

CONTEMPORARY CHALLENGES: EXPLORING THE IMPACT OF SCREEN TIME ON CHILD NEUROPSY MOTOR DEVELOPMENT

Júlia Ferreira de Almeida

Cruzeiro do Sul, Universidade de Franca –
UNIFRAN

Franca, São Paulo

<https://orcid.org/0009-0000-3012-2226>

Maria Luísa Freitas Cortillazzi

Cruzeiro do Sul, Universidade de Franca –
UNIFRAN

Franca, São Paulo

<https://orcid.org/0009-0004-2113-1664>

Ana Bárbara Veloso

Cruzeiro do Sul, Universidade de Franca –
UNIFRAN

Franca, São Paulo

<https://orcid.org/0009-0003-2701-1906>

Aymê Bastos de Oliveira

Cruzeiro do Sul, Universidade de Franca –
UNIFRAN

Franca, São Paulo

<https://orcid.org/0009-0009-3872-3726>

Dulce Helena Pena de Andrade

Degree in Dentistry by: Universidade
de São Paulo (1983), PhD in Dentistry
(Oral Rehabilitation) by: Universidade
de São Paulo (2006) and Professor at:

``Universidade de Franca``

Franca, São Paulo

<http://lattes.cnpq.br/5090670813486568>

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Abstract: Introduction: Child development is a complex area that encompasses several domains of skills related to children's health. To ensure that these individuals go through this evolutionary process without changes, it is crucial that they are exposed to appropriate stimuli that facilitate their successful development. In this context, the objective of this literature review is to analyze how excessive use of screens by children has the potential to harm child development.

Method: A review of 31 bibliographies from the databases: PubMed, National Center for Biotechnology Information, Scielo, Virtual Health Library (VHL) and Google Scholar was carried out to carry out this work. **Discussion:** This study addresses the increasing integration of new technologies into children's everyday lives, highlighting potential negative impacts in early childhood, such as language delays, deficits in social communication and self-regulation problems. Furthermore, it examines the association between screen time and sleep problems, influencing physical and psychosocial development. In the context of obesity, research reveals significant associations between screen use and increased body mass index (BMI), with interventions that reduce exposure time associated with slower decreases in weight gain. These conclusions emphasize the importance of parents as main caregivers, highlighting the implementation of proactive strategies, such as screen limits and supervision, to promote healthy and balanced child development.

Conclusion: Due to the important negative impact on child development caused by the inappropriate use of digital devices by children, awareness and supervision of those responsible for this habit is essential.

Keywords: Screen Time; Language Development; Television; Sleep Deprivation; Video games

INTRODUCTION

Childhood is a phase of human development in which several morphological and psychosocial changes are contemplated, where Neuropsychomotor Development (NPMD) occurs, which enables the broad development of individuals, learning, elaboration of activities and integration of values, in addition to acquiring important acquisitions motor, cognitive and emotional. (1)

The process of Child Development (ID) occurs in a complex and dynamic way and is obtained through biological and environmental factors (2). As in the first years of life the individual's Central Nervous System (CNS) is in a phase of maturation and continuous transformation, the stimuli from the environment in which the child is inserted and their ways of interacting and relating are important predictors and influencers, so that skills related to language, social, sensory and cognitive domains are learned effectively. (3)

It is known that especially in Early Childhood, a phase that corresponds to birth to 6 years of age, it is important to encourage children to develop through healthy and educational activities, providing stimulating toys and games, as well as quality time and interaction. social and affective with the family environment and community. This has already proven to be very beneficial in acquiring the different domains of development. (4)

Children born in the internet era are being introduced at an increasingly young age to the new technologies available. It is notable that the unrestrained use of electronics at this age is becoming a very common habit, and sometimes encouraged by parents themselves. (5) Currently, children have spent a lot of time exposed to "screens", such as cell phones, video games, computers, tablets and television, causing a negative impact on the cognitive performance and social

interaction of these individuals, in addition to promoting a sedentary lifestyle and changes in development. emotional and behavioral. (6)

In the modern world, with the ease of access to platforms and social networks, which are presented as forms of interaction and fun, these young people have increasingly lost interest in physical activities, healthy games, quality psychosocial relationships and other educational tasks that stimulate cognitive development. (7)

All this exposure to screens during childhood has been the subject of great concern, and according to the relevance of the topic today, the objective of this bibliographic review is to analyze how these technological devices can cause changes in Child Neuropsychomotor Development, mainly within the scope of affective and social interactions, in addition to possible behavioral changes.

METHODOLOGY

This article carries out a bibliographical analysis, in which 31 literary sources were examined throughout the preparation process. For this purpose, the following databases were consulted: Google Scholar, PubMed, Scielo, Virtual Health Library (VHL) and National Center for Biotechnology Information. The research was conducted using the keywords: Screen Time; Language Development; Television; Sleep Deprivation; Video Games, which are verified using the DECS/MESH descriptors.

DISCUSSION

In the current context, it is evident that new technologies, such as mobile and interactive screens, are deeply integrated into the everyday lives of children, considered 'digital natives', growing in a constantly evolving digital ecosystem, driven by the presence of mobile media (8). This digital

immersion becomes even more relevant when considering recent research that points to the potential negative impacts of excessive exposure to screens in early childhood (9). Such impacts are not only limited to language delays, social communication deficits, and self-regulation problems, but also extend to the increasing digital interactions in modern children's environments (9).

Several studies have been dedicated to investigating the effects of using screen media on the expression of behaviors during childhood, covering challenges such as attention deficit, hyperactivity, aggression and delinquent behavior (10). When examining specific computer and video game use, it was found that, unlike television viewing, they are related to more severe depressive symptoms, with video games demonstrating a correlation with anxiety severity (11). These findings align with studies indicating a cumulative impact of high screen time, with effects most pronounced during early adolescence and beyond (11).

