

The Varying Misconceptions and True Effects of Videogames on Psychological Functioning

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Abstract

This paper explores a variety of published articles and prior research that aim to defog the association between video games and psychological function, and whether they hinder or aid this key function. There are a variety of articles that debate this topic, with some arguing that videogames can lead to mental disorders and mishaps, and others that argue that they are beneficial to the human mind, with some arguing that these can serve as a medical treatment for some. A fundamental that many of these articles lacked was data or research to back them up, and most of those that did display the usefulness and of the use of videogames in psychological function. Through research and studies from Oxford University, Stetson University, and the Victoria University of Wellington, it becomes clear that in controlled quantities videogames of all types can serve as forms of comfort and therapy, aiding the psychological function of the brain and overall wellbeing for many.

Keywords: Internet-Gaming-Disorder (IGD), Psychological Well-Being, COVID-19, Videogames, Anxiety

Introduction

The Popularization of Videogames

Ever since the debut of the Nintendo N64 as the first mainstream console, videogames have grown from a fun pastime to a commonplace item in most homes. Moreover, with mobile devices becoming more powerful and videogame streaming service more and more available, more

people can enjoy videogames without the need for a dedicated console or powerful PC. Videogame streaming services, also known as cloud gaming, works by having the user stream a game live from a company's facility. Currently, the two biggest cloud gaming services are Google Stadia and Nvidia GeForce, and although their biggest drawback is latency, with Microsoft working on its own streaming service xCloud as well, the future is being paved for all to have access to the same games, regardless of what platform is being used. (Gnanasivam, 2021)

The Argument Against Videogame Consumption
Along with the increase in popularity and accessibility, videogames have also become a hot topic for arguments amongst many in trying to understand the effects of videogames on the psychological functioning of the adolescent brain. Parents are worried that their child will grow up socially inept and develop an addiction to videogames, to which they aren't completely without reason. In May of 2019, the World Health Organization formally recognized extensive gaming as a disorder that stems from an addiction to videogames. (Ganser, 2019) Also known as Internet Gaming Disorder (IGD), this obsessive addiction to videogames is in many ways like addictions in correspondence to other substance-related addictive disorders. People who play videogames extensively are prone to withdrawal symptoms, a lack of interest in previously enjoyed activities, and a decline in sociability. (Internet Gaming, n.d.) Although it is true that extensive gaming leads to addiction, there was a lack of

awareness about any potential psychological benefits to gaming in moderation.

The Surge in Videogame Consumption

With COVID-19 and its corresponding lockdowns keeping many quarantined and at home, the prominence of videogames drastically increased. As of March 2020, America saw an increase in time spent playing videogames during the coronavirus pandemic by 45%. (Statista, 2021) Furthermore, as seen by a study from the Entertainment Software Association (ESA), the number of Americans who play videogames leaped from 164 million in 2019 up to 214 million in 2020 then up to 227 million in 2021. (Snider, 2021) Due to the pandemic, the number of Americans playing videogames increased by 50 million in its first year alone, and collectively throughout the pandemic videogame use increased by 67 million. As mentioned prior, people are no longer bound to consoles and PCs for videogame playing. From 2019-2020, mobile gaming recorded a 12% increase in players, and grossed 77.2 billion US dollars in 2020 alone. (Mobile Gaming Industry Statistics and Trends for 2021, n.d.) As demonstrated by the aforementioned data, the pandemic introduced many new gamers to the videogame industry, notably, many casual gamers who had never avidly played in the past.

The Cure to Psychological Stresses

Why though? The pandemic enabled the success of videogames for a few key reasons. Firstly, as mentioned prior, people are home far more and have far less to do. To pass the time, many people are turning to videogames for entertainment. Secondly, humans are social creatures, and videogames enable us to be social in an isolated world. Between March and April of 2020, Microsoft reported a 130% increase in multiplayer engagement on its services. (Smith, 2020) All multiplayer videogames involve interaction and communication between people, and whether they be friends or strangers, multiplayer videogames allowed for humans to remain social.

