

**The Effect of Screen Time on Children and Adolescents' Physical and Mental Health
Including Differences Seen in Sex and Familial Socioeconomic Status**

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Introduction:

Have you ever gone to a nice restaurant for dinner with family members on a weekend evening and could not help but notice the “activity” of others who are sitting around you? Especially their actions concerning none other than the device that has control over many. Or have you ever tried to have an important conversation with someone who you deemed to be a close-friend and their phone lights up, prompting them to text back to the person on the other hand at that very second? How about seeing a car sway into your lane on the road, almost crashing into you, to only realize that the person is texting while driving? Silence, heads tilted downwards, and distraction are only some of the observable attributes of the behavior. This is what current life has come down to; screens taking priority over significant in-person communication. Fifteen or so years ago it was more common to see human interaction that did not include any kind of screen in the hands or vision field of an individual. Well, why is this so?

Phones are by no means the only type of screen that is common in society today. There are laptops used by different types of people with varying occupations, there are video games used by all age groups, there are TVs for the use of shows and movies, there are tablets, iPads, touch-screen watches, etc. The uprise in the use of screens in recent years has occurred because of several reasons, it doesn't just cause an annoyance like the common examples stated previously. Even though they deter the meaning of face-to-face contact, they do provide communication in an easier and faster way than that was not possible in the past. Screens could provide us a great extent of knowledge in an attainable manner, they could give us the type of entertainment that we needed after a bad day, and they also allow for the sharing of resources through social media. While these are arguably great aspects of screens, there are also, naturally, plenty of drawbacks, which will be detailed.

While there are some people, most older individuals are not being seen to be engrossed in technology that it would negatively influence them much. However, children and adolescents are currently being seen to use screens more than any other age group did at the same age. Since this trend has not been seen as much as it has today, it is not unusual to wonder how these individuals' excessive use of screens would potentially affect them and their overall well-being in the future. Physical and mental health are the most important aspects of being a human. It is crucial to have them both be in good shape because if one is poor, then it would affect the other. For example, if an individual lacks a healthy mental health and is not able to effectively pick themselves up, then they would most likely resort to unhealthy behaviors that would affect their physical being. On the other hand, if there is a burden to someone's body, then it is easier for them to feel stress, therefore also taking down their mental health. Consequently, there will be common overlap between the subsequent physical and mental effects of screens.

Although outlining the consequences of ample screen-use in individuals on a base-line level is appreciable, there will also be consideration of more specific kinds of people. Gender differences and socioeconomic status will be the factors analyzed for the purpose of seeing the influences of screens on them. It is fundamental to incorporate these diverse areas of research because they both impact a person's experiences, opportunities, and outcomes in life. It is possible that by raising awareness of the differences, there is potential for more effective strategies that could address the social inequalities. Nonetheless, with all the other positive and practical implications of technology, children, and adolescents, regardless of contradicting gender and familial socioeconomic status will potentially obtain harmful physical and mental health effects from extensive use of it.

Physical Components:

Cardiovascular Disease

Cardiovascular diseases, abbreviated CVDs, are groups of disorders of the heart and blood vessels (World Health Organization, 2021). The heart is the most important organ in the human body because it supplies all the other tissues and organs with oxygen-rich blood. This means that it pumps oxygen, a critical element of survival, throughout our bodies. Oxygen is also needed for cellular respiration, which is the process in which our body cells produce energy. Another function of the heart is to pump in a coordinated way, meaning at a good rate and synchronization so that the blood is effectively transferred. If this is an issue, several other abnormalities may occur, even in other organs and organ systems in the body, like the brain, kidneys, liver, and digestive system. For example, if there is inadequate oxygen (blood) flow to the brain, a person will have a stroke, which can further cause serious brain damage and impact an individual's life.

