

# Effects of Screen Viewing Time on Children's Early Development

Chen Yue<sup>1</sup>, Nordin Mamat<sup>2</sup> and Seah Peh<sup>3</sup>

<sup>1</sup>Faculty of National Child Development Research Centre, Universiti Pendidikan Sultan Idris, 35900 Tanjung Malim, Perak, Malaysia, <sup>2</sup>Faculty of Human Development, Universiti Pendidikan Sultan Idris, 35900 Tanjung Malim, Perak, Malaysia, <sup>3</sup>Faculty of Human Development, Universiti Pendidikan Sultan Idris, 35900 Tanjung Malim, Perak, Malaysia

To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v13-i4/22926> DOI:10.6007/IJARPED/v13-i4/22926

*Published Online:* 25 October 2024

## Abstract

In the context of the widespread popularity of smart devices, children around the world are generally exposed to screens for too long, and the age of exposure to electronic screens is also getting younger. Research across countries has shown that excessive screen time negatively affects children's cognitive, social, emotional and physical development, particularly affecting language development and attention in early childhood. Urban children in China spend significantly more time watching screens than rural children, and while urbanisation has contributed to the widespread use of smart devices, screen use and the probability of e-screen addiction among rural children are also gradually increasing. Prolonged screen exposure in children can lead to problems such as deterioration of social skills, reduced opportunities for sports, obesity and sleep disorders. Therefore, intervention strategies include adopting restrictive versus instructive regulation, setting daily screen time limits, and promoting parent-child interaction through shared viewing. At the same time, encouraging outdoor activities, reading and hands-on practice are encouraged to cultivate children's comprehensive development and reduce dependence on screens.

**Keywords:** Screen Viewing, Children, Parents, Development, Health, Intervention Strategies

## Introduction

With the rapid development of technology, electronic screens have become an integral part of children's daily life. The gradual increase in children's screen time has caused widespread concern among parents, educators and researchers. Studies have shown that since 1970, the age of children's first exposure to electronic screens has decreased from 4 years to 4 months, and the amount of time that young children spend watching screens has increased, far exceeding the World Health Organisation's recommended daily screen time for children (Al Hosani, Darwish, Ayanikalath, AlMazroei, AlMaashari & Wedyan, 2023). Particularly during the COVID-19 epidemic, the vast majority of countries restricted people's socialising and outdoor activities, which led to children's recreation and learning only through media screens (Monteiro, Rocha & Fernandes, 2021). And the dramatic rise in the number of hours of screen use can easily lead to young children developing a dependence on media screens, which can affect their health and development (Panjeti-Madan & Ranganathan, 2023). However, the

benefits of technological advances for young children cannot be denied. Kim, Wallander and Kim (2024) stated that effective integration of electronic screens and home education can improve the quality of family interactions, and help children develop towards more advanced and complex abilities.

This study provides an in-depth analysis of the prevalence of young children's viewing of media screens, and trends in the duration of viewing by investigating research on the use of media screens in various countries in recent years. The purpose of the study is to help parents and educators to guide children's use of electronic devices, such as computers, tablets, televisions, mobile phones, etc., in a more scientific manner. As well as provide effective intervention strategies for parent education, kindergarten management, and policy formulation, so as to better promote children's overall development and healthy growth. In addition, the study conducted a comparative analysis of the current screen viewing status of children in urban and rural China, which aims to reveal the patterns and potential impacts of children's technology use in different socio-economic contexts. This comparison can help researchers and policy makers better understand the complexity of technology use in children's development and provide a reference for designing interventions that are tailored to the needs of different groups.

### **The Problem Statement and the Important of Research**

The increasing prevalence of smart devices has led to a global rise in children's screen exposure, with many beginning to use screens at younger ages (Seršen, Peštaj & Fekonja, 2024). This trend raises concerns about the negative impacts of excessive screen time on children's cognitive, social, emotional, and physical development, particularly during critical early childhood years (Massaroni, Valentina, Marra, Arcangeli & Daniela Pia, 2024). Research indicates that extended screen time is associated with delays in language development and attention issues. In China, urban children spend significantly more time using screens than their rural counterparts; however, as urbanization progresses, screen use and the risk of screen addiction among rural children are also on the rise. Prolonged exposure to screens has been linked to a decline in social skills, reduced physical activity, obesity, and sleep disturbances (Muppalla, Sravya, Reddy & Himabindu, 2023). Despite existing research, there is a need for a deeper understanding of how screen time impacts children's development across different settings and what interventions can effectively mitigate these risks. This study seeks to address this gap by reviewing existing evidence, comparing screen time effects in diverse environments, and exploring strategies such as regulatory approaches, parent-child shared viewing, and promoting alternative activities to reduce dependency on screens.

