EFFECTS OF EXCESSIVE SCREEN TIME ON EARLY CHILDHOOD DEVELOPMENT

(*A Review of the Effects of Excessive Screen Time on Early Child Development*)

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Abstract: In today's digital world, youth have greater access to screen-based technologies (e.g., smartphones, tablets, computers, TV) at a younger age. Digital media provide children with opportunities for education and communication, but there is a growing concern of public health as a result of excessive screen time because of the impact of excessive screen time on many areas of child development. The purpose of the current review is to evaluate the impact of screen time on children's cognitive, linguistic, physical, and social-emotional development. A thorough analysis of published studies indicates that children who use screens more than recommended will likely experience delays in their language development and have shorter attention spans. Excessive use of screens may prevent children from experiencing caregiver interactions and interacting with their surrounding environments, both of which are critical for healthy development. Moderated, supervised use of interactive digital media could, however, produce some educational benefits if it is used correctly. The review suggests a significant need for parents to develop healthy and balanced screen-time habits. It is also vital to encourage children to use alternative activities such as physical play, socialization, and hands-on learning to support the overall health and optimal development of children in an ever-increasing tech-world.
Keywords: Early childhood development, Excessive screen time, Developmental delays

Introduction

Newer technologies, like mobile and interactive screen media, have become integral parts of daily life in a young child. In today's computerized age, children are exposed to screen time at an early age, whether it is through smartphones, tablets, computers, or simply watching television. Although technology can provide children with great benefits, there are great impacts that can be seen regarding screen time with children, they are "digital natives," born into an ever-changing digital ecosystem enhanced by media.

Imagine the scene. A mom is busily engaged in the kitchen, occasionally checking to make sure her infant remains engaged by the TV. At another place, a dad attends to his grocery shopping, accompanied by his toddler, who remains deep in thought as she plays with a mobile phone while being pushed in a stroller. At a doctor's clinic, a parent uses a tablet to entertain her restless child. On another occasion, during a long trip to visit family, a fussy child settles down in her car seat after being comforted by a music video. These scenarios are not one-off occurrences but are actually a reality of modern-day parenting. Screen time thus remains a necessity, despite the best of parental intentions, to get through the reality of daily living.

The age at which children start using media routinely has decreased from four years in 1970 to four months today. While electronic media have transformed the ways of learning, communicating, and accessing information, recent scientific research has suggested that screen media use may pose serious and long-term adverse health effects on children, making it a growing public health issue. It has increased the risk of making children obese, having behavioural problems, sleeping disorders, poor academic functioning, etc.

This Paper takes a deeper look into the effects of excessive screen viewing on children's cognition, language, and social-emotional development, while also touching on the effective strategies that the parents can employ to control and reduce the screen viewing hours of young individuals.

1.1 Screen time and Excessive screen time

Screen time refers to the "time spent" (the "duration") of any individual, especially children under the age of 6 years, on "electronic devices like screens: TVs, tablets, laptops or PCs, smartphones, computers." It is the overall amount of time an individual uses the devices that have screen displays, for instance, television sets, smartphones, tablets, and personal computers. It includes both active and passive time usage.

Too much time on screens is described by situations where the amount and/or type of time devoted to screen activities surpasses current recommendations for the degree and kind of time that is suitable for that particular developmental period. The activities may include sleep, physical activity, social contact, engagement with academic activities, etc. The timing of the period is very essential to consider, especially in young children.

A systematic review from 2023 in Brain Sciences determined that more screen time is associated with relatively poor language outcomes during early years. The review identified that passive screen exposure, as exemplified by video exposure without interaction between adult and child, can displace essential verbal interactions and reduce the practice of children with both expressive and receptive language skills.

There is an evident increase in the use of screens over the last decade, as screens have become an integral aspect of modern-day living, especially among young adults, who spend a considerable amount of their wakeful hours in front of screens.

A 2025 study carried out in Frontiers in Pediatrics revealed that young children with increased amounts of screened content would have language development delay issues, especially when coupled with increased parental usage of screened content and decreased parental interaction. The study highlighted how children interacting with parents who used screens were more prone to restrictive verbal interaction, which is vital.