In an extensive follow-up study with young children in the United States, a correlation was observed between increased exposure to television before the age of 3 and the manifestation of attention problems at school (10). More specifically, an increase of one standard deviation in television viewing time was associated with a 28% increase in the probability of experiencing attention difficulties during school time (10). These effects persist through adolescence, linking screen media use to conduct disorders, symptoms of attention deficit hyperactivity disorder, aggression, and delinquency (12). The presence of a television in a child's room at age six predicts lower levels of emotional understanding at age eight (13), and gaming has been linked to lower levels of emotional understanding in boys, suggesting that different screen activities have distinct effects

on emotional development based on gender (13).

In the first years of childhood, the development of linguistic skills is fundamental, encompassing the acquisition of vocabulary and phonology through interactions with adults (14). The act of watching television, especially when non-interactive, unless it is a program specifically designed for interaction, can result in deficits in language development (15). Daily exposure of 2 hours to television between 15 and 48 months of age multiplied the probability of delay in language development by four, increasing to six times when exposure began before 12 months (16). Time devoted to solitary television viewing before age 3 correlated with weaker levels of syntax at ages 3 and 4 (17). Children aged 6 months exposed to an average of 2 hours of television per day showed poorer cognitive performance and lower language levels at 14 months compared to those not exposed (18).

Possible explanations for these negative effects include the reduction in interactions between young children and adults during television viewing, with these interactions being fundamental for language development at this stage (15). Furthermore, adult-oriented programming, which children are often exposed to in many studies, may be considered “background television” from the child’s perspective, as they pay little attention and have limited understanding (19).

Screen media use is also associated with reduced sleep duration and poor quality, crucial for the physical and psychosocial development of children and adolescents (20, 21). Studies have revealed that sleep plays a crucial role as a mediating factor between internalizing and externalizing behaviors and the use of screen media. Disruptions in sleep due to the use of screen devices increase the likelihood of manifesting anxious, depressive, withdrawn, aggressive, and oppositional

behaviors (22).

A study of 715 babies and young children in the United Kingdom, aged between 6 and 36 months, revealed a significant association between the frequency of touchscreen device use and various sleep patterns (23). Each additional hour of tablet use was related to an average decrease of 15.6 minutes in total sleep time, comprised of an average of 26.4 minutes less nighttime sleep and an increase of 10.8 minutes of daytime sleep (23). Potential mechanisms include direct displacement of the time available for sleep, resulting in later bedtimes and shorter nighttime sleep duration (24). Media content can increase psychological and physiological arousal, making it more difficult for children to fall asleep and reducing sleep quality (25). Exposure to bright blue light from screens can affect your circadian rhythm, suppressing melatonin and indirectly influencing arousal levels (26).

In addition to biological mechanisms, the type of content (whether prosocial/educational or violent) may also play a role in contributing to the development of emotional and behavioral problems (27).

Furthermore, epidemiological research has consistently revealed significant positive associations between screen use and the incidence of obesity. Some randomized controlled trials have also identified direct causal effects of reducing screen time in community settings, resulting in decreased weight gain in children. For example, in a randomized controlled school trial involving elementary school children, students in the intervention group participated in classroom lessons that addressed reducing time spent watching TV and video games over 6 months. Although both groups showed increases in body mass index (BMI) during the school year, statistically significant reductions in TV consumption as well as relatively slower

increases in BMI were observed in the intervention group (28).

Additionally, a recent cross-sectional study conducted in the United Kingdom (N = 4,495), employing children's self-report measures, objective assessments of physical activity, fasting cardiometabolic risk markers, and anthropometric measurements, identified robust and graded associations between screen time and adiposity (29). This finding is in line with several previous cross-sectional studies conducted with children in Denmark, Estonia, and Portugal (30).

Parents play a crucial role as primary caregivers, offering a unique opportunity to implement behavioral control at home through observation and rule-setting (31). Interventions aimed at improving common parenting techniques have been effective in promoting desirable behaviors in children (31). Parental controls, manifested by additional settings and password protections on various technological devices such as televisions, laptops, and cell phones, offer a viable solution to parents' challenges regarding their children's screen time (31). In this sense, the imposition of prudent limits and close supervision by parents are valuable strategies to mitigate the potential adverse impacts associated with the excessive use of electronic devices by children. By taking a proactive approach to managing screen time, parents play an essential role in promoting healthy, balanced child development.

CONCLUSION

Considering the analyzes presented, we found that the excessive use of digital devices has a negative impact on neuropsychomotor development, harming both the physical and mental health of children. This habit can significantly limit the ability for social interaction, substantially contributing to the emergence of psychological disorders, such

as depression and anxiety. Furthermore, excessive exposure to screens is associated with reduced sleep quality, with possible implications for physical and psychosocial development.

Therefore, it becomes clear that excessive exposure to screens is replacing healthy activities and games, essential as stimuli for child development, preventing cognitive delays or behavioral changes. Furthermore, when considering the relationship between screen time and the incidence of obesity, it is crucial to emphasize the importance of a proactive approach to ensuring healthy and balanced child development.

Despite the undeniable benefits brought by the digital age, it is essential to recognize that the conscious use of these technologies, from the first contact, is essential, especially for children, who become digital users at an increasingly early age. In this sense, it is up to parents and guardians to closely monitor and carefully regulate the use of these devices, since long-term harm occurs from the earliest years of childhood. This proactive approach is essential to ensure healthy and balanced child development, preserving physical and mental well-being and combating potential adverse impacts.

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