social skills and aggressive or risky behaviors by observing role models on these platforms (Deaton, 2015). In this process, children's self-efficacy, defined as their belief in their own abilities, is directly influenced by digital content and the feedback they receive (e.g., likes, comments) (Bandura, 1991; Wajahat, 2024). While positive interactions reinforce self-efficacy, negative experiences such as cybervictimization may damage children's self-efficacy and social competence and may trigger depressive symptoms (Song et al., 2024).

The following table summarizes the digital implications of these two theories for child development within an integrated framework;

Table 1.
Integrated framework of digital media and development theories

Theory	Core process / Layer	Digital transformation and its impact
Ecological systems	Microsystem	Face-to-face interactions (family/peers) are interrupted by digital devices.
	Mesosystem	The emergence of virtual interaction spaces that connect school and home life.
	Exosystem	Algorithmic curation limits the child's information environment.
Social learning	Modeling	Imitation of the behaviors of digital characters and influencers.
	Self-efficacy	Online approval and "like" mechanisms shape self-perception.

In conclusion, this theoretical framework provides a holistic basis for analyzing the effects of smartphone and social media use by integrating child development across three fundamental dimensions. Social and Emotional Learning is a lifelong process through which children acquire five core competencies including managing emotions, empathizing, and making responsible decisions (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2015; Ross & Tolan, 2017). Middle childhood, encompassing ages 6–12, lies at the intersection of Piaget's concrete operational stage grounded in logical thinking and Erikson's industry stage, which emphasizes competence, thus offering a critical developmental window for acquiring these skills (Rzechowska, 2025; Ghazi & Ullah, 2015). This developmental trajectory has gained a new dimension in light of Bronfenbrenner's ecological systems theory and current neo-ecological approaches, particularly with respect to the virtual microsystems created by digital technologies and the phenomenon of "technoference" the technological disruption of face-to-face interaction (Navarro & Tudge, 2022; Komanchuk et al., 2023). Within the framework of Bandura's social learning theory, children construct their behavioral patterns and self-efficacy perceptions within this new ecosystem by observing and imitating digital models encountered on social media (Bandura, 1969; Deaton, 2015). This three-layered integrated approach encompassing conceptual competencies, developmental needs, and digital ecological systems makes it possible to understand how smartphone

use fundamentally shapes children's social and emotional world (Cerniglia et al., 2021; Ha et al., 2025).

The Impact of Social Media on Self-Awareness Competencies

Self-awareness and self-regulation

Neuroscientific findings show that intense screen exposure and digital addiction behaviors during middle childhood may weaken the functional connections between the prefrontal cortex (PFC), which is central to executive functions, and the amygdala, which manages emotional reactivity (Marciano et al., 2021; Horowitz-Kraus & Hutton, 2018). Particularly during developmental stages in which cognitive control systems are not yet fully mature, such as the 6–12 age group, excessive internet use has been associated with a decrease in gray matter volume in brain regions related to language processing and attention (Takeuchi et al., 2018). These structural changes can fundamentally disrupt the development of self-awareness, defined as the child's ability to recognize their own emotions, and self-regulation skills, which refer to the capacity to regulate these emotions in line with personal goals (Lissak, 2018).

Impulse control difficulties are directly related to the dopaminergic reward cycle triggered by the instant notification systems offered by social media platforms and the "magical maybe" mechanism (Macit et al., 2018). The anticipation created by notifications increases striatal dopamine release in the brain, reinforcing craving behaviors such as the constant urge to check the screen among children and negatively affecting the development of self-discipline (Weiss et al., 2011; Christensen, 2017). In addition, parents' use of digital devices as an "external emotion regulator" to calm children may hinder the development of internal emotion regulation skills and lead to a decline in emotional competence as passive content consumption increases (Cerniglia et al., 2021; Radesky et al., 2016).