On a global scale, a person spends an average of 6 hours and 40 minutes daily staring at a screen. Besides, the rate at which children have been accumulating screen time daily starting at tender ages is alarming, since in the last 2 decades, children's media usage grew by 32%.

Children in the range of 0-8 years spend an average of two and a half hours per day using screens. As per the national survey, it was found that "average screen time of kids in media-centric parenting style was found to be 4.30 hours per day.

A broader literature synthesis on screen time and child development noted that early and excessive screen exposure is associated with delayed developmental milestones, including reduced attention span, emotional dysregulation, and impaired social skills. The paper highlighted a balanced use of screens and real-life interaction to facilitate normal growth.

These findings highlight the significance of conscious screen usage during the initial stages of development. Screen usage, when utilized as digital pacifiers replacing parental interaction, may impair critical developmental processes. Parental imitation and establishing limits must be emphasized to avoid these adverse reactions and aim towards effective results.

1.2 Key Consequences of Excessive Screen Time

Too much time spent using devices can lead to screen addiction, which has various negative effects on children's lives. Therefore, it is important to identify and deal with the following negative effects in an effort to promote healthy lifestyles in children's lives.

1.2.1. Physical and Health Outcomes

i. Sleep Disturbance:

- Blue light exposure from using screens interferes with the production of the body's nocturnal hormone called melatonin necessary for a good night's sleep, delaying the time it takes to fall asleep due to the absence of this natural hormone.
- A child who watches fast-paced video content prior to going to sleep will have difficulty winding down from day time activities.
- The length and quality of sleep will be longer and better for preschool children who spend less time on screens after 6 p.m. than those preschool children who spend a lot of time on screens after 6 p.m.

ii. Sedentary Play/Childhood Obesity:

- When children spend time on screen-based activities, they are not engaged in active play; as a result, there is less opportunity for active play.
- Several studies find that extended use of screens and sedentary behavior are negatively correlated (an increase in time on screens increases the likelihood of overweight/obesity) and that Canadian preschool children who spend a lot of time using screens have poorer overall health in terms of development, including level of physical activity.

iii. Vision/Posture:

- Extended screen use can lead to vision problems, including a "digital strain" (eye strain, eye fatigue, headaches).
- Poor posture when using mobile devices increases the risk of neck/back pain, even in preschool children.
- Pediatricians recommend limiting screen time and using ergonomics and education to avoid the previous condition.

The excessive use of screens for children ages 0-5 results in sleep disturbance, decrease in active play, increase in overweight/obesity, and poor vision/posture. Provide your children with opportunities for limited and mindful screen time; model positive behavior; promote active play; and help them create in-person social interactions for social/emotional health why they are growing.

1.2.2 Cognitive Development

i.Language acquisition delays:

- High amounts of screen time (especially passive viewing) are linked with slower development of expressive language.
- Language is learned best through interaction using face-to-face communication between the child and the caregiver, which screens take away.
- Research has shown that children who spend longer on screens (especially toddlers) have poorer communication skills than those who are not on screens for long periods.

ii.Attention Span and Executive Functioning:

- Children who use screens excessively during their early years tend to have shortened attention spans and a lack of executive functioning skills (planning, impulse control, problem-solving).
- The stimulation from screens is frequently fast-paced, quick-moving, and often overstimulating; therefore, it becomes difficult for children to adjust to slower tasking in the real world.
- Longitudinal studies have found that children who are two to six years old and have very high screen usage have decreased self-regulation and focus in structured learning environments.

iii.Screen-Based vs Real-Life Experiences

- Quality is important, Educational and interactive programs can support children's learning, using screens as a way to entertain children (for example, cartoons or non-interactive videos) does not provide any real value for child development.
- Children learn from real-world experiences (like playing, making friends, exploring), where they use their senses in many ways and develop their thinking abilities through solving problems.

- It may contribute to the decline of hands-on experiences and subsequently to a slower rate of cognitive development, and provide fewer opportunities for creativity and imagination in young children.

