Video Game Addiction: Formation and Impact on Human Life

Kexin Fan,[1, †], Xuyin Zhang [2, †, *]

[1] Department of Psychology, Chengdu Medical College, Chengdu, China

[2] Department of Psychology, University of California, San Diego, California, United States

* Corresponding author: xuz028@ucsd.edu

[†]These authors contributed equally.

Abstract. Video game addiction has become a severe problem within the context of the rapid growth of technological society. Past researches show that although a thorough conclusion of the mechanism of video game addiction has already been built. However, the gap in the impacts of behavioral disorders on human life and social connection remains. The aim of the review is to connect recent research related to development and effects and to connect many aspects of how video game addiction affects people's lives. The formation and development of video game addiction and its possible impacts were examined separately, as the current studies focus on predicting future trends of video game addiction. The results show a correlation entre video game addiction and different personal factors such as mental health, parental factors, and gender differences. It also highlights the prominent correlation between different types of impacts and the addictive use of video games in both physical and psychological views. Studies are limited by the difficulty of controlling variables produced by time passing, and the vague boundary of social contact between the video game world and reality is also unfinished work. The results of this research lead to the conclusion that additional work is needed to be finished on experimenting with the possibility of genetic and physiological factors that may interrupt and affect the formation of video game addiction and Internet Gaming disorder (IGD). It will provide more opportunities for patients and people suffering from this unconventional type of addiction.

Keywords: video game addiction, self-control, self-esteem, Parental rearing styles, DES, depression, anxiety.

1. Introduction

In the wake of the advance and popularity of internet technology, the network is gradually changing the way people live. According to statistics, the video game user base has reached 552 million by June 2022 in China [1]. With the prevalence of online games, the problem of video game addiction has also received increasing attention from researchers and the public. For the definition of video game addiction, Griffiths believes that it is a kind of addiction because it meets the six core criteria of addiction, which are relapse, mood alteration, withdrawal symptoms, tolerance, conflict, and salience [2].

Video game addiction affects both mental and physical health, producing consequences including aggression, anxiety, stress, depression, and insomnia [3,4]. At the same time, more addicted gamers are performing poorly on academic assessments and have worse relationships with their families [5]. Video game addiction can have many negative effects on the individual. Therefore, the study of video game addiction has important practical significance for human life.

Numerous previous studies have demonstrated the various elements that influence video game addiction. Video game addiction links to elements like self-control and self-esteem. Self-esteem is detected as a nonnegligible prognosticator of online game addiction by an empirical study. The lower the self-esteem of a person, the higher the potential of this person to become addicted to video games [6]. Meanwhile, self-control was discovered to correlate with video game addiction significantly and negatively by a correlation analysis that the worse the self-control, the stronger the tendency to addiction [7]. Demographic studies suggest that factors including being male, young, and single were more associated with video game addiction [8].

In the first part of this paper, the causes of game addiction will be discussed from the perspective of personal factors, environmental factors, and gender. The second part will discuss the impacts of video gaming addiction, including physical and mental health aspects. Meanwhile, the formation and impact of video game addiction have been further discussed and summarized on the ground of both parts of this paper. The purpose of this paper is to This paper is devoted to extending existing research on video game addiction and contributing to the literature by analyzing how video game addiction forms and affects human life. The authors will follow the principle of combining theory and empirical evidence. This paper is aimed to discover new perspectives on how video game affects real life and identify research gap that can provide a direction for future academic research.

2. Causes of Video Game Addiction

2.1 Personal factors

Many passing studies have detected that both individual and environmental qualities influence video game addiction. From the point of personal qualities, the low self-esteem people who gain low self-control at the same time might have higher levels of video game addiction [6,7]. Self-esteem is a subjective evaluation of people about their values or feelings toward themself [9]. Lemmens and colleagues conducted a two-wave panel study of 851 samples and analyzed causality through autoregressive structural equation models, demonstrating that the psychosocial health indicators of low self-esteem were responsible for video game addiction [6]. Self-control is a complex psychological structure that contains multiple dimensions or levels of specific competencies [9]. Using multiple regression analysis of data from 1471 subjects, Kim and colleagues have found that the degree of individual self-control predicted the degree of video game addiction and that certain characteristics such as low self-control may lead to the situation that some individuals gain a predisposition to addiction to video games [10].