The social comparison mechanism on social media platforms also creates potential risks for the self-esteem and body image perceptions of children in middle childhood (Ahmad et al., 2019; Perloff, 2014). Exposure to filtered and idealized content encourages children to compare their own lives and physical appearances with the digitally curated identities of others, which may lead to feelings of inadequacy (Vogel et al., 2014; De Coen et al., 2024). Research findings demonstrate that media pressure is significantly associated with body dissatisfaction and low self-esteem among primary school–aged children (De Coen et al., 2024). This effect appears to be particularly pronounced among girls; the internalization of thinness ideals has been associated with increased body dissatisfaction, social anxiety, and depressive symptoms (De Coen et al., 2024; Perloff, 2014).

Social awareness and relationship skills

Social awareness refers to the ability to understand the perspectives of others and empathize with them, whereas relationship skills refer to the ability to establish and maintain healthy social connections with diverse individuals and groups (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2021a; Ross & Tolan, 2017). Smartphone and social media use may play both limiting and expanding roles in the development of these competencies among children in middle childhood.

Reduced face-to-face interaction poses a direct risk to the development of empathy skills in this age group, as face-to-face communication is a key predictor of social well-being and emotional health (Pea et al., 2012; Pantic et al., 2012). Research indicates that excessive reliance on digital platforms creates a phenomenon known as "digital displacement," which reduces children's sensitivity to real-world social cues and may be associated with decreased empathy levels (Wajahat, 2024; Wang & Tchernev, 2012). The absence of nonverbal communication cues such as facial expressions, body language, and tone of voice referred to as "silent language" in digital environments may hinder the development of social awareness (Wajahat, 2024).

Social media interactions largely rely on text-based messages and emojis, which limits the depth and emotional richness of communication (Wajahat, 2024). The lack of these cues may prevent children from accurately interpreting the emotions of others, leading to misunderstandings and conflicts, such as perceiving mild jokes as serious or sarcastic statements (Wajahat, 2024). Particularly in cases of cyberbullying, the inability to observe the victim's emotional responses (socio-emotional cues) may prevent perpetrators from fully recognizing the consequences of their behavior, thereby undermining the development of empathy (Doumas et al., 2020; Hughes et al., 2018).

On the other hand, the constant connectivity of the digital world may also provide opportunities for children in terms of peer support and social integration (Marciano et al., 2021). Social media and instant messaging tools can complement face-to-face communication by enabling children to join peer groups, share common interests, and build social capital (Marciano et al., 2021; Ellison et al., 2010).

Multiplayer games (e.g., Minecraft) and well-designed interactive applications provide digital "sandbox" environments that allow children to practice prosocial behaviors such as cooperation, sharing, and working toward a common goal (teamwork) (Hosokawa & Katsura, 2018; Griffith et al., 2022). However, this positive potential depends largely on the quality of the content; empirical evidence suggests that violent digital games may lead to decreases in prosocial behavior and empathy (Lissak, 2018; Anderson et al., 2010).

Consequently, the debate over whether digital communication complements or replaces face-to-face socialization focuses primarily on the nature of its use. The "replacement hypothesis" suggests that digital media use weakens social cohesion by replacing meaningful face-to-face interactions, whereas some findings indicate that digital tools may strengthen and support existing social ties (Ji et al., 2024; McDaniel & Radesky, 2018). Particularly for children aged 6–12, limited and parentally supported technology use (scaffolding) is considered a complementary element that supports the development of social skills (Cerniglia et al., 2021; Griffith et al., 2022).

Responsible decision making

Responsible decision-making refers to the ability to make constructive choices based on ethical standards and

safety considerations. However, children aged 6–12 often have difficulty demonstrating this competence in digital environments because their cognitive and emotional maturation processes are still developing (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2018; Rzechowska, 2025).

In the context of online content risks, children's exposure to age-inappropriate content such as violence or pornography may pose serious psychological risks due to their still-developing reasoning capacities (Lissak, 2018; Lee, 2012). Children in middle childhood generally have limited awareness of online risks, which increases the likelihood of unsafe behaviors such as communicating with strangers or sharing content that violates personal data privacy (Holloway et al., 2013; Lee, 2012).

Children, particularly those aged 5–8, are biologically more vulnerable in recognizing and resisting online risks, which limits their ability to make safe choices in digital environments (Ey & Cupit, 2011; Senel et al., 2019). At the behavioral level, negative norms such as cyberbullying and aggressive attitudes in online environments may transfer into children's real-life decision-making processes, leading them to make inappropriate choices under social pressure (Rzechowska, 2025; Doumas et al., 2020).

