



The Psychological Impact of Video Games on Children and Adolescent

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Abstract

For Gen Z, video games play an important part in the lives of children and teenagers because of their availability on consoles, computers, iPhones, etc. Video games differ from typical social media because they are not just chatting; you solve problems, compete, earn rewards, and more. There are positive and negative effects of this however, the positives include attention, problem-solving, and decision-making, while the negatives can cause health problems and sleep problems and schoolwork time being less. Most of these are being caused by violent video games as they tend to affect the thoughts and actions of children especially as they don't have a fully developed brain to understand what is correct and what is not. Time, age and health are one of the factors that are being affected by video games. Just because a child plays a video game does not mean they are facing problems but parental control seems to be limited. This paper focuses on different factors of the brain and how it is affected by video games and how it affects cognition, emotional behavior, social relationships, and others.

Introduction

Video games and multi-game platforms have become among the most common forms of entertainment for children and adolescents. Unlike passive media, games are interactive; for example, players make decisions, receive rewards, experience failure, compete, cooperate, and often communicate with others online. As a result, video games may influence children's cognitive, emotional, behavioral, and social development.

The discussion is not only about whether games are good or bad for children, but about their mixed effects. Some studies reflect that games become addictive, leading to sleep problems. (Kristensen et al, 2021; World Health Organization, 2018). Also, studies show that games can help students with attention, mood management, social relationships, and persistence, achieved through game levels and their application to life challenges. (Bediou et al, 2018)

One positive is that video games can support executive functioning by improving working memory and cognitive flexibility, which helps children make better decisions. A 2023 meta-analysis of exergaming showed improvements in cognitive flexibility, inhibitory control, and working memory. (Xiong et al, 2023) Attention, such as selective attention, is also affected, as the games make players focus on specific information while ignoring nonsensical stimuli. Children who played action-based games showed improvements in top-down processing and spatial cognition. (Bediou et al., 2018) Video games also improve visuospatial processing, the



ability to understand the location and relationships between objects in an area, as findings from the Bediou meta-analysis support. (Bediou et al., 2018) Working memory also improves because people can temporarily hold information better, as games help children remember key instructions, locations, rules, and other details. These games also support operant conditioning and reinforcement by giving kids rewards for good behavior and consequences for bad behavior, which can apply to real life. (Sala, 2018) (Xiong, 2023)

Aggression and Violent Video Games

One of the most debated areas is whether violent video games increase aggression. Anderson et al. found that violent video game exposure was associated with increased aggressive thoughts and behavior and decreased caring and prosocial behavior. Prescott et al. also reported a relationship between violent gameplay and physical aggression over time.

However, other researchers, including Ferguson, argue that the effects may be small and influenced by publication bias, measurement problems, or other factors such as family environment, personality, and pre-existing behavior problems. Therefore, it is more accurate to say that violent games may be one risk factor for aggression in some children, especially when combined with poor supervision, high exposure, or existing emotional/behavioral issues. Observational learning can cause aggression, as children tend to learn from their model, which in this situation is the video game. Violent games tend to reward violent actions, and especially if the child is not in the developmental stage, they assume these things are good, while an older teenager will have the common sense to know that it is a game and not to use it in real life.

Sleep and Academic Performance

Problematic gaming is strongly connected with sleep issues. Children may delay bedtime, seek mental stimulation before sleep, or keep playing late at night because of online rewards and peer pressure. Poor sleep can then affect attention, mood, memory, and academic performance.

Gaming can also affect school performance when it replaces homework, reading, or studying. The issue is not gaming alone, but displacement when gaming consumes time that would otherwise be spent on healthy development.

