

Children and the use of electronic devices: From discovery to addiction

Dr. Amaria Guenaoui ²	Dr. Hichem Bensaada ¹
Tlemcen University, (Algeria)	Ain Temouchent University, (Algeria)
amaria.guenaoui@univ-tlemcen.dz	hichem.bensaada@univ-temouchent.edu.dz

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Abstract:

As we all know, the use of digital devices has become increasingly common in children's daily lives. That is why we consider it important to take into account their possible effects, especially the negative effects that the excessive use of these devices can have on their development. In this study and by means of *the exploratory-analytical method*, we want to shed light on what specialists in neurological and psychosocial child development think about this phenomenon that we as parents experience in our homes. For this reason, we investigate the risks associated with the abusive use of digital devices, such as tablets, smartphones, among others, in the development of children, which according to our reasoning can have a negative impact on various aspects of their lives. We also propose solutions and strategies to promote a balanced and healthy use.

Keywords: devices; digital; children; impact; psychological development.

Introduction

In the digital age we live in, electronic devices are omnipresent, and their influence on daily life extends to all ages, including childhood. The increasing use of digital devices by children raises significant questions about their impact on child development. While these technologies offer unprecedented opportunities for learning and interaction, they also generate concerns about potential negative effects on key aspects of children's cognitive, emotional, and social development.

In this study, we will delve deeply into the impact of digital device use on child development, examining its effects on areas such as cognitive, emotional, social, and physical development. Additionally, we will discuss the importance of the role of parents and caregivers in regulating screen time and promoting a healthy balance between digital life and offline experiences to ensure optimal child development in the digital age.

¹ Hichem Bensaada is a permanent professor and holds a PhD in modern literary criticism in the Department of Arabic Language and Literature at the University of Ain Timouchent.

² Amaría Guenaoui is a permanent professor and holds a PhD in Hispanic linguistics in the Department of Spanish at the University of Tlemcen.

1. Literature Review

Studies have distinguished parental perceptions regarding children's use of various technologies, as well as the development of parental control mechanisms. On one hand, in a study conducted with parents in the United States, Vittrup, Snider, Rose, and Rippy (2016) report that parents consider their children under six years old accessing various technological devices positively, even though this contradicts the views of education and health experts.

On the other hand, according to research conducted in Spain, Gabelas and Lazo (2008) explain that parents' main concerns are related to the content children can access and the control of the time spent in front of a screen.

Similarly, Sánchez (2008) establishes the relationship between technology, childhood, and relational dynamics, linked to the existing digital divide, developing the idea that the greater knowledge possessed by children and young people limits the reflective access adults can have regarding technology. He confirms that: *“children enjoy a higher internet and mobile phone penetration rate than adults, stimulated within an electronic learning framework”* (p. 33), and that they must interact with adults who do not share the same technology access and usage skills. Likewise, he notes that children who do not have access to technologies are excluded from social environments where they develop. In the following table, we summarize the main opinions of psychology and pediatrics specialists:

Authors	Opinions
Jean M. Twenge (2017)	Warns about the possible negative effects of excessive device use on children's mental health.
Sherry Turkle (2015)	Highlights the importance of setting clear boundaries and promoting face-to-face communication in the digital age.
Sonia Livingstone (2016)	Advocates for a more balanced perspective that acknowledges both the risks and benefits of technology.
Jenny Radesky (2008)	Emphasizes the importance of quality interaction both on-screen and offline for child development.
Anya Kamenetz (2018)	Suggests practical strategies to foster a healthy balance between screen time and other offline activities.
Catherine Steiner-Adair (2013)	Emphasizes the importance of emotional connection and quality family time versus digital device use.

Michael Rich	Proposes an approach based on "mindful parenting," involving reflection and informed decision-making about technology use at home.
Dimitri A. Christakis (2009)	Warns about the potential negative effects of excessive device use on brain development, especially in early childhood.
Sara DeWitt	Advocates for a positive approach recognizing the educational and creative potential of technology when used balanced and supervised.
Gary Small (2008)	Stresses the need for a multidisciplinary approach combining scientific research with education and clinical practice to address the challenges of device use in child development.

Table: Summary of Authors' Perspectives on the Impact of Digital Device Use on Child Development. Own elaboration

As we can see, the authors mentioned above address the topic of the impact of digital device and technology use on child development and family life. While each author addresses different aspects and nuances, their works share concerns and recommendations on how to manage screen time and promote a healthy balance in the digital age.