Furthermore, algorithmic manipulation mechanisms embedded in smartphones and social media platforms may create a "rabbit hole" effect, narrowing children's information environment and trapping them within ideologically homogeneous content through filter bubbles (Ahmmad et al., 2025). This algorithmic pressure stimulates the brain's dopaminergic reward system, weakening children's capacity for autonomous decision-making and directing them toward consumption patterns focused on immediate gratification (Marciano et al., 2021; Ahmmad et al., 2025).

In conclusion, children require not only technical guidance but also social-emotional support that strengthens their digital media literacy and ethical reasoning skills in order to effectively manage cyber risks (Lee, 2012; Ahmmad et al., 2025).

Opportunities and Risks

Potential benefits

The use of smartphones and social media creates virtual microsystems that present both risks and significant opportunities from a "neo-ecological" perspective in children's development (Navarro & Tudge, 2022). These digital platforms have the potential to support critical developmental gains such as social support, self-efficacy, and identity formation, particularly for children from minority groups or socioeconomically disadvantaged backgrounds (Sun et al., 2023). For example, for low-income families with limited access to costly private tutoring or sports activities, technology functions as an "equalizer" in terms of entertainment, education, and socialization, becoming a fundamental source of information and development for these children (Cardy et al., 2023; Griffith et al., 2022). Furthermore, even spaces criticized as echo chambers may function as safe environments in which cultural belonging and identity validation are provided for marginalized children (Ahmmad et al., 2025).

The role of technology as a social bridge suggests that digital interactions may play a complementary role rather than a substitute for face-to-face socialization. In fact, some empirical findings reveal that children who frequently play digital games interact more often face-to-face with their peers outside of school (Hosokawa & Katsura, 2018). In terms of access to information, well-designed educational applications stimulate children's curiosity and contribute to the development of academic competencies such as mathematics and literacy, as well as interpersonal skills such as empathy and tolerance (Kılıç et al., 2019). Parents' co-use of interactive media with their children not only increases the child's learning success but also strengthens the parent–child bond through shared activities, ensuring that Social and Emotional Learning competencies are built on a more secure foundation (Connell et al., 2015; Griffith et al., 2022).

Critical risks

Cyberbullying stands out as one of the most serious digital risks affecting the psychological adjustment of children in middle childhood. Research indicates that even in relatively minor cases of online abuse, levels of unhappiness and irritability among children increase significantly, and even witnessing such incidents is directly associated with depressive symptoms ($\beta = 0.25$) and social anxiety ($\beta = 0.30$). Longitudinal studies confirm that cyber victimization triggers feelings of helplessness and isolation in children, damaging their perception of self-efficacy. Over time, this process may evolve into technology addiction and externalizing problems such as aggression and impulsivity.

In particular, early smartphone ownership before the age of 11 exposes children to age-inappropriate content and social comparison mechanisms, which may lead to decreased academic performance and an increased risk of depression that can persist into adulthood.

At the physiological level, one of the most significant risks is the disruption of sleep patterns. Studies indicate that children who sleep with digital devices in their bedrooms sleep an average of 40–45 minutes less due to the suppression of melatonin production by blue light and the stimulation created by device notifications. Sleep deprivation impairs the functioning of the prefrontal cortex (PFC), the brain region responsible for decision-making and self-regulation, making children more vulnerable to emotional dysregulation and temper outbursts.

In addition, the structure of short-form content such as TikTok, Reels, and Shorts—designed around the dopaminergic reward cycle—conditions children's attention systems to operate in a "scanning-and-shifting" mode. This weakens the capacity for deep thinking and sustained concentration, causing children to struggle with tasks that require prolonged attention, such as schoolwork, and reducing the efficiency of their cognitive control systems.

Mediating variables: Gender differences and technoference

The effects of digital technologies on children exhibit notable developmental differences according to gender roles. Girls tend to use smartphones and social media primarily for maintaining social interaction and relationships; however, they more frequently experience internalizing problems such as body dissatisfaction, low

self-esteem, and depressive symptoms due to social comparisons with idealized body images (De Coen et al., 2024; Perloff, 2014). In addition, forms of relational aggression such as exclusion and spreading gossip are more commonly observed among girls in the context of cyberbullying (De Coen et al., 2024).