Most prominently, COVID-19 has brought additional anxiety, stresses, and pain to many young adults. Roughly 1 in 3 teenage girls and 1 in 5 teenage boys have experienced new or worsening anxiety during the pandemic. (Teen Depression During COVID-19 Pandemic: What to Look For, 2021) Videogames can serve as an answer to these stresses plaguing many young adults. Videogames allow players to play in another reality, one where their stresses and troubles in life are nonexistent, hence allowing for them to be happier, improving their psychological wellbeing. (Deleuze, Maurage, Schimmenti, Nuyens, Melzer, Billieux, 2019) A great example of a videogame serving as a comforter is *Animal Crossing: New Horizons*, in which it's success soared as it offered just what the pandemic robbed of people: an escape whilst remaining multiplayer to play with friends. (Zhu, 2021)

Method

To find the proper sources, a select set of search terms were used (ie: Videogames and Mental Wellbeing, Videogames and COVID-19, Internet Gaming Disorder). Using Google Scholar as a basis of web search (large magazines, academic journals, and acclaimed independent databases were considered as well), a plethora potentially useful sources relating videogames and mental wellbeing were found. Of these sources, (n=56) sources directly discussed videogames and its adverse effects on mental wellbeing. Per source, a systematic literature review was performed. This multistep process entailed checking for an author or other form of legitimacy, relevant date to where the source was needed in the research and reviewing the site to which an article is published so that it is academically reliable. For large databases however this process was lightened up, because they have other forms of verifying what was written. For example, although the source from the American Psychiatric Association failed to have an author, what was written was reviewed by a named physician who is aware of the material, along with a date of review. With the

systematic review performed for eligible sources (excluding databases and other reviewed sources), (n=23) viable sources remained that could be used for the INTRODUCTION and RESULTS section. With the viable sources, they were used throughout INTRODUCTION section where needed.

For the results in the RESULTS section, all data/ideas were pulled directly from published research papers and case studies. With the relevancy and quality of data/ideas investigated thoroughly, (n=14) research papers were considered for the results. Although the data/ideas from all the (n=14) research papers were accurate, they were mostly basic and lacked nuance. Out of the remaining considered research papers, (n=3) research papers from Oxford University, Stetson University, and the Victoria University of Wellington provided data and insight that is not only interesting in itself, but when looked at cumulatively reveal that the use of videogames in moderation, regardless of genre, can serve as effective tools in aiding the psychological wellbeing of not only young adults, but the general population.

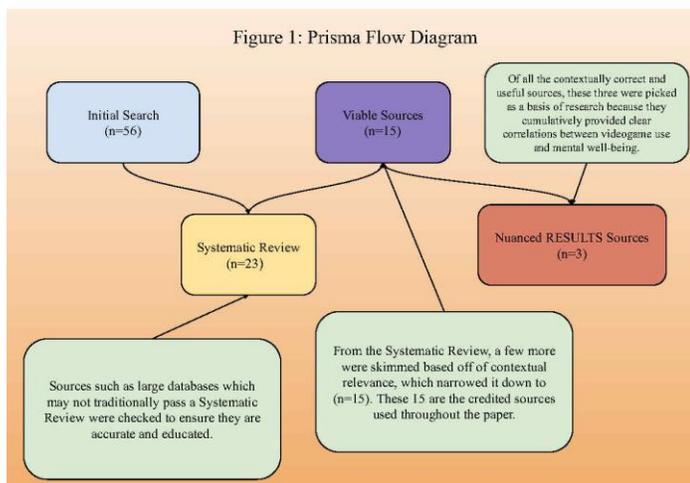


FIGURE 1: Prisma Flow Diagram depicting the METHODS process of diluting sources and narrowing viable sources