Excessive screen time in infancy can also have effects on children's communication skills, attention and executive functioning skills, and decrease the amount of opportunities for children to learn through hands-on experiences. Although some high-quality, interactive screen-based content may be beneficial to children, finding a balance and being actively involved as a parent is critical to helping your child with their cognitive development.

1.2.3 Social and Emotional Development

i. Impact of Excessive Screen Time on Empathy, Emotion Regulation, & Attachment:

- Children who spend too much time using screens do not get as many opportunities to share their feelings directly with people which is important for developing empathy and a secure attachment.
- Children who spend too much time using screens are likely to be less emotionally regulated than children who spend less time using screens because they don't have as many opportunities to practice self-soothing and coping skills in real life.
- Temor longitudinal research has shown children age 2-6 who have high screen exposure have lower levels of emotional resilience and more superficial social relationships than those with less screen time.

ii. Parent-Child Interaction and Co-Viewing

- Co-viewing (the act of a parent watching and engaging in the screen use of a child) is a particularly useful way to help reduce negative impact through providing discussion; developing emotional connections; and providing explanations by parents.
- When screens replace physical interaction (play) or conversation, the connection that exists as a result of parent-child interactions may be diminished.
- Research has shown that co-viewing video with family members or co-use of educational apps has been shown to support social learning; however, unsupervised screen access has been found to negatively impact social learning.

iii. Issues with Behaviour and Dependence on Devices

- Children who are dependent on technology may develop behavioural problems including irritability, hyperactivity, and difficulty in following rules.
- Screen dependency may include behaviours similar to those seen with addiction, as a child may seek out devices for comfort or entertainment. If denied access to a device when they want it, they may respond by throwing tantrums and exhibiting a loss of self-control.
- Research has shown that children who spend too much time with screens become increasingly at risk for social isolation, as well as having difficulty creating and maintaining peer-to-peer relationships. This is likely due to children preferring to engage with other children through digital means rather than through engaging in actual play activities.

Having excessive screen time throughout early childhood can interfere with the development of empathy, the ability to regulate emotions, and the formation of secure attachments between children and their parents and caregivers, as well as contributing to the development of behavioural difficulties and dependence on screens. However, if parents view screens along with their children and assist them in the use of screens, they will likely enhance the quality of the child's screen time.

1.3. Screen Time Guidelines and Recommendations

1.3.1. International and National Guidelines

WHO recommends that children under 5 should not be exposed to screens before they are 18 months old. WHO advises parents to avoid sedentary screen time for 1- to 2-year-olds, and do not exceed 1 hour per day of screen time for 2- to 4-year-olds. Excessive screen time can replace developmentally appropriate activities such as social play, sleep, and developmentally appropriate activities.

The American Academy of Pediatrics (AAP) also has guidelines for media use. The AAP recommends that children under 18 months should not have the use of screens unless it is done to video chat with family or friends. There should be adult supervision, control, and support of media content when introducing new media to 18-24-month-olds. Children ages 2-5 may use screens for up to 1 hour per day, as long as they are using high-quality media. For children age 6, or older, limits should be placed on screens so as not to interfere with sleep, physical activity, or social engagement (AAP).

Co-viewing is also highly recommended by the AAP, as this activity can often help enhance a child's ability to understand and learn from their media.

The Indian Academy of Pediatrics (IAP) has created national guidelines based on various sociocultural factors.

- Children less than two years of age should have no screen exposure.
- Children 2–5 years of age are allowed a maximum of 1 hour of total screen time each day.
- Children 5–10 years of age should limit their total amount of recreational screen time to 1–1.5 hours.

Teenagers should use screens in such a way that their utilization does not interfere with academic performance, sleep, or the ability to function socially. The IAP recommends that families spend time together without using media and heat recommend that meals and the time before bed is not used for any type of screen activity.