In contrast, boys tend to use the digital environment predominantly for gaming. The extensive use of long-term war and fighting games, in particular, has been associated with externalizing risks such as increased impulsivity, difficulties with anger regulation, and gaming addiction (Tuncay & Sarman, 2023; Lissak, 2018).

"Technoference," which plays a critical role in family dynamics, refers to the disruption of face-to-face communication and shared family time by technological devices (Komanchuk et al., 2023; McDaniel & Coyne, 2016). When parents turn to their devices while interacting with their children, an "absent presence" situation emerges, reducing parental sensitivity to children's signals as well as emotional warmth and verbal support (Komanchuk et al., 2023; Radesky et al., 2015).

According to the displacement hypothesis, excessive screen use by both parents and children weakens family bonds by replacing meaningful real-world interactions (Ji et al., 2024; McDaniel & Radesky, 2018). As a long-term consequence of this process, emotional attachment patterns may be disrupted; children who feel digitally neglected by their parents face an increased risk of social anxiety, loneliness, and social withdrawal (Ji et al., 2024; Xie et al., 2019).

Protective Factors

Parental mediation styles

Active (participatory) mediation involves parents consuming digital content together with their children and engaging in "scaffolding" activities that guide the child's cognitive and emotional processes. Restrictive mediation, in contrast, is a control mechanism typically implemented through time limits and content filters (Cerniglia et al., 2021; Lee, 2012). The literature emphasizes that while restrictive approaches may reduce online risks, they may also limit children's digital skills and autonomy and may even backfire among children with low self-control (Lee, 2012; Rudnova et al., 2023).

In contrast, children who experience an "enabling" mediation style one that combines high levels of support with reasonable control have been found to report higher levels of happiness and to be less prone to social media addiction (Rudnova et al., 2023). Parent–child co-use of digital media, particularly in the 6–12 age group, functions as a critical protective factor in developing Social and Emotional Learning competencies by making digital content socially meaningful (Griffith et al., 2022; Connell et al., 2015).

Among evidence-based practical strategies, defining the bedroom as a "screen-free zone" directly protects sleep quality and prefrontal cortex development by reducing exposure to blue light and preventing stimulation from device notifications (Lissak, 2018; Qi et al., 2023). Prohibiting phone use at the dinner table and implementing notification management (focus mode) can minimize the phenomenon of "technoference" within the family, thereby increasing the depth and emotional warmth of parent–child interactions (Komanchuk et al., 2023; Radesky et al., 2015).

Parents serving as disciplined role models in their own screen use is one of the most powerful ways to foster children's self-management skills, as excessive parental immersion in technology is among the primary factors triggering risks of loneliness and social anxiety in children (Jago et al., 2015; Ji et al., 2024). In this context, consciously planning screen-free activities (e.g., table tennis, dog walking) allows children to move away from the dopaminergic reward cycle and engage more with real-world interactions (Lissak, 2018).

School and educator dimension

The school represents the most fundamental developmental ecosystem after the family in which children acquire Social and Emotional Learning competencies (Rzechowska, 2025; Corcoran et al., 2018). Today, the risks and opportunities children encounter in the digital world necessitate the integration of school-based Social and Emotional Learning programs with digital literacy education (Ha et al., 2025; Ahmmad et al., 2025).

Contemporary academic approaches emphasize that Social and Emotional Learning should support not only cognitive development but also students' abilities to form social relationships and make ethical decisions (CASEL, 2015; Ha et al., 2025). However, the literature indicates that digital literacy is often treated merely as a technical skill within traditional curricula, whereas children require deeper competencies such as "algorithmic literacy" (understanding personalization processes) and "ethical media use" (Ahmmad et al., 2025; Levin & Segev, 2023).