Results

Video Gameplay is Positively Correlated with Well-Being

In the research paper written by Niklas Johannes, Matti Vuorre and Andrew K. Przybylski of Oxford University, they observed player's wellbeing in context with 2 very different games. (Johannes, Vuorre, Przybylski, 2021) One of the games was Plants vs. Zombies: Battle for Neighborville, an action game, and the other was Animal Crossing: New Horizons, a more laid-back life simulation with an emphasis on casual and relaxed. To measure the wellbeing of the players, they initially used forms to gauge the players' current wellbeing, motives to play, and other critical information to the study. Then, they let the players play the games to their leisure for two weeks, with a form that was to be filled out after the two weeks, with a 1-week window to fill out the form. To measure the wellbeing of players, the Scale of Positive and Negative Experiences was used. (Diener, n.d.) This scale accounts for the positive and negative emotions of Player Well-Being, Extrinsic Motivation, Intrinsic Motivation, Player Autonomy, Player Competence, and Player Relatedness. For each positive/negative of each emotion, there was a scale from 1 to 7 that sought to reflect the level of that emotion that the player felt within the past 2 weeks of playing the game. Using histograms, the data from both games were accounted for on the same figure. Although difficult to quantify, the charts represented that those who played more (even those who estimated that they played more) experienced greater well-being than those who were less immersed in their game. The data also reflected that there was almost no difference in wellbeing experienced between the two games, despite being completely different genres.

Aggressive Video Games Are Not a Risk Factor for Mental Health Problems in Youth

In this case study led by Christopher J. Ferguson and C.K. John Wang, these professors of Stetson University displayed the correlation (or lack of) between violent videogame use and long

term mental health symptoms. (Ferguson, Wang, 2021) To be specific, they investigated the stigma that violent games lead to violent behaviors in children, and they wanted to see whether it was true or not. To measure this, they used a sample of 3034 youth from Singapore, with a beginning mean age of 11.26 years of age at T1. Using the ESRB game rating scale, they picked out violent/action-packed videogames and had those participating in the case study play them frequently throughout the case study. They measured their health symptoms every year, with each following year being T2 and T3. By the end of the trial, T3, the mean age was 13.12. At the two intervals (T2 and T3), the participants were asked a variety of questions gauging Somatic Complaints, Depression, Anxiety, ADHD, Social Phobia, and Impulse Control Problems. Their research concluded that the games made no impact on any of these listed aspects of the participants' psychological wellbeing.

The Effects of Casual Videogames on Anxiety, Depression, Stress, and Low Mood

Throughout this case study, Russel Pine, from the Victoria University of Wellington, along with 3 others, Theresa Fleming, Simon McCallum, and Kylie Sutcliffe explore the effects that the playing of videogames has on combatting Anxiety, Depression, Stress, and an overall negative mood. (Pine, Fleming, McCallum, Sutcliffe, 2020) Focusing more on casual videogames, they found that many articles reported positive effects on anxiety in gamers, giving them less anxiety that lasted upwards of 30 minutes after gameplay. Their research also revealed that videogames that had bright colors, immediate feedback, and clear tasks were especially well with eliminating feelings of anxiety, as well as allowing players to remain calm in an anxiety-provoking situation. Participants demonstrated decreased left frontal alpha brain waves, which demonstrated improvements in mood with the decrease in brain activity which is affiliated with anxiety.