1.3.2. Age-Appropriate Screen Use

The use of screens needs to be regulated for a child's development:

- For early childhood, screens should only provide sensory-motor experiences, and emphasize real-world activity
- Middle childhood, screens with limited educational content (to ensure cognitive growth) should only be used under adult supervision
- For adolescents, increased autonomy to use screens is acceptable as long as guidance is provided to prevent negative effects on behaviour and emotional well-being

Regulating the use of screens properly to prevent negative outcomes related to focus, emotional self-regulation, and interpersonal skills.

1.3.3. Role of Parents, Educators, and Caregivers

In the development of a child's digital habits, parents and/or caregivers are in a position to influence them significantly. Responsibilities will entail:

- Monitoring the type of content and amount of time spent using digital media;
- Encouraging other types of activity such as playing outside or reading;
- Developing a family routine that is free from technology during family time, e.g., reading together at bedtime;
- Teaching children about safe and responsible ways to use technology.

In the classroom, educators can support children in using technology in a way that enhances their learning while not relying solely on digital technology as a primary source of information.

2. Review of literature

Dhar et al. (2026) evaluated the association between the use of screens and fine motor skills, language, and social development for children aged 1-6 years. Findings show that excessive use of screens is linked to delays in these areas of development. Prolonged use of digital media by children has the potential to impact early childhood development negatively. Bakht et al. (2025) performed a systematic review evaluating the effects of screen time on motor development in children aged 1-6 years. Their research supports the finding that there are negative associations between excessive screen time and gross and fine motor development. Prolonged use of digital devices decreases children's physical activity levels, which negatively affects motor development during the early childhood years.

Gillioz et al. (2025), they found a statistical correlation between the amount of time spent using screens and whether a child develops atypical sensory processing. By evaluating toddlers between the ages of six and thirty-six months, they concluded that using screens too much during this time could have an effect on the child's sensory and perceptual development.Bal et al. (2024), they found that children who had high levels of screen time typically had delays in developing language skills as well as a decrease in executive functioning skills. Their research indicates that children with high amounts of digital media usage will specifically show interrupting effects in their cognitive and communicative growth during the early years of life.

Kuta (2024) reviewed studies regarding the effects of excessive screen time on children aged six years and younger. They found that prolonged exposure to digital media may interfere with the development of speech skills and the development of vocabulary. Additionally, Kuta (2024) stated that increased screen usage acts as a barrier to caregiver-child interactions, which are critical to building strong foundations for early language development and communication.

Bhutani et al., 2023, a scoping review was done to see if time spent on screens is related to children's language development. Excessive amounts of time spent on screens can slow down the formation of spoken language and vocabulary. Increased use of digital media also can negatively impact a child's ability to form meaningful social relationships, which are important for developing language skills in their early years.

Champagne-Hamel et al. (2023) looked at how much time kids spend on screens when they are 6 years old to see if that would affect their visual functioning at a later age (e.g., visual function during early adolescence). Despite finding that kids who used more screens than their peers during their childhood tended to have poorer visual outcomes later in life, the authors suggest that excessive use of screens by children could result in negative long-term implications for their visual health. Wu et al., (2023) completed a scoping review to understand the impact of early digital experiences on children's (0-12 years old) brain development. The study determined that there is an association between excessive screen time exposures and the impact on neural development (related to attention, memory, and learning). This review found that using digital media for extended periods of time during early childhood could potentially impact cognitive functioning, as well as socio-emotional development.

Gastaud et al., (2023) studied the impact of screen time on cognitive development of early childhood and discovered that the more screen time a child has, the longer that child's cognitive and language development will take, and that increased exposure to screens has been shown to delay cognitive skills such as language acquisition, attention skills (e.g. selective attention) and executive functioning skills. They concluded that if a child is exposed to screens during the critical periods of development, it will negatively influence their cognitive development and also delay developmental milestones compared to their peers. Muppalla et al. (2023) published a literature review relating to excessive screen time in children and its effects on their cognitive, language, and socio-emotional development as an emerging public health concern. The researchers reported that excessive screen exposure is potentially associated with reduced executive functioning, poor academic achievement, disturbances in sleep, and behavioral issues; it also affects how caregivers interact with children (both linguistically and non-linguistically).