Digital citizenship education should include ethical behavior in online environments, protection of data privacy, and critical media literacy skills (Wright & Wachs, 2023). Ethics education has been shown to increase children's resistance to misinformation encountered in digital media and strengthen their capacity for self-narration. Furthermore, encouraging students to develop empathy and respect in online interactions plays a critical role in reducing misunderstandings that arise due to the absence of "silent language" (facial expressions and tone of voice) in digital environments (Wajahat, 2024; Levin & Segev, 2023).

Regarding teacher competencies, it is particularly important for educators to develop techno-pedagogical competencies in addition to their ability to integrate technology into lessons (Levin & Segev, 2023). Research indicates that teachers often experience difficulties in transferring interpersonal skills from the CASEL model into online environments and require structured training in this area (Levin & Segev, 2023). Developing their own socio-emotional competencies is also considered a prerequisite for teachers to effectively model these skills for students (Levin & Segev, 2023; Schonert-Reichl et al., 2017).

The effectiveness of school-based cyberbullying prevention programs depends on adopting a holistic school approach (Doumas et al., 2020). Rather than focusing solely on perpetrators and victims, programs that enhance the self-efficacy of student bystanders to intervene have been shown to significantly reduce cyberbullying rates, depression, and anxiety (Doumas et al., 2020; Williford et al., 2012). Clearly defining cyberbullying policies by school administrations, providing regular training for educators

and parents, and offering students safe reporting mechanisms are key components of a sustainable protective environment (Beale & Hall, 2007; Doumas et al., 2020).

International guidelines and policy framework

International health authorities aim to minimize risks by providing comprehensive guidelines for digital media use during middle childhood. The American Academy of Pediatrics (AAP) recommends that children should not create traditional social media profiles (e.g., Instagram, Facebook) before the age of 13 and advises consistent limitations on screen time for children over the age of six (Council on Communications and Media, 2016a; Cerniglia et al., 2021).

The World Health Organization (WHO) emphasizes that children aged 5–17 should engage in at least 60 minutes of moderate- to vigorous-intensity physical activity (MVPA) per day on average and that recreational screen time, particularly for entertainment purposes, should be limited (Chaput et al., 2020; WHO, 2020). These recommendations are based on the principle that screen exposure should not replace activities essential for healthy development, such as physical activity, sleep, and face-to-face interaction, consistent with the displacement hypothesis (Qi et al., 2023; Chaput et al., 2020).

In the context of Türkiye, digital media policies are shaped within the broader framework of integrating technology into social life while implementing child protection measures. Empirical studies conducted in Ankara indicate that children's use of mobile devices reduces family interaction and that parents frequently use these devices as a "babysitter" to occupy their children while performing daily tasks (Kılıç et al., 2019). Although digital literacy is included in the curriculum of the Ministry of National Education within current educational policies, the literature emphasizes that it should go beyond technical skills and include dimensions such as "ethical media use" and "algorithmic literacy" (Ahmmad et al., 2025).

At the policy level, platform regulation and algorithmic transparency constitute critical areas of discussion for protecting children's Social and Emotional Learning competencies. Legal frameworks such as the European Union's Digital Services Act (DSA) have introduced measures aimed at ensuring the accountability and transparency of recommendation systems (algorithms); however, child-specific protection mechanisms are not yet fully developed (Ahmmad et al., 2025; European Commission, 2022).

To mitigate the "rabbit hole" effect created by digital platforms, it has been recommended to strengthen age verification systems and to provide customizable streaming options that allow users to consciously diversify the content they consume (Ahmmad et al., 2025). Nevertheless, these structural reforms can ensure sustainable safety in digital environments only when combined with "enabling" parental and school strategies that enhance children's social and emotional resilience (Rudnova et al., 2023).

Gaps in the Literature and Methodological Limitations

The dominance of cross-sectional studies in the literature is a key factor that makes it difficult to establish a definitive causal relationship between smartphone use and developmental outcomes (Tuncay & Sarman, 2023). Current findings point to a bidirectional interaction regarding whether high screen time leads to depression and adjustment problems or whether children who already experience emotional difficulties turn to technology as a compensatory mechanism (Twenge & Campbell, 2018). This methodological limitation prevents a complete understanding of the temporal relationship between variables and highlights the need for more longitudinal studies to analyze developmental processes (Ha & Cipriano, 2025).