Lissak (2018) in a review study addressed that with every additional hour spent on a screen, there was a rise in diastolic blood pressure among 6-year-olds. High blood pressure is when there is a consistent high force of blood against the walls of arteries, the blood vessels that carry blood to the rest of the body. This is not ideal because it can cause damage to the body over time and is therefore considered to be the "silent killer". However, with every hour spent reading, instead of on a screen, these children displayed a decrease in the same type of blood pressure (p. 151). Another study revealed that with only one session of video game playing, children aged 9 to 10 years old had a high food consumption that was unrelated to feelings of hunger (Lissak, 2018, 151). This reveals that it is easy to fall into poor eating habits which could then cause obesity and CVDs.

Sleep

Sleep is what recharges the body. It is just as important for overall well-being than staying active. Sleep is responsible for growth and development, consolidating memory, regulating our mood, and keeping our immune system healthy. An adequate amount of time for sleep during the night is about 8-14 hours for young children and adolescents, of course varying with specific needs. The way sleep occurs happens through the pineal gland. This gland in the brain is responsible for producing melatonin, a hormone that is involved in the sleep-wake cycle. Melatonin specifically signals the body that it is time to get a good sleep, but it is hindered by brightness. For that reason, it is easier for humans to feel tired and fall asleep in the dark, compared to the light.

It is evident that screens are comprised of light. The eyes are constantly fixated to this type of electrochemical radiation whenever someone wants to watch TV, play video games, scroll through social media, etc. Blue light is the specific type that is associated with screens. Like previously stated, this could heavily affect how much sleep a person could get if used heavily close to bedtime. Seventh graders who used their phones after bedtime reported that for the year after, they felt significantly more tired, thus leading to poor academic achievement and drowsiness (Lissak, 2018, p. 150). It also has been seen that video game use has heightened children's psychophysiological arousal, affecting sympathetic regulation (Lissak, 2018, p. 150). The sympathetic nervous system should not be active during times of sleep because it is accountable for the famous "fight or flight" response, or in other words, for adrenaline. The parasympathetic nervous system, on the other hand, is more active during sleep because it is responsible for the "rest and digest" response. Hence, for the finding just previously stated, the children's sympathetic nervous system was triggered when it should not have been.

Sitting

Something that is, for the most part, common among varying types of screens is how the user is situated in a sitting position. If on the screen for a long time, then negative outcomes can occur from just sitting. This type of behavior is called sedentary, because it refers to activities that are not in any way increasing energy expenditure. Therefore, lying down is also considered sedentary behavior. An apparent equivalent of this type of behavior is reduced physical activity. Exercising is extremely important because it helps to reduce the chances of developing CVDs, like mentioned previously, it manages weight, it boosts mood in general, and improves sleep. A study that involved different age groups in England during the COVID-19 lockdown observed that younger age (18 to 39 years old) was associated with higher odds of sitting time than those older than them (39 years and up) (Bailey et al., 2022). This indicates that the younger population has shown more signs of increased sitting time, which can affect someone tremendously.

Eye Strain

After long periods of staring at a screen, a person is bound to get a headache. This headache is caused by none other than eye strain. Eye strain is not too serious and can be treated with rest, but the symptoms that accompany it can be irritating. Besides from a migraine, other problems include irritated eyes, blurred vision, and difficulty in focusing. The last symptom is prevalent because it is common to hear from other people that their “brain isn’t working properly” after being in front of a screen for a long time. Al-Mohtaseb et al., (2021) through a review study found that dry eye disease, which is a disease located on the ocular surface of the eye, is associated with digital screen users and is likely to affect a person’s mental health and work productivity because of the amount of pain and discomfort it produces.

Mental Components:

Mental health is another aspect of the human that is critical for thriving. It is extremely difficult to live a life when mental health is not up to par. Mental health is responsible for getting up out of bad and doing what needs to be done. It can affect how someone thinks, feels, behaves, and lives. Emotional, social, and cognitive functioning is all a part of mental health. In other words, poor mental health could influence any of these areas of being. Interestingly and sad enough, something as simple as a screen could impact a person's mental health.