Panjeti-Madan and Ranganathan (2023) completed a literature review on the effects of excessive screen time on children's cognitive, language, physical, and socio-emotional development. Their literature review indicated that excessive screen exposure was likely to have a detrimental effect on attention span, sleep patterns, physical activity, and emotional regulation; however, use of digital media in moderation and under adult supervision can provide educational benefits that assist with the overall growth of children. Sapsaglam and Birak (2023), in a study of preschoolers during COVID-19, found that preschoolers experiencing higher screen use had shorter attention spans and more difficulty concentrating on learning tasks than children with less access to screens. The authors concluded that too much screen time could be impairing cognitive processing abilities and decreasing preschoolers' engagement in educational activities.

Claussen et al. (2022) According to a systematic review with meta-analysis, found there to be an association between environmental risk factors, including the use of screens, and the diagnosis of ADHD in children. The

authors also concluded that too much screen time can potentially negatively affect children's ability to pay attention and their ability to control their behavior, thus negatively affecting children's cognitive and psychosocial development.

Tezol et al. (2021) examined the relationship between excessive screen time and preschoolers' psychosocial well-being, with findings indicating that, compared to other study participants, preschool children who spent more time using screens had lower levels of emotional stability as well as less social competence. Prolonged screen time may be detrimental to preschool children's psychosocial development and overall well-being. Alotaibi et al. (2020) looked at how technology usage relates to how active your child is when physically active, and when children search mentality active on screens, they search little available time for active physical development. Children spend more active screen-time using Digital Devices and not enough time or opportunity to be physically active, so this study concludes that," generally too much screen is a negative influence on their children.

Lin et al. (2020) looked at how long screen usage time was an emotional factor in language delays and behaviors for toddler-age children who have excessive exposure to screens may have affect for emotion and behavior problems, no other signs or evidence of no language delay has occurred but excessive prolonged screen may negatively impact toddlers' ability to develop socially and as a result of this excessive prolonged screen use, they are less than able to communicate.Kaur et al. (2019) looked at how children under the age of 5 years of age engaged with Digital Media and excessive digital media use led to behavioral problems, sleep patterns, and delay in language development. Researchers state prolonged screen time exposure before the age of 5 may negatively impact cognitive and emotional development of the child.

Madigan et al.(2019) conducted research to explore whether or not screen time affects child's development test results and discovered that children who use screens for longer periods of time perform worse on these developmental tests than do kids who use them for shorter durations of time. In fact, their findings suggest that a child's excessive amount of screen time might negatively influence how well they develop language skills, as well as how they develop motor skills, all of which are required for cognitive, language and motor skill development.

Neophytou, Martinelli and Toll (2019) completed a scoping review on the effects that excessive or prolonged amounts of time spent on screens has had upon children and adolescent's neurodevelopment, learning, memory and mental health, and reported that children who used screens for extended amounts of time demonstrate less cognitive abilities when completing tasks or problems and have poorer academic results than other children who do not use screens as often. Pınar, Şeker and Koc. (2018) conducted a review of the effects that excessive screen time has on children's development in the early years of life and concluded that children who use screens for extended periods of time show evident negative consequences with regard to cognitive functioning, development of language ability and ability to interact socially. In addition, the research indicated a correlation between children's increased amount of screen exposure and their ability to regulate emotions appropriately or achieve typical developmental milestones.

Webster and colleagues (2018). Studied the relationship of screen exposure, physical activity, and fundamental motor skills has been treated in preschool children. They found a relationship between increased use of screens, decreasing levels of physical activity and lowering motor skills. They concluded that too much time spent on a screen would create fewer opportunities for learning through movement and affect physical development in the early years.

Anderson and colleagues (2017) studied the effects of screen media on children's cognitive development. They found that an excessive amount of time spent looking at screen media has a negative impact on children's attention, executive functioning, and learning ability. The authors emphasize that the impact of screen media is dependent on both the content and situation.

Robinson and colleagues (2017) examined the relationship between screen media exposure and obesity in children and adolescent populations. They concluded that an excessive amount of time spent looking at screen media was associated with increased sedentary behaviours, unhealthy eating behaviours, and sleeping patterns

that are disrupted. They concluded that prolonged screen time can have negative impacts on both physical and mental health in children.