Another significant reliability issue in the literature is that data collection processes largely rely on self-reports from children and parents (Gerosa et al., 2024). Due to memory errors and concerns related to social desirability, individuals may report their screen time differently from their actual usage, thereby weakening the objectivity of empirical data (Gerosa et al., 2024). Furthermore, the concept of "screen time" is often treated as a global measure that fails to differentiate the nature of the content (e.g., educational versus entertainment). Conceptual inconsistencies in the definitions of "harmful use" also make it difficult to synthesize research findings (Qi et al., 2023).

In discussions regarding effect sizes, meta-analytic studies emphasize that although the negative effects of digital media use on well-being may be statistically significant, their practical significance may remain small (Orben et al., 2019). Findings by researchers such as Orben and Przybylski suggest that the impact of technology use on child adjustment may be marginal and that the primary determinant may not be the duration of use but rather the motivations behind technology use (Orben et al., 2019). This situation highlights the need for more nuanced and person-centered perspectives that consider the clinical significance of effect sizes rather than approaches that view technology as a broad risk factor (Gerosa et al., 2022).

Current literature largely focuses on adolescent groups aged 13–18 when examining the effects of digital technologies, creating a significant gap in understanding developmental processes specific to the 6–12 age group (Cerniglia et al., 2021; Ross & Tolan, 2017). While adolescents primarily use the digital world for social networking and identity construction, children in middle childhood interact more frequently with educational applications and video content. Therefore, generalizing adolescent findings to younger age groups may be problematic (Cerniglia et al., 2021). Some systematic reviews highlight that studies focusing exclusively on the 6–10 age group are extremely rare and that current Social and Emotional Learning measurement tools are insufficient for capturing the transitional phases of middle childhood (Komanchuk et al., 2023; Ross & Tolan, 2017).

Another critical limitation in research is the presence of a "Western bias," referring to geographical and cultural bias in the literature. The vast majority of empirical studies are conducted in high-income societies such as the United States and Western Europe (Ahmmad et al., 2025; Komanchuk et al., 2023). This raises concerns about the applicability of findings to children in the Global South and in different cultural ecosystems and limits a full understanding of how digital media use is shaped by societal norms (Ahmmad et al., 2025). In particular, ethnic minorities and socioeconomically disadvantaged groups are underrepresented in research samples (Sun et al., 2023). However, considering that these groups may be more

vulnerable to digital risks or may use technology differently as a "social equalizer," more inclusive and person-centered research approaches are needed (Sun et al., 2023; Valkenburg et al., 2021).

To address these gaps in the literature, priority should be given to longitudinal research that tracks children's digital developmental trajectories, particularly among those aged 6–12 (Cerniglia et al., 2021). The current literature's strong focus on adolescent samples prevents a comprehensive understanding of the risks and opportunities specific to middle childhood (Komanchuk et al., 2023). Future cohort studies are essential for clarifying the long-term effects of screen exposure and its temporal relationship with neurobiological processes such as prefrontal cortex development (Marciano et al., 2021).

Future research should adopt mixed-methods designs that combine both quantitative and qualitative data in order to better interpret the complex impacts of the digital world (Ahmmad et al., 2025). Rather than focusing solely on quantitative indicators such as screen time, research should analyze "quality-oriented" variables in greater depth, including content type, patterns of use, and co-use with parents (Griffith et al., 2022; Ha et al., 2025). Such a multidisciplinary approach will move beyond reductionist perspectives that view technology as a generalized risk factor and will allow for the identification of specific mechanisms that support children's digital well-being (Gerosa et al., 2024).

Conclusion

The impact of smartphone and social media use on Social and Emotional Learning requires a context- and content-focused synthesis that moves beyond polarized perspectives that portray technology as either "completely harmful" or "completely harmless" (Navarro & Tudge, 2022; O'Keeffe et al., 2011). Findings referred to as the "Goldilocks Hypothesis" or the inverted-U model indicate that neither the complete absence nor excessive use of digital tools during middle childhood is associated with optimal well-being. Instead, moderate and purposeful use appears to best support developmental outcomes (Przybylski & Weinstein, 2017; Orben & Przybylski, 2019a). In this regard, whether technology functions as a "social bridge" or a "displacement" tool is largely determined by the nature of its use and the type of content encountered (Hosokawa & Katsura, 2018; Qi et al., 2023).