The importance and necessity of this study can be demonstrated in several ways. Firstly, the early developmental stages of young children are a time of rapid development of key brain, cognitive, social, and language skills, and prolonged screen use may interfere with the development of these core competencies (Malik, Maqbool, Ali, Azhar, Ullah & Farid, 2022). A number of studies have indicated that increased screen time is strongly associated with negative outcomes such as language delays, weakened social skills, attention problems, obesity, and sleep disorders, so studying its effects is fundamental to preventing potential developmental disorders (Varadarajan, Akila, Karthik, Rajamohan, Krupa & Sathiasakaran Bernard, 2021; Xie, Liu, Wang & Wang, 2024; Yuan, Zhang, Song & Qin, 2024; Li, Cheng, Sha, Cheng & Yan, 2020; Monteiro, Rocha & Fernandes, 2021). Second, with the widespread

availability of electronic devices, screens have become a common tool in parenting for many families, but parents often lack scientific guidance and children are prone to over-reliance on screens, especially in rural families (Luo, Zou, Ji, Tong, Sun & Lin, 2019). Systematic research can provide clear guidelines for parents and educators to help them scientifically guide young children's use of electronic devices. Research on the effects of screen time on young children's development is highly necessary not only to help protect their physical and mental health, but also to provide a scientific basis for the development of intervention policies.

### **General Status of Children's Access to Screens Across Countries**

Currently, children's screen viewing hours show a significant upward trend across countries, reflecting the profound impact of the globalised digital environment on children's lives. With the proliferation of electronic media, touchscreens and other electronic devices have become a ubiquitous element in children's lives (Stamati, Lucas Gustavo, Miller, Elgier, Hauché & Azzollini, 2022). The ubiquity of touch-screen devices has made it the norm for children to be exposed to screens from infancy, a trend that is reflected in several countries and regions. Data show that in both developed and developing countries, the age at which children are exposed to electronic screen devices is gradually decreasing, and screen time continues to increase. For example, data from the Argentinean Paediatric Society indicate that 90% of parents report that their children have their own touchscreen device by the age of 3, while a study of children aged 6 to 36 months showed that approximately 69.2% of parents allow their children to use screens, with the average age of first use being just 11 months (Stamati et al., 2022). Similarly, in Italy 97% of children under 36 months and 89% of children under 18 months have used a digital device at least once (Operto, Viggiano, Perfetto, Citro, Olivieri, de Simone, Bonuccelli, Orsini, Aiello, Coppola & Grazia Maria, 2023). In addition, Tu, Shen, Luo, Mo, Jian, Mei, Zhang, Jin and Qin (2024) stated that in China, 55% of infants were exposed to an electronic screen before the age of 5 months and 96.6% of children had started to use an electronic device by the age of 1 year. Data from the United States and the United Kingdom show a similar trend, with 40% of children under the age of two years having used mobile media, and approximately 51% of children between the ages of 6 and 11 months sitting in front of a touchscreen on a daily basis (Massaroni, Valentina, Marra, Arcangeli & Daniela Pia, 2024).

The penetration of electronic devices in children's early life is increasingly extensive, and relevant institutions in different countries have put forward a variety of guidance for children of different ages. Al Hosani, Darwish, Ayanikalath, AlMazroei, AlMaashari and Wedyan (2023) stated that the American Academy of Paediatrics (AAP) and the World Health Organisation (WHO) recommend that children under the age of 2 years should not be exposed to any screens, and that children aged 2-5 years should not have more than 1 hour of screen time per day. However, the reality is that few parents follow these guidelines, and most children use screens far longer and more often than this recommendation. With Massaroni et al. (2024) stating that only 15% of preschoolers in Canada meet the 1 hour per day screen time limit. And this is particularly evident in the United States, where children use screen time for more than 2 hours per day, with video and television viewing dominating (Panjeti-Madan & Ranganathan, 2023). Studies have found that children's screen time not only increases with age, but also that there is a lack of monitoring and screening of content choices and viewing styles. For example, Seršen, Peštaj & Fekonja (2024) noted that 40% of children were exposed to screens before the age of 2 and watched an average of 67.23 minutes of children's

programmes per day. Similarly, a survey of 35 young children in China showed that 57.3% of children between the ages of 3 and 6 were exposed to electronic screens for more than two hours a day (Liu, Wu, Huang, Yan, Ma, Cao, Gan & Tao, 2021). However, the sample in Seršen, Peštaj & Fekonja's (2024), study showed that although most parents reported supervising their children's viewing of electronic screens, the proportion of parents actually participating in the selection of content and interactions was not high, which leads to the risk of children being exposed to a large amount of low-quality or even harmful content.