Happiness Levels

Happiness is only one component of good mental health. It is a feeling of well-being and satisfaction within life. Anxiety, fear, and depression causes happiness levels to decline, indicating that there is an increased risk of developing a mental health problem. The way that screens are related to happiness levels is because it restricts an individual to live up to their fullest potential. Forming worthwhile relationships in life can be the key to happiness. People say that all you need is love. Having true friends and loved ones provides emotional connections, social support, and personal growth as well. To many people, they give meaning to life. Making friends at a young age is especially important because they would be learning early on how to do so. Without having this kind of experience, they may be doomed for the future. Additionally, in the recent 20 years, social media has become popular. While social media grants communication over a screen, it also allows for cyberbullying. Because it is not face-to-face, some people find it okay to bully someone because they feel that they would not be as accountable for their actions. There is a lot of harm in this because of the psychological impact it could cause the receiver. Twenge et al., (2018) discovered this relationship when they studied the screen behavior of American adolescents after the year 2012 and found that the more time spent on a screen, the

poorer their psychological well-being. This was measured by self-esteem, life satisfaction, and happiness (p. 765). Contrastingly, the more time spent participating in homework, sports/exercise, religious services, and a job led to a better psychological well-being (p. 770). This implies that low happiness levels are associated with higher amounts of time interacting with screens, demonstrating a negative correlation.

Psychosocial Problems

Psychosocial problems are also known as mental disorders. Some that may arise due to excessive time with screens are depression, anxiety, substance abuse, social isolation, low self-esteem, attention issues such as ADHD, and behavioral problems. These disorders and problems develop usually because addiction to screens comes with being isolated from the outside world. Like stated previously, screens deter one from creating physical bonds, but it also could lead to aggression and poor self-regulation, which are behavioral problems. While the type of screen and content the user is exposed to could lead to outburst, like violent and graphic video games, something as straightforward as a lack of sleep and social comparison from social media could also cause the same exact outcome.

COVID-19 was a time in history where everyone was experiencing some type of stress because of needing to be socially isolated from one another to ensure safety. Screens were, by no means, used more than any time in life because it felt, commonly, like there was nothing else to do. Even classes for elementary, middle, high schoolers, and college students were moved to be fully remote, leaving no other option available. Korhonen (2021) argued, through her editorial, how screen time for children could be used as a coping strategy to something stressful in life, while using the pandemic as an example. Additionally, it was said that it could serve as stress reliever for a parent when their children are entertained by screens (p. 2671). Of course, during

the pandemic, it felt like there was no other option for entertainment and happiness. However, seeing how screens can negatively affect a person's mental health, there are other alternatives out there but to resort to screens.

Gender Differences

Sex refers to an individual's biological and physiological characteristics, such as someone's reproductive organs. This differs from gender, which are the characteristics of women, men, girls, and boys that are socially constructed and that includes norms, behaviors, and roles (WHO, n.d.). Distinguishing the two is important because they are separate concepts that often get confused with one another. Additionally, since a person's sex and gender could be contrasting, like a biological male who identifies as a female, understanding the idea of them could promote inclusivity and reduce discrimination that some are presently facing. Some of the research that will further be mentioned does not specify whether they are referring to an individual's sex or gender. However, the research does not talk about any biological traits/features and instead focuses on behaviors, specifically with screens. Accordingly, it is safe to assume that the research is indicating someone's gender, rather than sex.

Gender differences when it comes to the use of social media have been discovered. Booker et al., (2018) studied male and female 10–15-year-olds by administering a strengths and difficulties questionnaire, a six question "test" that asked about their overall happiness in life that was measured by friends, family, appearance, school, and schoolwork, and 2 additional questions about their daily social media interaction and use. For the female participants, there was a significant correlation between social media interaction and well-being, that showed that their happiness level decreased significantly as they got older, with a difference of 3.44 (p. 5). Males on the other hand, displayed a similar pattern, but their happiness had a smaller reduction as they

aged, with a difference of 1.47 (p.5). This study not only shows that females are more affected using social media, but it also shows that males are also affected, just a bit less. Regardless, both genders satisfaction within certain factors of life has decreased as they matured, just by engaging in social media.