Montanari-Dominguez (2017) studied how too much time spent in front of screens can cause negative effects on a child's mental health, as well as their development in the areas of behavior, attention span and social interaction. The author also discusses how prolonged exposure to screens can lead to sleep disruptions and emotional struggles and may result in poor mental health and developmental outcomes for children.

Parent et al. (2016) found that youth who spend a lot of time using screens could also experience higher levels of anxiety, depression, and problems with their behaviors. The authors suggest that excessive screen time can lead to negative impacts on a child's emotional well-being and psychosocial adjustment.

Radesky et al. (2014) looked into children's use of mobile and interactive forms of media, as well as their benefits and risks of screen time. The authors state that interactive forms of media may assist in a child's learning; however, excessive and unsupervised use of screens may cause a child to experience negative impacts on their attention, self-regulation, and ability to form social relationships in the early years of life.

3. Discussion

Studies on screen time use show that it impacts several areas of a child's development such as cognitive, language, behavior, motor skills, and social-emotional functioning. In particular, in the last few years there has been a drastic increase in the availability of screens like phones, tablets, and TVs leading to earlier and more frequent use of screens by young children (Radesky et al., 2014; Kaur et al., 2019). The use of technology to change the way we learn and communicate is evident through research, however, increasing research supports the idea that excessive screen time during early childhood can have negative consequences on a child's development.

Several systematic and scoping reviews (e.g., Neophytou et al., 2019; Muppalla et al., 2023; Wu et al., 2023; Bal et al., 2024) have reported that prolonged exposure to digital media may impact a child's executive functioning, attention span, and ability to learn. For example, Madigan et al. (2019) found that children with increased screen time during the first two years of life performed lower on developmental screening measurements compared to their peers on communication, and problem-solving skills. Furthermore, Anderson et al. (2017) concluded that excessive use of digital media may decrease a child's ability to regulate his/her attention and be flexible in his/her thinking.

The development of language has been one of the areas most affected by media usage. Bhutani and colleagues (2023) and Kuta (2024) both note that high levels of passive engagement in media may delay children's speech development and limit their ability to acquire vocabulary. Dhar and colleagues (2026) found that children aged 1–6 years old with high exposure (2 hours or more/day) to screens had delays in their language and social skills development, which indicates that overuse of screens may be displacing the parent-child interactions needed to support children’s development of communication skills. On the other hand, Lin and colleagues (2020) found no significant relationship between the use of touchscreens and language delays, which indicates that outcomes related to screens may vary depending on factors related to context, for example, the type of media being viewed and the parent's involvement in the activity.

There is evidence that increased screen usage can also impact the physical and motor development of infants and toddlers. Studies by Webster and colleagues (2018), Alotaibi and colleagues (2020), and Bakht and colleagues (2025) found that higher levels of screen time correlated with lower levels of physical activity, as well as delays in both gross and fine motor skill development. Robinson and colleagues (2017) found that children who spend long amounts of time on screens are more likely to become sedentary, have sleep disruptions, and develop unhealthy lifestyle habits, all of which could lead to increased risk of obesity during childhood.

There appears to be a significant impact on behavioral/ socio-emotional outcomes as a result of excessive exposure to screens. For example, findings by Parent et al. (2016) indicate that there were significant

associations between increased screen use and children having higher levels of anxiety, depressive symptoms, and behavior problems. In a similar manner, studies by Tezol et al. (2021) and Xiang et al. (2022) found links between excessive screen time and lower psychosocial well-being and increased behavioral issues/difficulties in preschool children. Additionally, results from Gillioz et al. (2025) suggest that early screen use may influence how toddlers process sensory input, which may lead to difficulties regulating emotions and responding to the environment.

While several researchers (e.g., Panjeti-Madan & Ranganathan 2023) have noted the potential positive effects of interactive and educational digital media when they are utilized in moderation with adult supervision, there is a wealth of literature to suggest that excessive screen time during critical developmental periods (e.g., infancy or early childhood) can negatively affect real world learning experiences and social interactions.