These opinions also reflect a variety of perspectives on the subject, ranging from warnings about potential risks to promoting practical strategies for addressing the use of digital devices in child development, including the importance of emotional connection, mindful parenting, the effects on brain development, and the educational potential of technology.

2. Child Development and Use of Electronic Devices

Child development and the use of digital devices are closely interrelated in the modern era. While technology can offer educational and entertainment benefits, excessive or inappropriate use can significantly affect children's cognitive, emotional, social, and physical development.

Changes in child development can be appreciated in both quantitative and qualitative terms. According to Papalia (2002), quantitative change is defined as “...*the variation in the number or amount of something, such as height and weight*”; in other cases, it could be the increase in the number of words or phrases in children's vocabulary. Conversely, qualitative change is defined by the same author as “...*a change in character, structure, or organization, such as the nature of a person's intelligence, the way the mind works.*”

This author makes a significant consideration, noting that both types of developmental changes are interrelated, considering that brain development both before birth and during childhood is fundamental for future physical, cognitive, and emotional development. Quantitative change implies that at birth, the brain weighs only 25% of what an adult brain will weigh; by three years old, it weighs about 90%. By six years old, it has almost reached adult size.

The use of digital devices by children can affect their cognitive and motor development in various ways. Some digital applications and games are designed to stimulate cognitive skills such as logical thinking, problem-solving, and creativity. However, excessive screen use can interfere with language development, attention, and memory, especially if it involves passive and non-interactive activities. In this regard, according to Dr. Medina (2016), the reasons for limiting access include:

- a. Brain development of the child;
- b. Delay in child development;
- c. Childhood obesity;
- d. Sleep disturbances;
- e. Mental illness;
- f. Aggressive behaviors in childhood;
- g. Attention deficit;
- h. Childhood addiction;
- i. Too much radiation;
- j. Overexposure.

In the same context, Ann Hui (2013) in her article "Should a 4-Year-Old Own a Smartphone?" states that special cell phones for children's use already exist. Additionally, applications like 'Kytephone' manage the functions accessible to teenagers and the corresponding usage time. Parents even have remote access to their children's device usage information, such as the time spent on specific games, who they communicate with, what photos they take, and to whom they send them.

The same author also notes that tablets called Nabi, specifically designed for children, are available. These electronic tablets are intended as educational tools with learning-based applications and a list of programs pre-approved by adults (Hui, 2013).

Regarding emotional development, time spent using these digital devices can have a negative impact. Exposure to inappropriate or violent content can influence emotional perception and understanding, while overexposure to social networks can contribute to personal issues such as low self-esteem, anxiety, and depression.

Furthermore, the use of electronic devices can affect children's social skills. Spending long periods in front of a screen can reduce opportunities for face-to-face interaction with other children and adults, potentially hindering the development of social skills such as empathy, verbal and non-verbal communication, and conflict resolution.

Similarly, time dedicated to these devices can affect children's physical health. The sedentary lifestyle associated with prolonged screen time can contribute to health issues such as obesity, poor posture, and sleep disorders.

It is important to recognize that the impact of digital device use on child development can vary depending on the child's age, the type of content consumed, and how technology is used. Therefore, it is essential to establish clear limits on screen time, supervise the content children have access to, and encourage a healthy balance between digital time and other offline activities that promote comprehensive and healthy development.

3. Impact of Electronic Device Use on Child Development

This topic is of great relevance and complexity in the digital age. In addition to what we have mentioned earlier, we present some key considerations:

- While digital devices can offer opportunities for language and reading learning through educational apps, excessive screen time can interfere with language development and reading skills if it replaces time dedicated to more interactive and enriching activities such as reading printed books and face-to-face conversation.

- It is important for parents to set clear limits on screen time and supervise the content their children access online. Using parental controls and actively participating in children's digital activities can help mitigate some of the potential negative effects of digital device use on child development.

The use of electronic devices in child development is a topic that has been widely studied and debated. Below are some of the main impacts, both positive and negative, that these devices can have on children:

a. Positive Impacts:

- *Access to Information and Education:* Electronic devices can be a powerful educational tool. Through educational applications, interactive games, and multimedia content, children can learn academic skills, languages, mathematics, and science in a fun and engaging way.

- *Development of Technical Skills:* Early familiarization with technology can prepare children for an increasingly digital world. Using devices teaches them basic technical skills, such as internet navigation, application usage, and understanding computer concepts.