Furthermore, there are gender differences when it comes to other outcomes stemming from screens as well. Busch et al., (2013) examined Dutch high school students' anonymous and confidential responses to a questionnaire regarding their screen time use and their health behaviors. "Screen time behaviors" consisted of watching television, using the computer/internet, and playing video games and the unhealthy behaviors listed were drug and marijuana abuse, smoking, bullying, and unsafe sex (p. 820). Both male and female participants who happened to be compulsive screen time users were seen to have psychosocial problems, be overweight, and have low self-efficacy scores (GSE) (p.828). There was a significant relationship between excessive video game use and skipping school only for males (p.827) and there was an association between excessive television watching and skipping school only for females (p.822). In general, compulsive video game users were significantly more likely to be bullies and have poor nutritional habits compared to those who weren't (p.828) and compulsive internet users were more likely to abuse alcohol, and for females especially, have poor nutritional habits (p.827). Females are more susceptible than males to want to look-up to a figure seen on social media that fits a certain "standard" in society like being skinny. This tremendously increases the chances of the female to develop an eating disorder and mental illness. Skipping school is likewise not ideal because it could hinder a student's future opportunities and thus even success. This article portrays that no matter the gender, there are still plenty of consequences related to technology addiction, just in differing ways.

Socioeconomic Status

According to the American Psychological Association, socioeconomic status (SES) is defined as a person's social standing, measured as a combination of education, income, and occupation. Socioeconomic status could heavily influence one's life, especially if they are on the lower end of the spectrum. They could face plenty of challenges in achieving any goals compared to people from a high SES and thus will not be able to receive the proper amenities and care that they both need and deserve. Those who have a social and economic advantage over others has a greater access to resources that will attempt to help them succeed in life. Some of these trends, especially access, will be seen through the research of screen use between people from a high SES and a low SES. By mentioning the disparities and inequalities regarding socioeconomic status, it will hopefully spark conversation about the matter and accordingly will involve efforts to increase access to all areas of life for those affected.

In a cross-sectional study involving pre-school aged students in Alberta, Canada, the use of screen time was investigated alongside their socioeconomic status that was known from their postal codes (Carson et al., 2010, p. 1). The children's use of weekend and weekday screen time was seen by the parents' participation in filling out a proxy report (p.1). This article is beneficial as it also separated their studies and results based on gender. Children from a lower socioeconomic status regardless of gender were involved with more screen time activities during the week (p. 5). Korhonen (2021) described this pattern as beneficial because screen time in poorer families could distract the children and allow them to stay inside if the neighborhood is deemed to be unsafe (p. 2671). Nevertheless, children of lower socioeconomic status were seen to play with video games more than any other group and were seen to use computers less than them (Carson et al., 2010, p. 5). These results could possibly be because of the general prices of

computers and video games, but there are scenarios where certain brands and features of video games are very expensive. While no relationship with boys, researchers discovered that there was a relationship between the girls who live in a low SES neighborhood and more overall weekly screen time with TV and movies compared to girls of a higher socioeconomic status (p. 4). Tanden et al., (2012) was another study performed that involved the parents of children aged 6-11 from Seattle, Washington and San Diego, California filling out a survey that addressed their children's access to media in their home. It was observed that children from low SES households had more electronic devices in their bedrooms than children from a higher SES and parents of low SES spent more time watching TV with their children than parents from a higher SES (p. 1). Reasons for these previous findings could be consistent with the arguments previously mentioned by Korhonen (2021) that screens provide a way to distract children if they are from dangerous communities. Furthermore, because they could be limited to other forms of entertainment like going out to concerts or traveling or any extracurricular activities, screens can serve as a low-cost option for recreation and enjoyment.