On the other hand, Stamati et al (2022), stated that children's screen viewing is mainly focused on learning and entertainment, and that touchscreen devices are widely used for educational purposes, with 73.9% of parents stating that they allow their infants to use touchscreens for learning purposes and 66.3% for entertainment purposes. Children's screen time is mainly spent watching children's programmes, videos and playing video games, and the length of time spent increases significantly with age. research by Seršen et al (2024), shows that children watch children's programmes for between 30 and 90 minutes per day, with the length of time spent increasing with age, e.g., two year olds watch for approximately 40 minutes per day, while six year olds' viewing time increases to 90 minutes per day. For example, two-year-olds watch about 40 minutes a day, while six-year-olds watch up to 90 minutes a day. Currently, there is a global trend towards diversification of children's screen viewing. Television is the most common screen device for children, but smartphones, tablets and computers are also emerging as the main means of accessing digital content. In the UK, 21 per cent of 3- to 4-year-olds have their own tablet, while 1% of children even have their own smartphone (Arumugam, Said & Nik Farid, 2021). In the United States, more than half of children between the ages of 2 and 6 have at least one media device in their bedroom and spend more than two hours a day on screens (Arumugam, Said & Nik Farid, 2021; Varadarajan, Akila, Karthik, Rajamohan, Krupa & Sathiasekaran Bernard, 2021). Italian studies also show that 80% of children start using their parents' smartphones between the ages of 3 and 4 (Nese & Meltem, 2024). In addition, the majority of children between the ages of three and six choose to watch television during meals, which is more prevalent in families with children over the age of two (Nese & Meltem, 2024). This suggests that screen devices are deeply integrated into children's daily activities and cannot be avoided even in traditional interaction settings such as family meals. The current state of children's screen use thus reflects society's reliance on digital media and the lack of related regulation and supervision. While some guiding recommendations have been issued by various countries, their implementation has not been satisfactory. Therefore, more targeted policies and public education are needed to help parents better manage children's screen-using behaviours in order to promote children's healthy development.

### **Comparison of Screen Viewing Hours between Rural and Urban Children in China**

There are significant differences in the current status of screen viewing between urban and rural children in China, and these differences are mainly in the number of screen devices, Internet penetration, home environment, and the education level of caregivers. Urban children will spend more time on screen viewing than rural children, which is associated with much higher internet penetration in urban areas than in rural areas (Wang, Abbey, Kennedy, Feng, Li, Liu, Zhu, Shen, Wadhavkar, Rozelle & Singh, 2023). In addition, this difference is closely related to the greater availability of media devices such as smartphones and tablets in urban areas, resulting in children having greater access to all types of screen devices. Tu, Shen,

Luo, Mo, Jian, Mei, Zhang, Jin and Qin (2024) indicated that currently smartphones and TVs are the types of electronic screen devices that infants are exposed to the most and are the most accessible to them in urban households. For this reason, reducing media exposure should be an important goal of interventions in urban families in order to prevent children from overusing screens (Wang, Abbey, Kennedy, Feng, Li, Liu, Zhu, Shen, Wadhavkar, Rozelle & Singh, 2023). In contrast, rural children's screen use behaviours are closely related to their living environment and family structure. With the gradual increase in internet usage in rural areas, Li, Abbey, Wang, Zhu, Shao, Dai, Jin & Rozelle (2022), stated that the penetration of rural connectivity has grown from 33.1% in 2016 to 55.9% in 2020, but it is still lower than that of urban areas. However, children's screen use in rural areas is associated with constraints in home and community environments compared to the diversity of media devices and richness of media resources in urban areas (Zhu, Yin, Li & Zhou, 2021). For example, rural preschool children's outdoor activities are limited due to factors such as poorer living environments, noisy traffic and lack of school districts, leading to some extent to a bias in favour of choosing to spend more time watching television or using other media devices at home (Wang et al., 2020).

On the other hand, the unique family caregiving environment faced by left-behind children in rural areas complicates their screen use. Parents in rural areas often work outside the home and children are cared for by grandparents who are less educated and often lack effective supervision and guidance for children, making it easier for children to become addicted to screen activities such as television and video games (Xie, Liu, Wang & Wang, 2024; Luo, Zou, Ji, Tong, Sun & Lin, 2019). There is a general lack of education for parents or carers in rural areas about child development and healthy use of technology, which leads to long screen time and unrestricted content for children. In addition to this, Yuan, Zhang, Song and Qin (2024), stated that guardians of left-behind children in rural areas often need to take care of their children while doing housework and farm work, thus smartphones and tablets become 'free babysitters' for the guardians. This has also led to left-behind children's early dominance of the electronic screen, making them dependent on electronic products from an early age. In contrast, in urban families, although grandparents are also the primary caregivers, parents' attention and involvement in children's screen use are generally higher, and grandparents will cooperate with parents' parenting philosophy to some extent, although sometimes they will relax the restrictions on screen time due to indulgence (Hu, Johnson, Teo & Wu, 2020). Moreover, most urban parents are more educated, they are more aware of children's physical activity, and parents act as role models for their children, positively influencing their children's physical activity in their leisure time (Pan, Gao, Jiang, Deng, He, Xia, Zhang & Zhang, 2022). In this comparison, the family structure and caregiving patterns of urban and rural children significantly influenced their screen use behaviours, with parental interventions for technology use more prevalent among urban children, whereas rural children relied more on spontaneous or external factors to regulate their use.

