

## Commentary on the article: 'Adverse physiological and psychological effects of screen time on children and adolescents -- Literature review and case study' - Environmental Research 164 (2018) 149–157

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### Article Info

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### Introduction

This commentary aims to elaborate on the article 'Adverse physiological and psychological effects of screen time on children and adolescents -- Literature review and case study'. Specifically, the commentary will expand on factors contributing to Internet addictive behavior and adverse effects of social media use, such as cyberbullying and suicidal behavior. Additionally, the commentary will discuss obstacles which clinicians are facing when working with families to change children's screen time habits. The paper will further point out the need for a community-level large-scale program targeted at changing youth's screen use habits, and an outline of such a program will be discussed.

Technological advancements in digital media can provide an environment which is increasingly more characterized by both continuous novel and fast-paced stimulations which activate dopamine and reward pathways. Due to such activation, young developing brains may display more sensation/novelty seeking behavior similar to behavior presented by ADHD symptoms<sup>1</sup> (Weiss et al., 2011). Together with boredom susceptibility, sensation/novelty seeking has been associated with severity of addictive behavior<sup>2,3</sup> (Olsen, 2011; Wen et al., 2015). Additionally, youth's device of choices, i.e., mobile phones, makes video games, and social media use more readily available, which is more likely to increase the risk for addictive screen use.

### Contributing factors to addictive screen/Internet behavior

Further investigation of the factors contributing to addictive screen/Internet time may shed light on how to decrease adverse consequences of excessive screen time. In a study, university students who rated themselves as heavy Internet users reported that boredom was a major triggering factor evoking their desire for Internet use. Studies also report that interpersonal stressors act to evoke a desire to use the Internet. Reportedly, Internet use is eventually conceived as a mean to relief interpersonal stressors, boredom, and loneliness<sup>3,4</sup> (Wen et al., 2015; Mcdool et al., 2016). However, exposure to intense social dynamics occurring through social networks may negate a relief effect on loneliness because it elevates the risk of feeling left out<sup>5</sup> (Twenge, 2017). Additionally, use of social networks involves efforts to enhance self-esteem<sup>4</sup>

(Mcdool et al., 2016). However, a sense of failure to accomplish sufficient sense of self-esteem may contribute to experiencing a negative mood; which in its turn is adding to experience more stress. Consequently, experiencing online social difficulties increases attempts to revive social support; thus bringing young users to immerse themselves in a vicious cycle of further use of Internet/social networks<sup>6</sup> (Wu et al., 2016). Moreover, studies state that social media use is likely to be linked to a decrease in personal well-being and life satisfaction<sup>7</sup> (Lin et al., 2016).

Another major online factor creating an interpersonal stressor is cyberbullying. Addictive Internet and exposure to violent content may increase the occurrence of cyberbullying behavior, which in turn may serve as a central cause for suicidal behavior<sup>8</sup> (Sampasa-Kanyinga et al., 2014). Furthermore, the more cyberbully and the victim are addicted to screens; both individuals may display similar cognitive dysfunctions, such as poor impulse control, emotional processing, and dysfunctional decision-making. Such dysfunctions are likely to lead to bullying, on one side, and increase the risk for occurrence of suicidal behavior on the part of the victim. The suicidal tendency is likely to increase if the victim is prone to depression or negative mood<sup>9</sup> (Oshima et al., 2012).

### The clinical picture arising from excessive screen use

Descriptions of the clinical picture arising from excessive screen use further shed light on the complexity of screen time effects<sup>10,11</sup> (Dunckley, 2015; Bentley, 2016). Physically, a child may display a decrease of physiological adaptation to normal conditions, aches, pains and facial or vocal tics. Other symptoms may include, oversleeping or trouble in waking up even after apparently sufficient sleep hours. Emotional symptoms may include rages and meltdowns. A child may also be more sensitive to frustrations and react in a defiant and oppositional manner. Additionally, the child may appear anxious regarding separation situations, overall fearful and report nightmares. Depressive mood, isolative and withdrawn/low energy behavior and OCD like behavior are also prevalent symptoms. Other behavioral symptoms include hyperactivity, impulsiveness and concentration difficulties. Socially, a child may present decreased empathy and less face-to-face communication. Lack of interest in non-screen activities is common whether involving peers or not. Blaming peers and being less considerate may characterize social interactions. At school, a child may display distractions in class and apparent learning difficulties<sup>10</sup> (Dunckley, 2015).

