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POTENTIAL RISKS OF SCREEN EXPOSURE TO A TODDLER'S DEVELOPMENT. CLINICAL ILLUSTRATION: THE CASE OF LITTLE LEITH

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Abstract

All types of screens captivate babies and children, quickly leading to dependence, Screen addiction is a growing concern among children. Excessive screen time has been associated with delays in cognitive, psychological, and social development. Healthcare professionals must educate parents about these risks. We will present the case of little Leith, a clinical case of a 2-year-old boy exhibiting developmental delays across multiple domains. We will explore the potential role of excessive screen time and describe the psychological intervention provided to the child and his mother.

Keywords: Screen exposure; Toddler’s development; Potential risks; Psychological intervention

“ Before screens, we used to put children in front of the window.
Today , we put them in front of screens”

Serge Tisseron

1. Introduction

Since the invention of television and the subsequent rise of electronic media, screens have become a staple in family life. Advancements in screen technology have led to the creation of touchscreen mobile devices that can handle multimedia streaming, video calls, and interactive apps. These devices are user-friendly, even for infants with limited motor skills. (Adams, Kubin, and al,2023, e97)

The screen is defined as a limited, framed surface that influences the visibility and legibility of content.(Seux, 2014)

Screen time is the amount of time spent looking at digital screens. The World Health Organization (WHO) suggests limiting screen time for children under five to one hour per day. However, many parents and guardians are not aware of this guideline and let their children use digital devices excessively. The existence of screens that serve as a comfort object (or security blanket / transitional object).(Schoenacker,Missonnier, 2023).

Most pediatric organizations worldwide advise against screen time for children under two. They recommend avoiding television, videos, and games, except for video calls supervised by parents. This advice is backed by research linking excessive screen exposure to negative developmental and behavioral issues in young children.

Studies show that parents often use screens to keep their children occupied or to provide educational opportunities. These reasons are linked to increased screen exposure. While the connection between other parental motivations and screen time is less clear, it's important to understand how these factors influence how much time infants spend with screens.(Campos, Kcrmar, and al ,2023).

The issue of screens and their use by children and adolescents is today at the heart of the—often anxious—concerns shared by parents, teachers, and childhood professionals, including psychologists. Among these concerns, the one relating to the impact of screens on children's learning and social behavior is recurrent.(Chagnon, Azoulay, 2022).

Children begin to understand content by the end of their sec- ond year . Tere is solid evidence that infants and toddlers have difculty transferring new learning from a 2D representation to a 3D object (e.g., from screen to real life) and are unlikely to learn from TV at this age. By contrast, they learn intensely through face-to-face interaction with parents and caregivers. Early learning is easier, more enriching and developmentally more efficient when experienced live, interactively, in real time and space, and with real people.(Lankveld, 2021)

1.1. Literature review:

1. Basic concepts:

Screen Time:

In recent decades, the availability of television programs designed for infants has grown significantly, leading to increased screen time and earlier exposure to media among young children.(Guellai, Somogyi, and al, 2022).

Watching digital screens for more than 25-30 hours a week can be considered a behavioral addiction. This means the person craves the positive feelings they get from screen time and struggles to stop, even if it's harmful. .(Arguedas, Cedeño, and al,2022,p03)

Toddlers:

A toddler is a young child who is learning to walk or has recently started walking. They are older than babies but younger than elementary school children.

A toddler is a child in the early stages of walking, between infancy and preschool age.

A toddler is a young child who is taking their first unsteady steps, typically aged around one to three years old.(Cambridge Dictionary,2024)

2. Babies/Toddlers learn the most from human interaction:

Patricia Kuhl, a renowned brain scientist, has found that babies learn best from interacting with humans. Her studies show that even engaging videos don't compare to the learning that occurs when babies interact with a real person. This is why the World Health Organization recommends limiting screen time for young children, especially for those under two years old.

Children need to learn to focus and concentrate to succeed. This ability begins developing early on, when their brains are more receptive to their surroundings. Brains need external stimulation to grow and develop, and they need time to process this information. Reading aloud to children allows them to process words, images, and sounds. However, the constant stream of on-screen information can negatively impact their attention span and focus (Unicef, 2024)

3. Child neurodevelopment:

Child neurodevelopment is how a child's brain grows and adapts to their environment. It involves interactions between the child and their surroundings, both inside and outside. The brain is flexible and can change in response to new experiences. This flexibility is important for developing cognitive skills, like problem-solving and self-control. These skills are built during the first few years of life, which is a crucial time for brain development.