Despite the differences in screen viewing times and patterns between urban and rural areas, the gap between the two has narrowed in recent years, particularly in the context of rising internet penetration in rural areas (Wang et al., 2023), however rural children still face more challenges in screen use, such as a lack of effective regulation and educational resources. (Li et al., 2022) indicated that the government has taken measures to restrict the use of online games by minors in recent years, for example, stipulating that minors should not play video



games for more than one hour per day or three days per week. However, little is known about the optimal and most detrimental factors of screen time for rural children's mental health and all aspects of development, and there is a lack of insight into the impact of other activities such as outdoor time (Wang et al., 2023). Urban children, on the other hand, are better able to balance screen time with other activities due to better educational resources and parental attention, which mitigates the negative effects of prolonged screen time to some extent.

In general, Chinese urban children have significantly higher screen time than their rural counterparts due to higher Internet penetration and media device ownership, but rural children present more potential risks and developmental challenges due to their family structure, education level, and social environment. Therefore, education, family guidance and policy interventions need to be tailored to the current status of screen use among children in different regions in order to promote the healthy use of digital media among children.

### **Effects of Screen Viewing Time on Child Development**

#### *Impact on Physical Development and Health*

The impact of screen time on children's physical development is more significant, especially for health problems associated with sedentary lifestyles. Seršen, Peštaj and Fekonja (2024) stated that when children engage in long screen time, parents report that the most common physical risks include neck, joint, and spinal pains, headaches, musculoskeletal, and obesity, and that these problems accumulate over time to have a significant impact on children's quality of life. Nese and Meltem (2024), further stated that prolonged television viewing by children may lead to a sedentary lifestyle, which in turn increases the risk of obesity. One study stated that an additional hour of television per day in children at the age of five increased the chances of developing obesity by 7% in adulthood (Nese & Meltem, 2024). The promotion of unhealthy foods in television advertisements and children's frequent snacking while watching leads to worsened eating habits and an increased risk of obesity. In addition, screen time can lead to postural problems in children, such as scoliosis and reduced motor coordination (Yuan, Zhang, Song & Qin, 2024). Hu, Johnson, Teo and Wu (2020), also highlighted the negative impact of excessive screen time on posture, motor coordination and spinal development, which further exacerbating physical health problems. In terms of eye health, Massaroni, Valentina, Marra, Arcangeli and Daniela Pia (2024), indicated that prolonged screen viewing can lead to digital eye strain (DES), which manifests itself in symptoms such as dry eyes, blurred vision, and eye discomfort. In addition, prolonged screen exposure in children increases the risk of astigmatism, especially in early childhood, which is positively associated with daily exposure time and total years of exposure (Huang, Gui-You, Schmid, Jing-Yi, Chen-Guang, Guan-Hao, Zeng-Liang & Wei-Qing, 2020).

#### **Cognitive Development and Language Development**

Li et al (2024), suggested that the human brain and cognition are affected by environmental interactions, especially in early childhood. With today's children spending most of their time on new media, numerous studies have shown that excessive screen time can negatively affect children's cognitive development and language development. A study by Al Hosani et al (2023), found that children aged 0-2 years old Excessive television viewing leads to delayed cognitive and language development. Particularly in the context of reduced parent-child interaction, there was a significant association between screen time and delays in speech and language development. Massaroni et al. (2024) noted that excessive screen time significantly increased

the risk of delayed language acquisition and that passive viewing without interaction reduced children's language activities and vocabulary. This phenomenon is particularly evident in infants and toddlers during the critical period of language learning. For younger children, screen time in excess of 2 hours per day increases the likelihood of cognitive and motor developmental delays, and in particular, children exposed to more than 4 hours of screen time per day at 1 year of age show more persistent language deficits (Massaroni, Valentina, Marra, Arcangeli & Daniela Pia, 2024). Also, excessive screen time is strongly associated with reduced attention and limited creativity (Seršen et al., 2024; Hu et al., 2020; Yuan et al., 2024).

### **Social and Emotional Development**

Excessive screen time also has a negative impact on children's emotional and social development. Muppalla, Sravya, Reddy and Himabindu (2023), noted that prolonged screen viewing may increase the risk of mood swings and aggressive behaviours in children, and can even lead to screen addiction. Parents are also generally concerned that prolonged screen viewing by their children may lead to increased mood changes and affect their emotional well-being (Seršen et al., 2024). In addition, a study by Monteiro, Fernandes and Rocha (2022), found that excessive screen time caused children to play in a more passive and isolated manner, and that the development of social skills was inhibited. Hu et al (2020), further stated that excessive screen time was negatively correlated with social development, including attention, socio-emotional, and behavioural problems that in the long term it may lead to attention deficits in adolescence. Children who watch television for long periods of time perform less well academically and are less engaged in the classroom (Priftis & Panagiotakos, 2023). Additionally, a negative correlation between screen time and the development of social skills has been confirmed. Excessive screen time not only weakens children's social interaction skills, but may also trigger behavioural problems such as antisocial behaviour and reduced interest in out-of-school activities (Seršen et al., 2024).