### Practical steps to change screen time habits

Clinical work aimed to change excessive digital media use confronts obstacles. The author's communications with parents show that, usually, it is difficult for the

parents to independently realize that a child's screen habits could be a significant factor in causing physical and behavioral symptoms. Another aspect which is adding difficulty to parents' understanding of a child's situation is that a child may present seemingly unrelated symptoms creating a complex clinical picture, in which it is unclear which type of treatment would be effective<sup>10</sup> (Dunckley, 2015). Consequently, parents may not relate to children's symptoms as demanding any treatment. The complex clinical picture may also confuse clinicians who are not up to date about screen time adverse effects. As a result, parents may refer their child to a treatment which may not be relevant or efficient enough when not accompanied by an intervention which relates to screen time habits. Referral to non-relevant interventions is also less cost-effective for parents and the health system.

Clinicians, who relate to screen time use, face a challenge on how to educate parents about screen time effects in a manner that will be convincing there is a need to take practical steps for altering a child's screen time habits. Another difficulty clinicians may face is that they can only reach a relatively small portion of children and parents who are in need of professional guidance. Thus, health systems are facing a challenge of optimizing the diagnostic and referral processes to be more efficient, cost-effective and to be reaching a more substantial portion of the population at an early age.

A critical factor in changing screen time habits is creating alternative activities to take place in time slots previously devoted to screen use. However, daily obligations make it difficult for caretakers to provide children with alternative activities. Additionally, children's screen time is, in many cases, freeing up parents' time. Thus, providing non-screen based alternatives may not be appealing to parents.

Confronting the difficulties mentioned above, it thus seems that, when dealing with altering screen time habits, there is a need for large-scale programs which will reduce the burden on the nuclear family. Teams of multidisciplinary experts should devise such programs and be assisted by technology trends predictions, in order not to 'lag' after developments in digital media use. Based on the Icelandic model, successful in reducing teenage substance abuse, the following components may act as founding blocks of such program:

- (a) Emphasis on actions at the community level - where practical actions can be carried out efficiently and quickly.
  1. Increase non-parental adult supervised/after school time periods by creating more frequent and structured activities.
  2. Compose school sessions devoted to screen use consequences.

- (b) Get high-level leadership to campaign for this project, including running a media campaign to educate the public about screen time effects and coping means.
- (c) Achieve a delay of first screen exposure, particularly for smartphone use, and strive for decreased and informed use of digital media both for youth and for parents who should serve as models.

A 'screen time habit changing' program may adopt mainly an experiential nature by using both digital media based and direct face-to-face communication, including role-playing activities. Such a program should emphasize the exploration of the addictive characteristics of social media and video games. When focusing on video game addiction, program activities should offer opportunities to experience the differences between actual and tangible reality versus virtual reality; train the ability to detach from a game avatar by exercising emotional detachment and foster a stronger sense of the physical self-image through body awareness and mindfulness techniques. When aiming at decreasing social network addiction, core discussed topics should include independence from social judgment and handling real-life and virtual negative social feedback and their effect on the notion of self-esteem<sup>12</sup> (Leménager et al., 2016). Exploration of non-judgmental mindfulness and compassion, as opposed to a bullying mentality, is recommended to be included<sup>13</sup> (Foody & Samara, 2017). Discussions should also raise the meeting points of pornography and body image, self-exposure in contrast to privacy. Overall, such activities will aim to convey to participants practical offline based methods of coping with interpersonal stressors and loneliness<sup>14</sup> (Parsons et al., 2017); and means to handle boredom and how to turn it into creative time periods. Eventually, a program should be aiming at the cultivation of a non-virtual based self-esteem and sense of self. The program should also include guiding parents about the informed use of digital media at home. A more comprehensive description of the program is beyond the scope of this commentary.

## Conclusion

Presently, we are witnessing how offline time is gradually less shaping youth's experience while digital media time is negatively affecting users by compromising main pillars of personal resiliency, i.e., physical health, social attachment and mindfulness skills. Research should further focus on the effects of evolving screen time trends, i.e., mobile phone use, multi-screening, social networks use and online gaming. Research should aim to study further fundamental factors which seem to drive screen addiction, i.e., sensation/novelty-seeking behavior, boredom, loneliness and the need for self-esteem enhancement.

Community-level research-based programs should support the acquisition of practical means for more informed use of both offline and online time with an aim to minimize the adverse effects of screen time on psychophysiological resilience.

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