Gaps in Literature

Despite the expanding body of research on screen time and child development, several critical gaps remain evident.

Longitudinal Studies Are Needed,

Cross-sectional study methods dominate the existing literature and limit our ability to establish causal relationships between screen time exposure and developmental outcomes. The existing longitudinal studies examining developmental trajectories over time (e.g., Madigan et al., 2019) do not provide enough evidence to understand the long-term effects of early screen time exposure on cognitive, behavioral, and socioemotional development from early childhood into adolescence.

Research on socioeconomically disadvantaged populations

Current literature places a significant emphasis on urban and middle class populations, while it lacks data on children who live in rural or socioeconomically disadvantaged areas. There are cultural differences related to parenting, technology usage and access to educational resources that may impact how children use screens, as well as what types of developmental outcomes they achieve, but these contextual factors have not been fully explored in the research that is currently available.

Most research has focused on conventional screens (TVs and cell phones), but new advances in technology will soon include more options for learning using artificial intelligence (AI), virtual reality (VR), and augmented reality (AR). What we do know is that these new ways of learning will create a shift in the way children learn and unfortunately we do not have much knowledge of the long-term impacts they will have on cognitive ability, emotional behaviour and the sense of self/identity (due to the immersive and interactive nature of the digital medium).

Future Directions

Future research will be key to exploring how long-term screen time affects children's development through longitudinal and mixed methods approaches. The next stage of research will also need to investigate rural, low-income communities to provide a wider variety of data on how children from various socioeconomic and cultural contexts experience screen time. Finally, as technology is increasingly integrated into learning environments, further research will be essential to provide evidence about the influence that these technologies, such as AI-enabled educational tools and immersive environments, have on children's cognitive, emotional, and neurodevelopmental development. All of this information will assist experts in developing evidence-based guidelines for appropriate, healthy uses of digital media for children.

4. Conclusion

The current environment has made screens (smartphones, tablets, computers, and televisions) commonplace and part of kids' daily experiences, leading to an increase in the frequency that kids are being exposed to screens at younger ages than ever before (Radesky et al., 2014; Kaur et al., 2019). Although screens provide numerous benefits in terms of education and communication, a growing body of research indicates that too much unmonitored screen time might have a negative influence on how kids grow up. The objective of this

review was to analyze old research regarding how too much exposure to screens has an effect on kids' cognitive, language, physical, and socio-emotional development.

In the literature that is reviewed it has been found that extended screen time is related to negative developmental outcomes such as delays in language development; reduced ability for children to concentrate; poor task management or executive functioning; decreased levels of physical activity; sleep problems and increased instances of emotional and behavioural problems.

For example, Madigan et al. (2019) found that as children's level of screen time increases, they demonstrate poorer development in the areas of communication and problem-solving. Similarly, Bhutani et al. (2023) and Kuta (2024) believe that excessive screen exposure inhibits caregiver-child interaction, which in turn contributes to delayed speech and vocabulary development. Additionally, Webster et al. (2018) and Bakht et al. (2025) found that when children have increased screen time, they tend to participate in fewer opportunities for physical activity and this negatively affects their gross motor development.

Parent et al. (2016) and Tezol et al. (2021) have also suggested that prolonged exposure to digital media is associated with emotional and behavioural issues for children and decreased psychosocial well-being overall. However, research supports that the thoughtful use of technology in moderation can lead to improved educational benefits and learning outcomes (Panjeti-Madan & Ranganathan, 2023). As a result, to achieve healthy developmental progression for children requires maintaining balance and being intentional about the use of screens.

To develop evidence-based guidelines for age-appropriate use of screens, parents, educators and policymakers must work together to enact regulations that limit children's exposure to screens while promoting alternative activities (i.e., physical play, reading and face-to-face social interaction). The use of informed parenting practices and policy interventions can help reduce potential negative consequences associated with excessive screen use and support the optimal development and wellness of children living in an ever-growing technology-intensive society.

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