### **Sleep and Behavioural Problems**

The impact of screen time on sleep patterns is also of concern. An increase in screen time and a decrease in sleep time can also have an adverse effect on children's mood and behaviour. Jain et al (2023), noted that the use of screen devices at night interferes with the quality of sleep, and that exposure to blue light in particular may lead to delayed onset of sleep and sleep deprivation, which in turn can exacerbate children's emotional instability. Panjeti-Madan and Ranganathan (2023), showed that for each additional hour of television time, children's daily sleep time was significantly reduced. In addition, Muppalla et al (2023), indicated an association between chronic screen use and negative outcomes such as behavioural problems, decreased academic performance, and depressive symptoms, which were particularly prominent in early adolescence. In this regard, Teicher, Bolger, Garcia, Hafezi, Weiser, McGreenery, Khan and Ohashi (2023), also validated this conclusion with their findings showing that sleep deprivation is strongly associated with decreased processing speed, decreased reasoning ability, and decreased verbal creativity.

### **Positive Effects of Electronic Screens**

While most research highlights the negative effects of screen time, there is also research that suggests that, with appropriate guidance and control, quality screen content may have a positive effect on children's development. Seršen et al (2024), note that high-quality children's programmes can promote language development, enhance social skills, and foster values such

as empathy, tolerance and respect. Moreover, well-designed children's programmes can improve children's language development, expand their knowledge, and help them better understand different cultures and ethnicities (Seršen et al., 2024). Li et al (2020), also mentioned that certain screen media can reduce attention problems and increase children's learning ability and knowledge of the alphabet. Additionally, it has been shown that quality electronic screen play can support parents to have quality interactions with their children, thus helping to create a positive family interaction environment (Kim, Wallander & Kim, 2024). Moderate screen time may also stimulate children's curiosity and creativity by providing varied opportunities for exploration. Therefore, the quality of screen content and how it is used is critical in influencing children's cognitive development.

Overall, the impact of screen time on children's development is complex and multifaceted. Excessive and unguided screen use is often associated with negative outcomes in cognitive, language, social, emotional and physical development. However, moderate and purposeful screen time, especially with quality educational content, may provide positive support for children's cognitive and social development. Therefore, parents and educators should focus on content selection and interaction facilitation when managing children's screen time to maximise its potential benefits while reducing adverse effects.

### **Research Gaps**

In conjunction with current research on children's screen viewing hours, this paper summarises research gaps in several areas. Firstly, many studies focus on short-term outcomes, highlighting a need for longitudinal research that examines the long-term developmental impacts of prolonged screen exposure, especially from early childhood. While differences in screen use between urban and rural children have been identified, there is a lack of in-depth comparative studies that explore how these differences affect developmental outcomes. Understanding how varying socio-economic and cultural contexts influence the relationship between screen time and child development is crucial. Additionally, most research tends to analyze screen time as a whole, without considering the effects of different types of content (e.g., educational vs. entertainment) on cognitive and social development. Although the negative impacts of excessive screen time are recognized, the effectiveness of various intervention strategies—such as restrictive versus instructive regulation and parent-child shared viewing—remains underexplored, necessitating further investigation into the most effective approaches to reducing screen time risks. Another key gap involves the age at which children are exposed to screens, as little is known about how early screen exposure influences developmental trajectories and whether there are critical periods during which children are particularly vulnerable. While the cognitive and physical impacts of screen time, such as language development delays and obesity, have received considerable attention, the effects on children's emotional regulation, resilience, and self-esteem are less understood. Addressing these research gaps is essential for developing a more comprehensive understanding of how screen time affects early childhood development and for informing targeted and effective intervention strategies.

### **Specific Screen Use Intervention Strategies**

The study combines several pieces of literature to analyse effective intervention strategies from multiple research perspectives. The implementation of these interventions not only



helps to reduce children's prolonged screen viewing behaviour, but also promotes children's overall healthy development.