Child neurodevelopment is the process of a child's brain growing and developing. It's influenced by both internal factors, like brain structure, and external factors, like the environment. The early years of life are particularly important for brain development, as this is when many key cognitive skills are formed.(Arguedas, Cedeño, and al,2022,p 02)

4. The profound negative impacts of excessive screen time on children's health, happiness, and prospects:

As the Academy of Sciences pointed out in its 2013 report on "Children and Screens": digital evolution has significant positive impacts by enhancing the acquisition of knowledge and skills, and by contributing to the formation of thought and the social integration of children and adolescents. (Sur le bon usage des écrans, 2024)

The impact of screens on brain development and the acquisition of fundamental skills:

Overexposure to screens can have detrimental effects on brain development and the acquisition of essential skills. Children who spend excessive time in front of screens are at a higher risk of language delays. A recent study by Quebec and American researchers underscored the long-term consequences of early screen exposure. Each additional hour of television viewing during toddlerhood was associated with poorer academic outcomes at age 10, including reduced motivation for school and diminished math abilities. Furthermore, excessive early screen time was linked to lower levels of autonomy, perseverance, and increased social difficulties, such as being ostracized by peers. (Sur le bon usage des écrans, 2024)

Despite the American Academy of Pediatrics' recommendation against screen exposure for children under 24 months. Research examining the impact of television on young children suggests that these programs may not be as beneficial as previously thought. While some studies have shown positive associations between certain children's TV programs and language development, others have found negative effects on language, cognitive, and attentional skills. Additionally, background television can be a distraction for young children. (Anderson, Pempek,2005)

Regarding our children's well-being and balance:

According to a survey conducted by Public Health England (the UK's Department of Health), children who spend excessive time in front of screens (television, computer, console or mobile phone) are reported to be less happy, more anxious and more depressed than others. Beyond four hours a day, the risk of developing emotional problems and low self-esteem is significantly increased. This screen time also encroaches on time spent in other recreational activities (sports, playing with friends), which are essential for learning certain values (sharing, respect for others) and have a recognized positive impact on children's well-being,

Study conducted among 42,000 young people (aged 8 to 15).

Concerning behavior: children who spend a lot of time exposed to violent content (video games or television) are more aggressive and more likely to fight, and are more impulsive. Moreover, excessive exposure for younger children can lead to a passive attitude towards the world around them. (Sur le bon usage des écrans, 2024)

Regarding health: excessive screen consumption contributes to reduced time spent in physical activities and can encourage snacking. The combination of the two can lead to weight gain. Similarly, according to a recent study conducted by a team of researchers from the University of Zaragoza and Sao Paulo, screen exposure of more than two hours a day is associated with a 30% increased risk of hypertension in children." (Sur le bon usage des écrans, 2024)

Screens and sensory processing disorders in toddlers:

Jama Pediatrics has recently published a study revealing that infants under 2 who are exposed to screens may be at increased risk of developing sensory deficits, such as those associated with autism.

The study relied on data from the National Children's Study (NCS), a longitudinal study tracking 1,471 children from 2011 to 2014. Participants were assessed for digital media exposure at 12, 18, and 24 months, and their sensory processing was evaluated around 33 months. The study examined four sensory processing patterns: low registration, sensation seeking, sensory sensitivity, and sensation avoidance. Findings revealed a link between increased screen time at specific ages and later atypical sensory behaviors. (Hallo,2024)

At 12 months, increased exposure to screens (television or video) was linked to a twofold higher probability of developing atypical sensory processing. It is important to remember that sensory processing is crucial as it involves the brain's integration of sensory information (such as sight, sound, touch) to form appropriate responses. Adequate sensory processing is essential for daily functioning and well-being. Greater screen exposure at 18 months was associated with more frequent low registration and sensation avoidance, a pattern where children actively try to limit sensory input. At 24 months, longer screen time was linked to more frequent behaviors of sensation seeking, sensory sensitivity, and sensation avoidance. As a reminder, the recommendations of pediatric societies are: "no screens before 3 years old".(Hallo,2024)

The results suggest that early-life digital media exposure may be a potential risk factor for the development of atypical sensory profiles. The researchers highlight the need for further research to understand this association, particularly in relation to autism spectrum disorders, and to assess whether reducing screen exposure at a young age can improve later sensory outcomes."(Hallo,2024)

Jonathan Bernard, from the Center for Research in Epidemiology and Statistics (Inserm), emphasizes that it's not just the amount of time spent on screens, but the context in which screens are used that significantly impacts individuals.(Rosier,2023)

Despite expert warnings, baby and toddler media products, such as the popular "Baby Einstein" series, have been widely available for years, often claiming to stimulate and educate young children. However, substantial evidence indicates that screens are ineffective teaching tools for infants and toddlers. Instead of promoting learning, they can interfere with essential face-to-face interactions that are crucial for a child's development. (Pappas, 2022).