Gaming may also affect the child's school performance as addiction can occur, causing them to not focus on homework, reading, or studying. The problem isn't gaming alone, but how the kid plays. Schedules are affected because many kids and teenagers stay up late at night to play, which disrupts the Circadian rhythm. This causes less sleep because the body needs specific times to sleep for basic memory processes, such as Memory consolidation, which helps consolidate information learned during the day. With games and school, children's sleep has been reduced, but 8 hours of sleep is needed to maintain the circadian rhythm and help people absorb information, especially in school. (Kristensen et al., 2021)

Video games can help with the social development of children, as they can help with communication skills. This can help children and teenagers build friendships and learn more;

however, too much can reduce the amount of face-to-face connections and physical activity. Like real life, there may still be some bullying language and witnessing something that is inappropriate. Social learning theory supports the claim as Children can learn behavior based on observation and imitation of people, and multiplayer games are one of them. Modeling can also happen as children can imitate models it may even be AI or an actual person teaching the game. There can also be a benefit of conformity, as a lot of public games kids are speaking in different languages and having friends from other countries may help them learn a new language.

Game Influence over Brain and Hormones

Brain regions such as the Nucleus Accumbens, Ventral Tegmental Area, and Prefrontal Cortex are predominantly activated. Playing video games with rewards activates the brain's dopamine, much as other highly rewarding activities do. However, activation of the reward circuits is a normal brain response as by itself it does not indicate addiction. Usually, children who are in problematic gaming show altered activity in the prefrontal cortex - the brain part that is in control of decision-making and planning. Also, these games may cause emotional stimuli to happen and amygdala responses to be altered. Games affect dopamine levels as people want to earn rewards, and eventually it causes addiction. The VTA contains dopamine-producing neurons, which are involved in reward and motivation. The prefrontal cortex of a child, which is needed for planning, judgment and decision-making, can improve, but too much addiction may also cause problems. Children tend to have high Neuroplasticity which is the reason why they are getting affected by these violent games as they adapt to based on experience and by the time they are older it is too late causing problems so parents need to control the kids to play age appropriate games and then allow after they learn the basics about life.(World Health Organization, 2018)

Moderating Factors for Behavior

There are various factors that affect psychological behavior and depend on the time children spend playing, their age, their ability to distinguish between real and reel worlds and between fun and social play, sleep habits, existing mental health conditions, balance with school, study patterns, exercise, and hobbies. Moderate, supervised gaming is less likely to cause harm than excessive, unsupervised, or emotionally dependent gaming.(Kristensen et al., 2021; World Health Organization, 2018) For moderating behavior, the biopsychosocial approach is affected, as biological factors can affect the intensity of the game; psychological factors affect the emotions of the child, causing parents ' and friends' relationships to either get better or get worse. A child's behavior is affected by Nature and Nurture, so Gaming does not affect each child in the same way. For example a more controlled parent will not face the effects of violent video games compared to a parent who does not pay attention to their child. One of the ways to try and stop this is using Delayed Gratification, which is that children need to learn how to stop even when they are still invested in the game because then they will be able to finish the important work that they need to finish.(Hilgard et al., 2019; World Health Organization, 2018). Then they can use these games as rewards for it. Age is extremely important. Developmental psychology plays a major factor, as different Age groups respond differently to different games as the older you are, the more mature you are to realize the good and the bad. In the end, environmental influences such as parental supervision are important to control the child from going too far.

Conclusion

Research shows us that video games can have both positive and negative effects on children and adolescents, both psychologically and physically. Some positive effects include developing problem-solving skills, attention, decision-making, motivation, and communication, as these games can help build friendships with many people. Overall, the negative effects can include poor sleep if someone is getting addicted, anxiety, irritability, and maybe lower academic performance, though most of these are caused when there are no restraints on the video games. Other effects include age and content, since some ages are more mature to handle violence than others. Sometimes parents don't supervise children enough or control how much time they play. Sleep is finally a major factor as addiction is one of the main reasons as addiction is the main cause of sleep loss and focus loss and limits should be made by the parents or even the game developers to make the game not work for someone for a specific age group as parents should make rules and regulation to control their children in the violent video games but also reduce the amount of time they play.

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