- **Guided Parental Involvement:** also known as guided conditioning. Parents can facilitate children's understanding of and reflection on screen content by discussing the viewing with their children. Parents can increase their child's critical thinking about the content by discussing the content with the child during or after viewing (Seršen, Peštaj & Fekonja, 2024). And in this way children can be taught how to differentiate between useful and useless information, developing their media recognition skills and preventing blind acceptance of content that is not appropriate for their age (Seršen, Peštaj & Fekonja, 2024).
- **Co-viewing and discussion:** also known as social co-viewing, represents the possibility for parents to watch programmes with their children and participate in discussing the content to help their children better understand the screen content (Panjeti-Madan & Ranganathan, 2023). Co-watching can help to improve the level of parent-child interaction. In this regard, Massaroni, Valentina, Marra, Arcangeli and Daniela Pia (2024) stated that when the level of parent-child interaction is higher, children's socio-emotional and cognitive skills are better. In this regard, Xie, Liu, Wang and Wang (2024) emphasised that a positive home environment can mitigate the negative effects of prolonged screen use. Parent-child interactions are particularly important to support children during critical periods of their development so that their cognitive, social and emotional development is better facilitated. In addition, through co-viewing, children can implicitly learn from their parents' reactions and behaviour how to properly understand and respond to screen content and learn to apply this knowledge in their daily lives (Seršen, Peštaj & Fekonja, 2024).
- **Limiting screen time:** also known as restrictive conditioning. A number of studies have suggested that parents should limit daily screen time and adjust the content according to the child's age and developmental stage (Panjeti-Madan & Ranganathan, 2023). Seršen, Peštaj and Fekonja (2024) stated that restrictive conditioning is effective in preventing children's obsession with screens through explicit time management and helps them to maintain healthy screen-use habits and avoid the impact of prolonged screen viewing on their physical and mental development. Chen and Shi (2019) showed that restrictive conditioning was more effective than instructive conditioning in reducing children's screen time, and was particularly effective for young children with poor self-regulation skills. In addition, Arumugam, a/p, Said, and Nik Farid (2021) indicated that parents can control their children's screen exposure by setting up a daily screen time schedule and strictly monitoring the content. Healthy behaviours are usually developed during childhood, so developing good screen viewing hours at an early age can be very beneficial to children's future health (Yi-Ching, Meng-Che Tsai, Strong, Hsieh, Chung-Ying & Lee, 2020).
- **Alternative activities for screen time:** parents can reduce their children's prolonged screen exposure through alternative activities such as outdoor activities, puzzles, and hands-on experiments, while also increasing parent-child bonding and helping to build secure attachments (Panjeti-Madan & Ranganathan, 2023; Xie, Liu, Wang & Wang, 2024).

In addition, Panjeti-Madan and Ranganathan (2023) stated that enrichment activities promote holistic development and reduce young children's dependence on electronic screens.

- Parents lead by example: Parents should reduce their own screen use to set a healthy example for their children. Parents are also advised to follow the '20-20-20' rule (after every 20 minutes of screen viewing, take a 20-second break and look at an object 20 feet away) to reduce digital visual fatigue (Panjeti-Madan & Ranganathan, 2023). Yuan, Zhang, Song and Qin (2024) suggested that parents can intervene in their children's screen viewing behaviour by setting an example. Song and Qin (2024) suggested that parents can intervene in their children's screen-watching behaviour by setting an example, while also accompanying their children to grow positively, helping them to get rid of bad habits and establish a healthy living environment.

□

- Finding inter-agency collaboration: Arumugam, a/p, Said and Nik Farid (2021) suggested collaborating with healthcare organisations, the education sector and the social welfare sector to promote awareness and education on healthy screen use and to help parents and educators better manage children's screen use.

### Conclusion

This paper has been able to learn from several pieces of literature that excessive screen time in early childhood can have a negative impact on children's current and future cognitive, social, emotional, and physical health. Furthermore, poor screen habits in early childhood increase the likelihood that children will become addicted to electronic screens during adolescence. Existing research suggests that excessive screen use may lead to decreased language skills, reduced social interactions, weaker emotional management skills, and increased risk of obesity and sleep disorders in children. Overall, restrictive parental regulation has been found to be the most effective in reducing young children's screen time, especially for children with poor self-regulation skills. Positive home environments and quality parent-child interactions can mitigate the negative effects of screen time. Scientific guidance on the use of electronic devices by young children is important, especially for children left behind in rural areas. Only by balancing screen time with offline activities and developing good media literacy can we avoid the use of screens as a pacifying tool and promote the healthy growth of young children.

