

Extended Abstract

The Negative Effects of Digital Technology Usage on Children's Development and Health*

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Abstract

Today, children and adolescents are growing up exposed to both traditional and modern technology. While it is known that the increase in the use of traditional technology, such as television and its content, have negative effects on children's development and health, studies have shown such modern technologies as smartphones, tablets, and computers that have been developed and become increasingly widespread over the past decade to be beneficial and to constitute health risks for children. It seems that children's inappropriate use of such technological devices in terms of content, duration, frequency, and the posture they adopt while using them pose a variety of health risks, including developmental problems, musculoskeletal problems, physical inactivity, obesity, and inadequate sleep quality. This study reviews the literature on the clinical problems that digital technology use has on children. In order for children and adolescents to adopt a healthy life style, it is important to monitor the time, frequency, and content viewed while using technological devices and to ensure that children have or develop adequate physical activity opportunities, healthy eating habits, proper sleep cycles, and a nurturing social environment.

Keywords

Health • Technology • Child • Risk • Addiction

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Digital technology's integration into the daily lives of children and its influence on their cognitive, emotional, and social development continues to increase day by day. Technology offers many opportunities for children to play, explore, and learn (Linebarger & Piotrowski, 2009). Since children's brains are extremely flexible in this period, these learning opportunities constitute a critical developmental point in children and through the natural exploration and discovery of their own world, new connections between neurons are formed and existing connections are strengthened (Blanchard & Moore, 2010).

Use of Digital Technology among Children

In the United States, more than 1,000 parents reported on a nationwide telephone interview that their children under the age of 6 used digital technology an average of 1.58 hours a day, played outside an average of 2.01 hours, and spent 39 minutes reading. In the study, it was found that 36% of the children lived in a house where the television was constantly on, 45% of the parents used television as a means to keep their children occupied when they had important jobs to complete, and 27% of the children between 4 and 6 used a computer every day (Rideout, Vandewater, & Wartella, 2003).

Technological Tools and Their Effects

Television. Television plays an active role in children's world due to its visually and auditory captivating and entertaining nature. Watching an excessive amount of television and videos by children less than two years of age has been reported to significantly influence language development and behavioral disturbances (Chonchaiya & Prusanandaonda, 2008; Mistry, Minkovitz, Strobino, & Borzekowski, 2007).

Computer. Similar to television, computers have become an indispensable element in children's lives. Spending too much time on the computer from an early age can negatively affect academic success due to the low concentration, lack of attention and disorganization, undeveloped language skills, creativity, and imagination seen in children as a result of excess computer use (Cordes & Miller, 2000; Palmer, 2015).

Internet. Studies on the internet's possible effects on early literacy activities have explored whether the internet offers intentional and unintentional learning opportunities, and the impact of the internet on early literacy is still not fully understood (Coiro, Knobel, Lankshear, & Leu, 2008). Easy access to illegal, violent, and sexual content, communication with dangerous people, and excessive dependence on games constitute only a few of these significant risks (Iscibasi, 2011).

Video games. Although much has been written about the effects of video games on children and adolescents, there has been little work done on the effects of video games on young children (Bailey, West, & Anderson, 2011). Violent video games

can lead children to aggressive behavior and inhibit creative game play (Provenzo, 1992). Studies have shown that there is a strong link between violence in video games and real life violence, and that these games lead to social isolation and lack of communication and communication with children (Kutner & Olson, 2008).

Smart phones. An increased use of smartphones has been reported to be associated with passive aggressive, unprotected, socially incompatibility, obsession, addiction, and anxiety. It has been reported that those children engaged with their smartphone during school negatively affect both own and their classmates' attention (Sevi, Odabaşiođlu, Genç, Soykal, & Ozturk, 2014; Yen et al., 2009).

Digital toys. As digital toys multiply and become an indispensable part of children's daily lives, the increasingly restricted use of outdoor playgrounds may negatively affect the normal development of children. For normal development, children need to spend their time with their peers (Rosen et al., 2014).