Discussion

The Whole Picture

Videogames have made themselves more and more prominent in our world today, and with 40% of the world playing them, it becomes crucial to know about the psychological effects of videogames on humans. (Sanjay, 2020) As listed, each study (from RESULTS section) relates videogames and psychology, but each of these studies overlap and blend together to form a comprehensive explanation for how the three relate. In the study that measured how players psychologically reacted to playing casual videogames, there was research on how brain activity changed in response to playing videogames, and it demonstrated specifically how left frontal alpha brain waves decreased in activity when and shortly after the participants played videogames. These waves are indicative of anxiety levels and seeing how they decreased in activity demonstrates that videogames are indeed effective at curbing anxiety levels in people; however, this is in itself incomplete. The study targeted only casual videogames, but by compiling data from another study that covered more games, the results become more viable. Another study of research was the one that pinned videogame usage of both casual and action games. In this study, players play the casual Animal Crossing: New Horizons and the more chaotic Plants vs. Zombies: Battle for Neighborville, from which the researchers surveyed the players before and after playing for two weeks. They surveyed the moods and wellbeing of the players through these surveys and based their findings on the Scale of Positive and Negative Experiences. This scale covers 6 different emotions and both the positives and negatives of the emotions (see RESULTS section for further explanation). Through this scale, they were able to measure any changes in psychological well-being from playing these games, as well as how the changes varied from the casual and aggressive videogame. They found that those who played more of either videogame experienced a better state of well-

being than those that played less. Additionally, the data demonstrated that even the thought of playing more was enough to mimic the psychological effects of actually playing for longer, suggesting that the level of immersion a player experiences with a game affects just how great of a psychological impact that game has on one's wellbeing. The type of videogame didn't matter either because results were similar in all categories of the Scale of Positive and Negative Experiences (only notable difference between the two games was in player relatedness, which scored higher with those who played the more casual game). The data from their research suggested that there is no difference in the psychological well-being from casual and action videogames but, studying any potential negative effects of extremely action packed and violent videogames on youth allows for the conclusion to be more complete. The last study used as a final basis of argument was a case study performed in Singapore, in which roughly 3000 kids with the mean age of 11.26 years of age were exposed to violent videogames. From there, they were monitored for two years annually to measure any change in behavior, measuring a variety of the associated behaviors of violent videogames. Throughout the study, researchers noted no significant changes to the behaviors of the surveyed, which counters the many prior stigmas that tied violent videogames to depression, anger issues, anxiety, and many other negative behaviors.

Final Conclusion

Seeing how each of these studies tied together different aspects of videogames and mental health allows for the following to be concluded; Videogames, regardless of genre, can serve as effective tools in combatting anxiety and improve the overall psychological wellbeing of not only youth, but to the general population as well. Further research into the topic is highly recommended due to unavoidable deficiencies. Deficiencies;

Throughout this research paper, were two significant deficiencies that were bound to come up. First and foremost, there was a lack of quantifiable data available. There was data used throughout the paper where possible to provide the proper context and other benefits, but to the core argument, there was a lack of it. There is no set unit of measurement that is effective in quantifying psychological wellbeing, so researchers have to get creative in gauging this pivotal statistic. The most effective way of doing so is through forms and interviews, and then creating data from there. All the data is based on the moods of the people and their opinions, which makes the data yielded from research (such as the data from the Scale of Positive and Negative Experiences) difficult to trust. These are still useful in coming to a conclusion, but since the data is from questioning, there is a higher likelihood for error. Secondly, there is a lack of research and long-term testing of Internet Gaming Disorder (IGD). Although the rise of videogaming during the pandemic has brought IGD under the spotlight, there is a lack of long-term testing and studies on the disorder due to the fact that it is a relatively new disorder. There are a plethora of research and articles about IGD, but in the current use-case scenario of this research paper, they proved only useful in understanding the disorder, but no more. Having the ability to use data or any sort of figures that breakdown the long-term effects of IGD and levels of well-being in players would allow for a more complete conclusion and strengthen the credibility of the paper.

Future Avenues of Research

A much-needed avenue of research that this research paper opens up is for the future study Internet Gaming Disorder (IGD). To be specific, since this paper establishes that the initial effects of playing videogames are positive, it would be interesting to see what happens for people who play a lot of videogames over an extended period. An interesting topic would be researching the use of videogames amongst a pool of children that vary in prior videogame experience levels, and

checking up on their mental well-being up until adulthood. This would not only measure the likelihood of contracting IGD over an extended period of exposure, but it would also gauge how people mature over time with the common playing of videogames. Another interesting study would be on those who have already officially contracted IGD and how they got it. By studying more about their various experiences with the condition and what their environments/life situations were like when they noticed the disorder plaguing their lives, researchers can be one step closer to discovering a common trigger for the disorder, and then go onto creating preventative methods to counter IGD.