## References

- Arumugam, C. T., a/p, Said, A. B., & Nik Farid, D. B. (2021). Screen-based media and young children: Review and recommendations. *Malaysian Family Physician, 16*(2), 7-13. <https://doi.org/10.51866/rv1143>
- Al Hosani, S. S., Darwish, E. A., Ayanikalath, S., AlMazroei, R. S., AlMaashari, R. S., & Wedyan, A. T. (2023). Screen time and speech and language delay in children aged 12–48 months in UAE: a case–control study. *Middle East Current Psychiatry, 30*(1), 47. <https://doi.org/10.1186/s43045-023-00318-0>
- De Craemer, M., Verbestel, V., Cardon, G., Androustos, O., Manios, Y., & Chastin, S. (2020). Correlates of Meeting the Physical Activity, Sedentary Behavior, and Sleep Guidelines for the Early Years among Belgian Preschool Children: The ToyBox-Study. *International Journal of Environmental Research and Public Health, 17*(19), 7006. <https://doi.org/10.3390/ijerph17197006>
- Hu, B. Y., Johnson, G. K., Teo, T., & Wu, Z. (2020). Relationship Between Screen Time and Chinese Children’s Cognitive and Social Development. *Journal of Research in Childhood Education, 34*(2), 183–207. <https://doi.org/10.1080/02568543.2019.1702600>
- Huang, L., Gui-You, Y., Schmid, K. L., Jing-Yi, C., Chen-Guang, L., Guan-Hao, H., Zeng-Liang, R., & Wei-Qing, C. (2020). Screen Exposure during Early Life and the Increased Risk of Astigmatism among Preschool Children: Findings from Longhua Child Cohort Study. *International Journal of Environmental Research and Public Health, 17*(7), 2216. <https://doi.org/10.3390/ijerph17072216>
- Jain, S., Shrivastava, S., Mathur, A., Pathak, D., & Pathak, A. (2023). Prevalence and Determinants of Excessive Screen Viewing Time in Children Aged 3–15 Years and Its Effects on Physical Activity, Sleep, Eye Symptoms and Headache. *International Journal of Environmental Research and Public Health, 20*(4), 3449. <https://doi.org/10.3390/ijerph20043449>
- Kim, K. W., Wallander, J. L., & Kim, B. (2024). Associations of Broader Parental Factors with Children’s Happiness and Weight Status through Child Food Intake, Physical Activity, and Screen Time: A Longitudinal Modeling Analysis of South Korean Families. *International Journal of Environmental Research and Public Health, 21*(2), 176. <https://doi.org/10.3390/ijerph21020176>
- Li, M., Zhao, R., Dang, X., Xu, X., Chen, R., Chen, Y., Zhang, Y., Zhao, Z., & Wu, D. (2024). Causal Relationships Between Screen Use, Reading, and Brain Development in Early Adolescents. *Advanced Science, 11*(11)<https://doi.org/10.1002/adv.202307540>
- Li, L., Abbey, C., Wang, H., Zhu, A., Shao, T., Dai, D., Jin, S., & Rozelle, S. (2022). The Association between Video Game Time and Adolescent Mental Health: Evidence from Rural China. *International Journal of Environmental Research and Public Health, 19*(22), 14815. <https://doi.org/10.3390/ijerph192214815>
- Li, C., Cheng, G., Sha, T., Cheng, W., & Yan, Y. (2020). The Relationships between Screen Use and Health Indicators among Infants, Toddlers, and Preschoolers: A Meta-Analysis and Systematic Review. *International journal of environmental research and public health, 17*(19), 7324. <https://doi.org/10.3390/ijerph17197324>
- Liu, W., Wu, X., Huang, K., Yan, S., Ma, L., Cao, H., Gan, H., & Tao, F. (2021). Early childhood screen time as a predictor of emotional and behavioral problems in children at 4 years: a birth cohort study in China. *Environmental health and preventive medicine, 26*(1), 3. <https://doi.org/10.1186/s12199-020-00926-w>

- Luo, J., Zou, J., Ji, M., Tong, Y., Sun, M., & Lin, Q. (2019). Emotional and Behavioral Problems Among 3- to 5-Year-Olds Left-Behind Children in Poor Rural Areas of Hunan Province: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, *16*(21)<https://doi.org/10.3390/ijerph16214188>
- Monteiro, R., Fernandes, S., & Rocha, N. (2022). What Do Preschool Teachers and Parents Think about the Influence of Screen-Time Exposure on Children's Development? *Challenges and Opportunities. Education Sciences*, *12*(1), 52. <https://doi.org/10.3390/educsci12010052>
- Massaroni, V., Valentina, D. D., Marra, C., Arcangeli, V., & Daniela Pia, R. C. (2024). The Relationship between Language and Technology: How Screen Time Affects Language Development in Early Life—A Systematic Review. *Brain Sciences*, *14*(1), 27. <https://doi.org/10.3390/brainsci14010027>
- Muppalla, S. K., Sravya, V., Reddy, P. A., & Himabindu, S. (2023). Effects of Excessive Screen Time on Child Development: An Updated Review and Strategies for Management. *Cureus*, *15*(6)<https://doi.org/10.7759/cureus.40608>
- Malik, M., Maqbool, S., Ali, A., Azhar, H., Ullah, E., & Farid, A. (2022). Impact of Screen Media Usage on Early Childhood Development. *Pakistan Armed Forces Medical Journal*, *72*(6), 1977. <https://www.proquest.com/scholarly-journals/impact-screen-media-usage-on-early-childhood/docview/2777224743/se-2>
- Monteiro, R., Rocha, N. B., & Fernandes, S. (2021). Are Emotional and Behavioral Problems of Infants and Children Aged Younger Than 7 Years Related to Screen Time Exposure During the Coronavirus Disease 2019 Confinement? An Exploratory Study in Portugal. *Frontiers in psychology*, *12*, 590279. <https://doi.org/10.3389/fpsyg.2021.590279>
- Nese, M., & Meltem, D. (2024). Evaluation of Screen Time in Children Under Five Years Old. *Cureus*, *16*(2)<https://doi.org/10.7759/cureus.54444>
- Operto, F. F., Viggiano, A., Perfetto, A., Citro, G., Olivieri, M., de Simone, V., Bonuccelli, A., Orsini, A., Aiello, S., Coppola, G., & Grazia Maria, G. P. (2023). Digital Devices Use and Fine Motor Skills in Children between 3–6 Years. *Children*, *10*(6), 960. <https://doi.org/10.3390/children10060960>
- Priftis, N., & Panagiotakos, D. (2023). Screen Time and Its Health Consequences in Children and Adolescents. *Children*, *10*(10), 1665. <https://doi.org/10.3390/children10101665>
- Panjeti-Madan, V., & Ranganathan, P. (2023). Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. *Multimodal Technologies and Interaction*, *7*(5), 52. <https://doi.org/10.3390/mti7050052>
- Pan, X., Gao, Y., Jiang, L., Deng, P., He, J., Xia, T., Zhang, A., & Zhang, Y. (2022). Study on the Status of Scientific Fitness Literacy of Rural Left-Behind Minors and the Influence of Family Environment. *International journal of environmental research and public health*, *20*(1), 249. <https://doi.org/10.3390/ijerph20010249>
- Rivera, E., Hesketh, K. D., Orellana, L., Taylor, R., Carson, V., Nicholson, J. M., Barnett, L. M., Löf, M., Koorts, H., Becker, D., Galland, B., Salmon, J., & Downing, K. L. (2024). Prevalence of toddlers meeting 24-hour movement guidelines and associations with parental perceptions and practices. *Journal of Science and Medicine in Sport*, *27*(4), 250-256. <https://doi.org/10.1016/j.jsams.2023.12.008>
- Stamati, M., Lucas Gustavo, G. G., Miller, S. E., Elgier, A. M., Hauché, R. A., & Azzollini, S. C. (2022). Association between electronic media use, development milestones and language in infants. [Asociación entre el uso de medios electrónicos, hitos del desarrollo