Developmental and Health Risks of Digital Technology Usage

Digital Technology Usage and Developmental/Behavioral Risks

The use of digital technology has been associated with lack of attention, aggressive behaviors, physical inactivity, obesity, and sleep problems in preschool and school age children. The overuse of digital technology causes children to use their time inefficiently. Concern should also be paid to the cognitive and emotional effects that these technologies have on the development of children (Brown, 2011). The overuse of technology in early childhood has been found to be related to cognitive, language, and social/emotional delays in community-based researches (Pagani, Fitzpatrick, Barnett, & Dubow, 2010).

Digital Technology Usage and Musculoskeletal System

A steady increase in the use of digital technology at home and in school environments has been reported to cause an increase in musculoskeletal problems (Harris & Straker, 2000; Kelly, Dockrell, & Galvin, 2009). In addition to psychological factors such as monitoring anxiety and somatic complaints (headache and abdominal pain) (Harris, Straker, Pollock, & Smith, 2015), musculoskeletal disorders are associated with such physical factors as sex, age, body mass index (BMI), and exposure to sedentary activities. For this reason, playing with toys should be encouraged in place of watching screens in order to minimize the risks of potential musculoskeletal disorders and sedentary lifestyles, and conscious instruction manuals for tablets and other technological devices should be provided to parents and caregivers (Howie, Coenen, Campbell, Ranelli, & Straker, 2017).

Digital Technology Usage and Physical Inactivity

Evidence that the use of technology has changed physical activity is doubtful, but it is being investigated as to whether the use of excessive technology, in particular, takes the place of night's sleep. In a study on children aged 4-11 years, it was found that 37% of the children had a low active play level, 65% had high screening time (television, computer, tablet, etc.), and 26% had a combination of these two (Anderson & Whitaker, 2010). Another study found that only 4 out of 10 children aged 6-11 years met the recommendations of the guidelines for both physical activity and screening duration, further showing that increased age was associated with decreased physical activity in children (Fakhouri, Hughes, Brody, Kit, & Ogden, 2013).

Digital Technology Usage and Obesity

The rate of obesity in children has tripled in the last 20 years. For healthy development of children, 3-4 hours of daily physical activity and social interaction are needed (Hancox & Poulton, 2006). Excessive use of technology is linked to lifetime obesity and cardiovascular risk and this relationship is now observed starting from early childhood (Bel-Serrat et al., 2013). The excessive use of social media during the pre-school period is associated with low, but significant increases in BMI, laying the groundwork for weight gain in later childhood (Cox et al., 2012).

Digital Technology Usage and Sleep Quality

Keeping a television, computer, or mobile phone in the bedroom during early childhood is associated with less sleep (Cespedes et al., 2014). Children who make excessive use of social media or who sleep with mobile devices in their bedrooms are at increased risk of experiencing sleep disturbances (Levenson, Shensa, Sidani, Colditz, & Primack, 2016). Poor sleep quality in adolescents is associated with extreme mobile phone use while the number of devices in a bedroom and poor sleep quality are associated with excessive internet use and duration of digital technology usage prior to sleep in pre-adolescents (Bruni et al., 2015). The use of electronic devices during the daytime can also affect sleep quality (Hysing et al., 2015).

Conclusion

It is clear that the developments in digital technology and research on these products will continue. Technological developments are largely variable, and the effects also depend on the type of device, the type of use, the amount and extent of use, and the characteristics of the child or adolescent. Since children are currently growing up using highly personalized technology, parents should strive to ensure that they are able to implement and benefit from the principles of balanced nutrition, quality sleep, adequate physical activity, and positive social interaction for healthy growth

and development by making plans according to the age, health status, character, and level of development of their children. However, parents should also be aware of their duties and responsibilities in modeling appropriate technology use while also striking a balance between technology usage and other activities.

Parents should be aware that their technological device use may also have negative effects on their children. It should be known that children under the age of four playing games alone rather than being exposed to technological devices will help the child develop creative thinking and individual problem solving skills. The total technology usage time during the day (e.g., watching television and playing games on computers, tablets, and mobile phones) should be limited to 1-2 hours. Care must be taken that children aged 2 years or younger not be allowed to face the screen. Television and technological equipment connected to the internet should be kept away from the child's bedroom. If one's children are allowed to use technological devices, the use of these devices must be subject to certain rules. Enforce a mealtime and bedtime "ban" for technological devices, including cell phones. Reasonable, but firm, rules for cell phones, television, computer games, internet, and social media use should be established and these rules should not be compromised.

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