Screens and Children: A Detour from Fundamental Learning

Screens can harm children in two ways: they are addictive and can take away time from important learning activities. Because screens are so addictive, children may find it hard to stop using them, even if it means missing out on essential skills. The use of digital tablets in families has made this problem worse. (Dieu Osika, Duflo, and al, 2017).

Screens: A Barrier to Learning

For many children, screens have become the main source of stimulation and education. However, screens are different from other objects. They can be addictive because they overstimulate children's attention in a way that is not helpful. This can lead to problems with voluntary attention, which is important for learning.

Screens Disrupting Children's Sleep

Screens can also disrupt children's sleep. Many children stay up late to watch screens, which can lead to poor sleep quality. Additionally, some children may wake up early to watch their favorite shows, which can further disrupt their sleep. Studies have shown that limiting screen time in the morning can help children sleep better. (Dieu Osika, Duflo, and al, 2017).

Screens: An Object of Capture and Dependence

Children can become very emotionally attached to screens. When screen time is taken away, they may react with anger or distress. This can make it difficult for parents to set limits on screen use.

Screens: An Obstacle in the Child's Social Construction

Screens can limit children's social interactions and prevent them from learning important skills. (Dieu Osika, Duflo, and al, 2017).

Parents-children and digital tools:

Parenting in the digital age and, more broadly, digital literacy (or education on digital tools) are issues that have become central at a time when the use of these tools is omnipresent in the daily lives of several generations.(Haddouk,2021)

Parenting today cannot ignore the omnipresence of digital tools, even as generational differences in their use persist. Alone in front of their screens, children may adopt risky behaviors that have a real-life impact. Prevention involves intergenerational sharing of digital tools and supporting this digital parenting, based on knowledge of the underlying psychological phenomena.(Dartau, Guillard-Prudhomme, Romero, 2019).

It is true that the digital omnipresence—at home, in playgrounds, on public transport, and even in classrooms—leads to an obstruction of attention and a global distraction, with addiction to screens and their content. Digital technology, with its compulsive uses, displays and perpetuates pornography, violence, and a state of torpor. It contributes, so to speak, to sedentariness and obesity. It also dehumanizes professions such as those of caregivers or teachers . For improved digital hygiene, it is important to know how to control oneself and not to leave these devices in bedrooms. On the part of parents, efforts must be made to manage their children but also to set an exemplary example.(Les défis de l'enseignement, 2024).

The baby is thus often exposed via the parent's own screen exposure, a phenomenon of parental technoferference that hinders daily interactions at an age when they are nevertheless essential for the baby's development.(Devouche, Morange-Majoux, 2023).

2. Method

1. Clinical Illustration:

This case study will focus on Leith, a 2-year-old boy who was referred to our psychology department at the University Hospital of Algiers for developmental delays. As the youngest of four siblings, Leith exhibited significant delays in language acquisition, socialization, and motor skills. He attended our clinic with his mother and siblings.

Upon our initial consultation, Leith appeared detached from his surroundings. Despite the provision of toys, he seemed disengaged and inattentive. A thorough review of the mother's prenatal and postnatal history revealed an unplanned pregnancy amidst significant familial challenges. Overwhelmed by the demands of raising five children, the mother reported feeling exhausted and unable to provide consistent attention to Leith. Our assessment highlighted a strained mother-child relationship, exacerbated by the mother's reliance on television as a means of childcare, allowing her to attend to household chores.

The mother's decision to seek psychological evaluation was prompted by concerns raised by her social network regarding the possibility of her child having autism spectrum disorder.

Based on our initial observations, Leith appears to be easily distracted and does not seem to value social interactions.

Our therapeutic approach with Leith focused on building a sense of security, fostering secure attachment, and enhancing social interactions, particularly through language-based activities. To facilitate these goals, we included his siblings and mother in therapy sessions. We also utilized standardized questionnaires and rating scales to establish a comprehensive diagnosis.

2. Psychological intervention tools:

We know that when children are young, the assessment of developmental progress is conducted in a global manner, as differentiation of functions is gradual. Composite developmental scales, encompassing various components such as motor skills, communication, cognitive and affective processes, are used to evaluate a child's overall developmental level while exploring these different aspects. These assessments, both global and differentiated, are particularly useful in the initial stages for analyzing a child's developmental profile and any potential heterogeneity, especially when deficits are present.(Tourrette,2020), Our psychological tools were:

2.1. Clinical observation:

Clinical observation isn't just about passively watching and taking notes. It's an active process that combines personal beliefs, academic knowledge, and clinical experience within the context of the patient's life. To be effective, clinical observation requires consistent practice and a strong foundation in clinical philosophy. It's essential to consider the patient's perspectives, values, and needs, as well as those of their family.(Hall,2019,p04)

Clinical case reports can be powerful and informative; they can suggest novel hypotheses, identify gaps of knowledge, and provide suggestions for improvement. (Dalmau,2018,e1)

2.2. The Brunet-Lézine Scale:

The Brunet-Lézine Scale, a tool for assessing psychomotor development in children, was originally validated for the French population. (Cardoso, Formiga, and al, 2017).