- y lenguaje en infantes] *Interdisciplinaria*, 39(3), 151-166. <https://doi.org/10.16888/interd.2022.39.3.9>
- Seršen, S., Peštaj, M., & Fekonja, U. (2024). Parents' Views on Quality Programmes for Children and the Risks and Benefits They Bring to Preschool Children's Development and Learning. *Psychological Topics*, 33(1), 191-214. <https://doi.org/10.31820/pt.33.1.10>
- Teicher, M. H., Bolger, E., Garcia, L. C. H., Hafezi, P., Weiser, L. P., McGreenery, C. E., Khan, A., & Ohashi, K. (2023). Bright light therapy and early morning attention, mathematical performance, electroencephalography and brain connectivity in adolescents with morning sleepiness. *PloS one*, 18(8), e0273269.
- Tu, K., Shen, C., Luo, Y., Mo, Y., Jian, L., Mei, X., Zhang, Q., Jin, L., & Qin, H. (2024). The relationships between screen exposure, parent-child interactions and comprehension in 8-month-old infants: The mediating role of shared viewing and parent-child conversation. *PLoS One*, 19(1)<https://doi.org/10.1371/journal.pone.0296356>
- Varadarajan, S., Akila, G. V., Karthik, N. R., Rajamohan, M., Krupa, M., & Sathiasekaran Bernard, W. C. (2021). Prevalence of excessive screen time and its association with developmental delay in children aged <5 years: A population-based cross-sectional study in India. *PLoS One*, 16(7)<https://doi.org/10.1371/journal.pone.0254102>
- Wang, H., Abbey, C., Kennedy, T., Feng, E., Li, R., Liu, F., Zhu, A., Shen, S., Wadhavkar, P., Rozelle, S., & Singh, M. K. (2023). The Association Between Screen Time and Outdoor Time on Adolescent Mental Health and Academic Performance: Evidence from Rural China. *Risk Management and Healthcare Policy*, 16, 369-381. <https://doi.org/10.2147/RMHP.S384997>
- Wang, Q., Ma, J., Maehashi, A., & Kim, H. (2020). The Associations between Outdoor Playtime, Screen-Viewing Time, and Environmental Factors in Chinese Young Children: The “Eat, Be Active and Sleep Well” Study. *International Journal of Environmental Research and Public Health*, 17(13), 4867. <https://doi.org/10.3390/ijerph17134867>
- Xie, H., Liu, C., Wang, S., & Wang, X. (2024). Screen time and preschoolers' pre-academic and behavioural competence: the moderating role of child characteristics. *Early Child Development and Care*, 194(2), 260–280. <https://doi.org/10.1080/03004430.2024.2303473>
- Yi-Ching, L., Meng-Che Tsai, Strong, C., Hsieh, Y., Chung-Ying, L., & Lee, C. S. C. (2020). Exploring Mediation Roles of Child Screen-Viewing between Parental Factors and Child Overweight in Taiwan. *International Journal of Environmental Research and Public Health*, 17(6), 1878. <https://doi.org/10.3390/ijerph17061878>
- Yuan, R., Zhang, J., Song, P., & Qin, L. (2024). The relationship between screen time and gross motor movement: A cross-sectional study of pre-school aged left-behind children in China. *PloS one*, 19(4), e0296862. <https://doi.org/10.1371/journal.pone.0296862>
- Zhu, C., Yin, X., Li, Z., & Zhou, L. (2021). Psychological Capital Differs Among Rural Left-Behind Children and Is Associated With Emotional and Behavioral Problems. *Frontiers in psychology*, 12, 565385. <https://doi.org/10.3389/fpsyg.2021.565385>