



REVIEW

Neurodevelopment and stimuli: keys to a healthy childhood

Neurodesarrollo y estímulos: claves para una infancia saludable

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ABSTRACT

The child neurodevelopment as a complex process sensitive to environmental stimuli, particularly in the first years of life. It pointed out that factors such as stimulation, nutrition, genetics and the quality of the environment significantly influence the cognitive, emotional and social development of children. The growing concern about excessive use of screens in childhood, especially before the age of two, due to their possible negative impact on areas such as language, attention and socialisation, was highlighted. Studies cited associated this early exposure to neurodevelopmental disorders such as ADHD and ASD. Finally, the text emphasised the need to promote environments rich in real experiences, human bonds and creative play as fundamental pillars for healthy child development.

Keywords: Neurodevelopment; Screens; Childhood; Stimulation; Emotional Bonds.

RESUMEN

El neurodesarrollo infantil como un proceso complejo y sensible a los estímulos del entorno, particularmente en los primeros años de vida. Señaló que factores como la estimulación, la nutrición, la genética y la calidad del ambiente influyeron significativamente en el desarrollo cognitivo, emocional y social de los niños. Se destacó la preocupación creciente por el uso excesivo de pantallas en la infancia, especialmente antes de los dos años, debido a su posible impacto negativo en áreas como el lenguaje, la atención y la socialización. Estudios citados asociaron esta exposición temprana a trastornos del neurodesarrollo como el TDAH y el TEA. Finalmente, el texto enfatizó la necesidad de promover entornos ricos en experiencias reales, vínculos humanos y juego creativo como pilares fundamentales para un desarrollo infantil saludable.

Palabras clave: Neurodesarrollo; Pantallas; Infancia; Estimulación; Vínculos Afectivos.

INTRODUCTION

Child neurodevelopment is the foundation upon which human cognitive, emotional, social, and motor skills are built. Understanding this process, especially during the early years, is essential to ensuring healthy and harmonious growth. In this context, the environment in which a child develops—including the stimuli they receive and the technological tools they are exposed to—can either enhance or hinder their development. In recent years, the increasing use of screens in childhood has raised concerns among specialists due to their potential adverse effects on the developing brain. This paper explores the implications of early and excessive use of electronic devices on child neurodevelopment and the need to promote environments that favor comprehensive development.

DEVELOPMENT

Child neurodevelopment is a dynamic, progressive, and complex process involving the structural and functional maturation of the central nervous system. This process enables children to acquire motor, cognitive, linguistic, emotional, and social skills.⁽¹⁾ This development is not linear but depends on multiple factors, such as the environment in which the child grows up, early stimulation, nutritional status, genetics, and life experiences.

During the first years of life, the brain has high neural plasticity, which makes it extremely receptive to external influences, both positive and negative. During this period, most neural synapses are formed, consolidating the foundations of learning, memory, and behavior. Neurotypical developmental milestones, such as language, locomotion, and social interaction, allow us to assess whether a child is growing as expected or showing warning signs that could indicate a disorder.⁽²⁾

In recent years, screen use in childhood, especially in children under two years of age, has raised growing concern among pediatricians, psychologists, and educators. Prolonged exposure to electronic devices at an early age has been associated with possible interference in brain development, as children have not yet acquired the symbolic thinking and attentional control necessary to adequately process the visual and auditory content offered by these technologies.⁽³⁾

Numerous studies have reported that excessive screen use can affect language development, memory, attention, and social-emotional skills, which could lead to neurodevelopmental disorders such as attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). These disorders manifest with poor concentration, impulsivity, communication difficulties, and repetitive or restricted behavior patterns.⁽⁴⁾

Conversely, comparative research has shown that traditional play, as opposed to screen use, stimulates richer and more diverse language, promotes creative thinking, and strengthens emotional bonds with adults and peers. In other words, the physical and emotional environment in which children develop plays a crucial role in their overall development.⁽⁵⁾

In addition, organizations such as the Argentine Society of Pediatrics and UNICEF recommend avoiding screen use in children under two years of age and limiting their exposure in preschool ages, promoting instead real sensory, motor, and social experiences that stimulate healthy child development.^(6,7,8)

Neurodevelopment is a process sensitive to environmental stimuli. There are warnings about the risks associated with early and excessive screen use and the importance of fostering enriched environments and human bonds that promote the harmonious growth of children.^(9,10,11)

CONCLUSIONS

In short, child neurodevelopment is a process that is highly sensitive to environmental stimuli, and its proper progress requires optimal conditions that prioritize human bonding, creative play, and interaction with the real world. Scientific evidence warns of the possible adverse effects of excessive screen use at an early age, especially regarding language, attention, and socialization. Therefore, families, educators, and health professionals must promote practices that strengthen comprehensive development, avoiding overexposure to technology and prioritizing enriching experiences that accompany children's healthy growth.

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CONFLICT OF INTEREST

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