The tests are divided into 4 domains: motor or postural eye-hand coordination language sociability 10 items are proposed per age level but their proportion varies according to the domains and reflects the progression of the child's acquisitions.

The analysis of the results allows the calculation of partial ages and development quotients in the 4 evaluated domains, as well as the calculation of a global age and development quotient.

(Pearson,2024)

Administration Time of Brunet-Lézine Scale :

Children under 15 months often exhibit significant fatigability. Therefore, it is recommended to limit the assessment to 25-35 minutes. While remaining attentive to the young child’s state of fatigue and attention, the evaluation can last up to 1 hour for children older than 15 months. There is no strict time limit for administering the entire scale. If all items cannot be administered in a single session, the remaining items can be assessed during a second appointment.(Verrez,2014,p54)

3. Findings

Through clinical interviews with the mother, observations of Leith's interactions with his siblings, his play and exploration of his environment, and the results of the Brunet-Lézine psychomotor development scale, we observed scores below the average in all four areas: motor or postural, oculomotor coordination, language, and sociability.

While some experts advocate for a complete ban on screen time, others suggest a more balanced approach. Jon Lasser, a psychologist at Texas State University, believes that strict restrictions can hinder a child's ability to self-regulate. In his book "Tech Generation," he and Mike Brooks propose the Family Assessment of Screen Time (FAST) tool, which helps families assess their feelings about screen usage and establish shared guidelines. This approach is similar to the American Academy of Pediatrics' Family Media Use Plan, which encourages parents and children aged 5 and older to negotiate screen time limits and boundaries.(Pappas, 2022).

Young children are naturally drawn to playing with others rather than screens. The problem is finding playmates. This can hinder the development of important social skills like sharing and empathy. (Tisseron,2017)

To encourage healthier habits, let's offer engaging activities like games and reading. Screens can be great tools, but like food, it's important to have a balanced diet. By alternating activities, talking with our kids about what they see online, and setting clear limits, we can help them develop healthy screen habits.

Remember, we are all role models for our children. If we want them to limit screen time, we need to do the same. With a little effort, we can help our children grow and learn in a healthy and balanced way.(Tisseron,2017)

It's imperative to re-examine the child-screen link, as the reinvestment bond is particularly strong among the youngest children, which is important for the socialization to the culture of future generations.(Frau-Meigs, 2021).

Discussion

Despite Leith's developmental delay, we observed that he responded when we engaged with him, but was unable to initiate relationships independently. We prioritized play-based interventions to establish a trusting relationship, integrate Leith into family dynamics, and encourage family interactions.

We informed the mother about the dangers of screen time and its potential impacts (psychoeducation). The mother was cooperative and we were able to replace Leith's constant screen exposure with human interaction and play-based activities. By banning phone use during mealtimes, we gradually observed improvements in his communication and social skills. As Rosier (2023) stated, the effects of screen time on a child's development are influenced by the family environment and lifestyle.

Some researchers have proposed that the negative impacts of screen time on children's cognitive development may primarily stem from the displacement of other activities that are more beneficial for learning. This suggests a need for further research into modifiable lifestyle factors that can compete with screen use, such as physical activity, parent-child interactions, and sleep.(Yang, Saïd, and al,2024, p 681),

Radesky et al. reviewed the literature on increased screen time and its effects on the behavior and development of children from birth to eight years of age. Various behavioral problems, such as aggressive behavior, attention problems, and health problems, including sleep and obesity, are associated with technology usage in early childhood.(Panjeti-Madan, Ranganathan,2023).

Conclusions

Since the brains of babies and toddlers are still developing, they do not have the same capacities as adults. Television, smartphones, computers, and tablets send an enormous amount of information to a child's brain, which it is not yet able to process.

Screens have become an integral part of modern life. While they offer educational and entertainment opportunities, excessive screen time can have detrimental effects on toddlers development. This is what was demonstrated in our case study « Little Leith ».

It is recommended to avoid using digital screens as a reward, distraction, or incentive. This means not using them to bribe children to do things like eating or completing tasks.

UNICEF indeed states: "Babies need humans, not screens."

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