Conclusion

To end, there are plenty of ways to reduce the chances of any of these repercussions from happening to an individual. The first is to educate others about its harmful effects. The acknowledgement of a problem raises the opportunities for change to finally occur. Secondly, taking breaks and standing up, for example in between a long assignment that requires an individual to be in front of a screen for a while, allows blood to flow and can reduce the possibilities, again, of unfavorable outcomes. Also, engaging in other activities can keep the mind off the urges to pick up a device. For instance, finding a hobby is a commendable way to do so, because not only will it be a distraction, but it will also be an activity that should be

equally enjoyable as screens. Going back to the information on sleep, it is extremely imperative to remember to avoid screen use close to bedtime so that an adequate amount is obtained. It is also recommended and preferable to keep screens out of the bedroom in general at night so that there are no temptations. This last point might be harder to attain because a considerable number of people use their phones alarm clock feature to wake up in the morning, but it is worth noting for the sake of the health of an individual. Lastly, turn off notifications from a phone because they can easily tempt someone to open it and lead to increased time spent on the device. Of course, this should not have to be the case for all the time, because it is understandable that emergencies are able to arise, but always keep an eye on it and as an individual, check out its effects.

Technology has the likelihood to be detrimental to all beings, regardless of gender and socioeconomic status. It was seen that, typically, children and adolescents from a lower socioeconomic status use screens more often and are maybe more at risk for the consequences, but that does not mean that screens do not have an impact on children and adolescents from a high socioeconomic status. For example, in Carson et al., (2010), it was mentioned that more fortunate children use computers as a source of screen the most out of any other socioeconomic group. Consequently, everyone could be at risk, so it is best to always be aware of the amount of time spent engaging with screens.

References

- Al-Mohtaseb, Z., Schachter, S., Shen Lee, B., Garlich, J., & Trattler, W. (2021). The relationship between dry eye disease and digital screen use. *Clinical Ophthalmology*, *15*, 3811-3820. <https://doi.org/10.2147/OPHTH.S321591>
- American Psychological Association (n.d.). Socioeconomic Status. *American Psychological Association*. <https://www.apa.org/topics/socioeconomic-status>
- Bailey, D.P., Wells, A.V., Desai, T., Sullivan, K., & Kass, L. (2022). Physical activity and sitting time changes in response to the COVID-19 lockdown in England. *PLOS ONE*, *17*(7), 1-12. <https://doi.org/10.1371/journal.pone.0271482>
- Booker, C.L. et al. (2018). Gender differences in the associations between age trends of social media interaction and well-being among 10-15 year olds in the UK. *BMC Public Health*, *18*(1), 1-12. <https://doi.org/10.1186/s12889-018-5220-4>
- Busch, V., et al. (2013). Screen time associated with health behaviors and outcomes in adolescents. *American Journal of Health Behavior*, *37*(6), 819-830. <http://dx.doi.org/10.5993/AJHB.37.6.11>
- Carson, V. et al. (2010). Association between neighborhood socioeconomic status and screen time among pre-school children: a cross-sectional study. *BMC Public Health*, *10*(1), 1-8. <http://www.biomedcentral.com/1471-2458/10/367>
- Korhonen, L. (2021). The good, the bad and the ugly of children's screen time during the COVID-19 pandemic. *Acta Paediatrica*, *110*(10), 2671-2672. <https://doi.org/10.1111/apa.16012>
- Lissak, G. (2018). Adverse physiological and psychological effects of screen time on children and adolescents: literature review and case study, *Environmental Research*, *164*, 149-157.

<https://doi.org/10.1016/j.envres.2018.01.015>

Tandon, P.S., et al. (2012). Home environment relationships with children's physical activity, sedentary time, and screen time by socioeconomic status. *International Journal of Behavioral Nutrition and Physical Activity*, 9(1), 1-9.

<http://www.ijbnpa.org/content/9/1/88>

Twenge, J.M., Martin, G.N., & Campbell, K.W. (2018). Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion*, 18(6), 765-780. <https://doi.org/10.1037/emo0000403>

World Health Organization (2021). *Cardiovascular diseases (cvds)*. World Health Organization. [https://www.who.int/news-room/factsheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/news-room/factsheets/detail/cardiovascular-diseases-(cvds))