- *Cognitive Stimulation:* Some games and applications are designed to stimulate critical thinking, problem-solving, and creativity. These can help develop important cognitive skills from an early age.

- *Social Connection:* Electronic devices allow children to stay in touch with friends and family through video calls and social media, especially in situations where physical contact is not possible.

b. Negative Impacts:

- *Reduction in Physical Activity:* Excessive screen time can lead to a decrease in physical activity, contributing to health problems such as childhood obesity and other sedentary lifestyle-related disorders.

- *Sleep Problems:* Using electronic devices before bed can negatively affect sleep quality. The blue light emitted by screens can interfere with the production of melatonin, a hormone that regulates sleep.

- *Social and Emotional Development:* Excessive screen time can limit face-to-face interactions, which are crucial for developing social and emotional skills. Children may have difficulty interpreting non-verbal cues and developing empathy.

- *Mental Health Risks*: Improper use of social media and other digital platforms can expose children to risks such as cyberbullying, social pressure, and constant comparison, which can contribute to anxiety and depression.

- *Attention and Concentration Difficulties*: Overexposure to fast-paced and changing digital stimuli can affect children's ability to concentrate and maintain attention on tasks that require sustained and deep effort.

Consequently, although digital devices can provide educational and entertainment benefits, it is crucial to use them in a balanced and supervised manner to avoid any negative impact on child development.

4. Use of Electronic Devices by Children: From Discovery to Addiction

Children's use of electronic devices has experienced rapid growth in recent decades, as digital devices have become ubiquitous in modern society. This phenomenon has gone through various stages, from being a tool for discovery and learning to, in some cases, becoming an addiction.

In the initial stage, children's use of electronic devices can be beneficial. These devices offer access to a wide range of educational and entertainment resources, which can stimulate curiosity, creativity, and learning. Many parents and educators have seized this opportunity to integrate technology into the education and development process of their children.

However, as children spend more time in front of screens, there is a growing risk of developing excessive dependence on electronic devices. This dependence can manifest in various forms, such as difficulty disconnecting from devices, irritability when their use is limited, and decreased interest in activities outside the screen.

Addiction to electronic devices in children can have negative consequences for their physical, mental, emotional, and social health. As many pediatric and psychology specialists affirm, excessive screen time can contribute to problems such as obesity, deterioration of social skills, lack of sleep, anxiety, and depression.

To address this issue, it is important for parents and caregivers to establish clear limits on the use of electronic devices and promote a healthy balance between screen time and other activities. This includes encouraging outdoor play, reading, family interactions, and sports. Active and quality parental involvement is essential to ensuring children use technology in a balanced and beneficial way.

5. What Can Be Done to Prevent This Addiction?

To prevent addiction to electronic devices in children, a series of measures can be taken that promote healthy and balanced use of technology. Here are some key recommendations:

- ✓ *Set Clear Limits on Screen Time*: Establish rules about the amount of time children can spend using electronic devices each day and stick to those limits. The American Academy of Pediatrics (AAP) recommends that children aged 2 to 5 years should have no more than

one hour of screen time per day, and for older children, limits should be based on the child's age, developmental stage, and individual needs.

- ✓ *Supervise and Select Appropriate Content:* Make sure the content children access is age-appropriate, educational, and non-violent. Use parental controls to filter content and regularly review what children are watching and playing.
- ✓ *Encourage Physical and Outdoor Activities:* Promote physical activity and outdoor play to balance screen time. Participation in sports, family walks, and outdoor games can help reduce dependence on electronic devices.
- ✓ *Foster Interpersonal Interaction:* Encourage children to interact with family and friends in real life. Face-to-face communication is essential for the development of social and emotional skills.
- ✓ *Lead by Example:* Parents and caregivers should model balanced and healthy use of technology. Limiting personal screen time and engaging in non-digital activities can positively influence children's behavior.
- ✓ *Create Technology-Free Spaces and Times:* Designate certain areas of the house, such as the dining room or bedrooms, and certain times, such as family meals or before bedtime, as screen-free zones and moments. This encourages interpersonal interaction and helps establish healthy habits.
- ✓ *Educate About Responsible Use of Technology:* Teach children to use technology responsibly and critically. This includes understanding the potential risks of excessive use and the importance of balancing digital activities with other forms of play and learning.

In summary, to prevent addiction to electronic devices in children, it is essential to set clear limits, supervise content, encourage physical activities, promote interpersonal interaction, lead by example, create screen-free spaces and times, and educate about responsible use of technology. These measures can help children develop a healthy and balanced relationship with technology.