The most consistent negative findings in the literature are clustered around sleep disturbances, cyberbullying, and passive social comparison mechanisms. In particular, nighttime device use and exposure to blue light suppress melatonin secretion and shorten sleep duration, representing key mechanisms associated with depressive symptoms and impairments in executive functions among children (Lissak, 2018; Zhao et al., 2024). Experiences of cyberbullying weaken children's self-esteem and increase the risk of social anxiety and isolation, while passive comparisons on social media may lead to body dissatisfaction and emotional dysregulation, particularly among girls (Doumas et al., 2020; De Coen et al., 2024; Perloff, 2014).

The strongest protective factor against these risks is active parental mediation, which involves high-quality digital guidance that goes beyond purely technical restrictions. Parents who co-use digital content with their children and discuss norms within digital environments strengthen children's self-management and responsible decision-making skills more effectively than restrictive approaches alone (Griffith et al., 2022; Rudnova et al., 2023). Consequently, transforming technology from a developmental risk into an opportunity depends on parents, schools, and policymakers adopting enabling strategies that enhance children's digital literacy and emotional resilience (Ha et al., 2025; Ahmmad et al., 2025).

Educators should strengthen students' psychosocial resilience to algorithmic manipulation and online risks by integrating critical media literacy and digital citizenship skills into Social and Emotional Learning curricula (Levin & Segev, 2023; Ahmmad et al., 2025). At the policy level, the widespread implementation of systematic and technology-integrated Social and Emotional Learning programs within the Ministry of National Education could provide a holistic school-based approach to addressing risks such as cyberbullying.

Furthermore, it is important for regulatory institutions such as the Radio and Television Supreme Council to update child protection mechanisms in accordance with the dynamics of the digital ecosystem and to introduce stricter age verification protocols for social media platforms. Regulations that align with the American Academy of Pediatrics' recommendation of a minimum age of 13 for social media use may contribute to creating a societal safety net that protects children from exposure to content for which they are not developmentally prepared (Council on Communications and Media, 2016a; Cerniglia et al., 2021).

The key factor determining the impact of smartphone use on Social and Emotional Learning during middle childhood is not the physical presence of the device itself, but rather how and for what purpose it is used (Yang et al., 2021; Whitlock & Masur, 2019). Research demonstrates that the content children encounter on digital platforms, the individuals with whom they communicate, and their motivations for technology use are more significant developmental predictors than screen time alone (Yang et al., 2021; Hosokawa & Katsura, 2018). In this sense, technology should not be viewed merely as a passive domain of consumption; instead, it should be understood as a dynamic ecosystem in which self-efficacy, empathy, and social connection skills can develop when supported by parental guidance and high-quality content (Moreno et al., 2019; Griffith et al., 2022).

In today's world, digital literacy is not simply a technical skill but a fundamental developmental competence necessary for children to function healthily within virtual microsystems (Levin & Segev, 2023; Ahmmad et al., 2025). Children's ability to recognize algorithmic manipulation, resist misinformation, and make ethical decisions online has become an essential component of digital citizenship and emotional resilience (Levin & Segev, 2023; Ahmmad et al., 2025). Therefore, the focus of education systems and parenting practices should be on equipping children with the competencies required to become conscious and responsible agents within this complex digital environment rather than isolating them from technology (Rudnova et al., 2023; Lee, 2012).

In conclusion, the relationship between smartphones and children should not be framed solely as a threat to be avoided but rather as a delicate balance in which developmental opportunities and risks coexist. Approaches that portray the impact of technology on developmental

skills as either entirely harmful or entirely harmless obscure the genuine developmental potential of the digital environment. The real objective for future generations is to enable children to manage technology not as a means of escape, but as a social learning platform that is compatible with the real world and that allows self-regulation skills to be practiced and strengthened.

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N/A

Patient consent statement

N/A

Consent for publication

I confirm that I am the sole author of this review and give my consent for its publication. I affirm that the work is original, has not been published elsewhere, and that I approve the final version for submission.

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