References

- Deleuze, Maurage, Schimmenti, Nuyens, Melzer, Billieux, J. P. A. F. A. J. (2019). Escaping reality through videogames is linked to an implicit preference for virtual over real-life stimuli. *Journal of Effective Disorders*, 245, 1024–1031. <https://www.sciencedirect.com/science/article/abs/pii/S0165032718315325>
- Diener, E. (n.d.). Scale of Positive and Negative Experience (SPANE). Measurement Instrument Database for the Social Sciences. Retrieved August 19, 2021, from <https://www.midss.org/content/scale-positive-and-negative-experience-spane-0>
- Ferguson, C. J., & Wang, C. (2021). Aggressive Video Games Are Not a Risk Factor for Mental Health Problems in Youth: A Longitudinal Study. *Cyberpsychology, behavior and social networking*, 24(1), 70–73. <https://doi.org/10.1089/cyber.2020.0027>
- Ganser, M. E. (2019). Gaming Addiction in ICD-11: Issues and Implications. *Psychiatric Times*, 36(9). <https://www.psychiatristimes.com/view/gaming-addiction-icd-11-issues-and-implications>
- Gnanasivam, A. (2021). The future of gaming is in streaming. *The DiamondBack*. <https://dbknews.com/2021/04/09/game-pass-streaming-industry-change/>
- Internet Gaming. (n.d.). American Psychiatric Association. Retrieved August 15, 2021, from <https://www.psychiatry.org/patients-families/internet-gaming>
- Johannes, Vuorre, Przybylski, N. M. A. K. (2021). Video game play is positively correlated with well-being. *The Royal Society*, 8(2). <https://royalsocietypublishing.org/doi/10.1098/rsos.202049#d1e530>
- Mobile gaming industry statistics and trends for 2021. (n.d.). *BusinessofApps*. Retrieved August 16, 2021, from <https://www.businessofapps.com/insights/mobile-gaming-industry-statistics-and-trends-for-2021/>
- Pine, Fleming, McCallum, Sutcliffe, R. T. S. K. (2020). The Effects of Casual Videogames on Anxiety, Depression, Stress, and Low Mood: A Systematic Review. *Games For Health*, 9(4), 255–264. <https://www.liebertpub.com/doi/10.1089/g4h.2019.0132>
- Sanjay, S. (2020, August 18). Around 40% of the People on the Planet Now Play Video Games. *Vice*. <https://www.vice.com/en/article/ep48g7/3-billion-people-around-the-world-play-video-games-now>
- Smith, N. (2020, May 12). The giants of the video game industry have thrived in the pandemic. Can the success continue? *The Washington Post*. <https://www.washingtonpost.com/video-games/2020/05/12/video-game-industry-coronavirus/>
- Snider, M. (2021, July 11). Two-thirds of Americans, 227 million, play video games. For many games were an escape, stress relief in pandemic. *USA Today*. <https://www.usatoday.com/story/tech/gaming/2021/07/13/video-games-2021-covid-19-pandemic/7938713002/>
- Statista. (2021, January 29). COVID-19: increase in time spent playing video games worldwide as of March 2020. <https://www.statista.com/statistics/1111587/video-game-time-spent-covid/>
- Teen Depression During COVID-19 Pandemic: What to Look For. (2021, April 20). *Scripps*. https://www.scripps.org/news_items/5319-teen-depression-during-covid-19-pandemic-what-to-look-for
- Zhu, L. (2021). The psychology behind video games during COVID-19 pandemic: A case study of *Animal Crossing: New Horizons*. *Human Behavior And Emerging Technologies*, 3(1), 157–159. <https://onlinelibrary.wiley.com/doi/full/10.1002/hbe2.221>