6. How to Keep Children Away from Smartphones and Other Digital Devices?

First and foremost, before asking ourselves how to keep our children away from these devices, we need to investigate and identify the main causes of a child's attachment to the device. It can be said that when parents use their phones as a means to reward their child, this undoubtedly fosters the child's attachment to the mobile device, similar to when parents use the mobile as a way to occupy or distract the child. Adults should also be aware of their own use of digital devices in front of children. It is advisable to model balanced and appropriate behavior to help establish healthy expectations.

Secondly, when parents use their mobiles for long hours in front of the child, the child imitates them, learns from them, and wants to do the same. Keeping children away from digital

devices is indeed a challenge, but there are effective strategies to promote a healthy balance between screen time and other activities. Below are some strategies:

- i. *Set Clear Boundaries and Rules:* Establish clear guidelines about when and how long children can use digital devices. Consistency is key to helping children understand and adhere to these rules.
- ii. *Promote Alternative Activities:* Encourage activities that do not involve screens, such as outdoor play, reading, arts and crafts, or family board games.
- iii. *Be a Role Model:* Demonstrate balanced and mindful use of digital devices yourself. Children are likely to follow your example.
- iv. *Create Tech-Free Zones:* Designate certain areas of the home, such as the dining room and bedrooms, as tech-free zones to encourage more face-to-face interaction.
- v. *Engage in Joint Activities:* Spend quality time with your children doing activities that do not involve screens. This strengthens your bond and shows them that fun can be had without digital devices.
- vi. *Educate About Digital Use:* Teach children about the impact of excessive screen time and the importance of a balanced lifestyle. Helping them understand why limits are necessary can foster their cooperation.
- vii. *Gradual Reduction:* If children are heavily reliant on digital devices, gradually reduce screen time rather than eliminating it all at once. This approach can make the transition smoother and less resistant.

By implementing these strategies, parents can help their children develop healthier habits and a more balanced approach to technology use.

7. Discussion of results

The exploratory analysis of the impact of digital device use on child development reveals a complex interplay between benefits and risks. On one hand, digital devices offer significant educational and cognitive stimulation opportunities, such as access to interactive learning apps, development of technical skills, and enhanced creativity. These positive aspects align with findings from experts like Sara DeWitt and Jenny Radesky, who emphasize the potential of technology to foster learning and quality interactions when used appropriately. However, the data also highlights substantial risks associated with excessive or unsupervised use, including delays in cognitive and language development, reduced physical activity, sleep disturbances, and mental health challenges. These findings are consistent with warnings from researchers like Dimitri A. Christakis and Jean M. Twenge, who stress the potential negative effects on brain development and emotional well-being.

A critical observation from the analysis is the dual nature of digital device use, which can either support or hinder child development depending on context and moderation. For instance, while educational apps and games can enhance problem-solving and creativity, excessive screen time often replaces essential offline activities such as face-to-face interactions, physical play, and

reading. This imbalance can negatively affect social skills, emotional regulation, and physical health, as noted by Catherine Steiner-Adair and Sherry Turkle. Furthermore, the exploratory results underscore the importance of parental involvement and structured guidelines. Experts like Michael Rich and Anya Kamenetz advocate for mindful parenting strategies, including setting screen time limits, supervising content, and modeling balanced technology use to mitigate risks.

The findings also highlight the need for a multidisciplinary approach to address the challenges posed by digital device use in child development. As Gary Small suggests, combining scientific research, education, and clinical practice can provide a more comprehensive understanding of the issue. The exploratory results emphasize that while technology is an integral part of modern life, its impact on children must be carefully managed through proactive measures. These include promoting alternative activities, creating tech-free zones, and educating children about responsible digital use. By fostering a balanced approach, parents and caregivers can help children reap the benefits of technology while minimizing its potential harms.

Conclusion

The use of digital devices in childhood can have both positive and negative effects on child development. While they offer unprecedented opportunities for learning and interaction, they also raise significant concerns about their impact on children's cognitive, emotional, social, and physical development.

The role of parents and caregivers is essential in regulating screen time and promoting a healthy balance between digital life and offline experiences. By setting clear limits, supervising content, encouraging physical activities, fostering interpersonal interaction, leading by example, creating screen-free spaces and times, and educating about responsible use of technology, we can ensure that children develop a healthy and balanced relationship with digital devices. By adopting these measures, we can help children harness the benefits of technology while mitigating potential negative impacts, thus ensuring their optimal development in the digital age.

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