

A Bio-Psycho-Social Analysis of Excessive Screen Use in Adolescents: Implications for Development and Evidence-Based Intervention Design

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Abstract

Excessive screen time among adolescents has emerged as a significant global concern, with research consistently demonstrating its associations with negative physical, psychological, cognitive, and emotional outcomes (Cain & Gradisar, 2010; Christakis et al., 2004; Tremblay et al., 2011). Prior studies have shown that high screen exposure disrupted sleep patterns, reduced physical activity, contributed to sedentary behavior and obesity risk, and is linked to emotional dysregulation, attention difficulties, anxiety, and depressive symptoms (Cain & Gradisar, 2010; Oswald et al., 2020). Although multiple interventions have been implemented to manage and reduce screen use, their effectiveness remains mixed, and long-term sustainability is limited. The meta-analysis by Jones et al. (2021) identifies promising strategies such as school-based programs, family involvement, behavioral modification techniques, and environmental restructuring, but overall effect sizes have remained modest. In response to these gaps, the present study aims to identify the bio-psycho-social determinants of high screen use in adolescents, examine its developmental impacts, review existing evidence-based interventions, evaluate their efficacy, and explore the challenges encountered by professionals, parents, and institutions in implementing screen-time reduction strategies. This study includes a systematic review of empirical studies published between 2000 and 2025. It synthesizes the findings on biological factors that contribute to usage of screen time such as sleep disruption and sedentary physiology, psychological contributors such as poor self-regulation and coping through digital media, and social factors including parental modelling, peer norms, and accessibility of devices. Based on these insights, this study aims to create a Comprehensive Intervention Model that targets reduction in screen time usage and increases overall being in adolescents.

Index Terms

Adolescent Screen Time; Digital Media Use; Bio-Psycho-Social Factors; Developmental Outcomes; Intervention Strategies