There is also a symbiotic link entre video gaming addiction and poorer psychological wellness. Wang concluded with his colleagues that higher levels of addiction were linked with more serious depression, anxiety, and stress [3]. Using hierarchical multiple linear regression analysis, Mathews and colleagues demonstrated that having attention deficit hyperactivity disorder (ADHD) can lead to a greater risk of video game addiction and that gamers with stronger ADHD symptoms may have an increased risk of video game addiction symptoms and its passive outcomes [11]. These studies all demonstrate the correlation entre defective psychological wellness and video game addiction, and that this correlation can contribute in some way to the detection and treatment of video game addiction. Psychological factors related to video game addiction can help therapists to screen and diagnose patients with video game addiction and provide therapeutic interventions based on the corresponding adverse psychological factors.

2.2 Environmental factors

Environmental factors can also contribute to game addiction. An empirical study showed that dual-income household teeners have higher scores on addiction elements such as salience, tolerance, and withdrawal, while multicultural household teeners have markedly greater mood modification scores. These two environmental factors contribute to adolescent video gaming addiction through killing time and engaging in social interactions, respectively [12]. This study applied multiple regression analysis and multivariate analysis of variance to determine the causality entre family environment, including multiculturalism and dual income, and adolescent video game addiction. However, the subjects in this research were limited to household types in Asian countries, and therefore may lack external validity and cannot be generalized to other regions.

Parental rearing styles can also have effects on the likelihood of addictive behaviors in adolescents. A study that analyze data from 747 high school student subjects using multivariate analysis of variance (MANOVA) and Canonical Correlation methods demonstrated that negative parental rearing styles were strongly associated with video game addiction, while under authoritarian

parenting styles, children's predisposition to gaming addiction was more serious [13]. This finding indicates that adolescents may receive vicarious compensation from video games because of parental authoritarianism, thus leading to video game addiction. However, the subjects in this study were all from Beijing, China, so the findings may lack external validity when generalized to adolescents in other regions. Future research needs to fill this gap by selecting samples from more regions and different cultures for study and analysis. Also, the subjects were all high school students, so the limitation of conducting experiments with social groups of different ages remains unfilled. Future studies are recommended for replication in more diverse groups.

2.3 Gender

Gender is also a factor associated with gaming addiction. Applying multiple regression analysis, Ko and colleagues demonstrate that men have greater age, poorer self-esteem, and less satisfaction with their current existence have a higher risk to be addicted to video games or have more serious gaming addiction problems. However, it is noteworthy that female subjects in this study did not reflect this association [14]. A study by Brunborg and colleagues found that factors such as being male, young, and single were more associated with video game addiction [8]. Moreover, in accordance with research on high school students, compared with girls, boys have a higher risk to be addicted to video games [13]. However, in these studies, samples without previous video game experience were not included in the analysis of gender differences. Therefore, further research is needed to estimate the patterns of gender differences in such groups.

3. Impacts of Video Game Addiction

Previous studies have discovered that video game addiction leads to effects on physical and mental health [15]. For most individuals, video gaming is an enjoyable and stimulating activity. With this perspective, it becomes attractive for people to use video games as a tool to overcome problems that they cannot handle in real life. As a result, computer games can be recognized as a continuum from activities that are enjoyable to pathological, and even cause addictive use [4]. Addiction will probably lead to future influences on human life mentally and physically, which are the most negative.

3.1 Physical health

The harmful effects on vision cannot be overlooked as the first effect of video game addiction on humans. Prolonged gaming could lead to issues with the vision. For those players who focus on digital screens for a long period of time, the negative issues on vision can be presented heavier compared with the people who rarely play video games. There have been issues with long-term and near-term adaption and symptoms of dry eye syndrome, including blurry vision close, difficulties focusing, headaches after using screens, and neck pain [16]. The thought of being rewarded in the game world can lead to a situation where individuals will bury themselves in video games and eventually addicted to them. A recent study also experimented on students from an area where with a highly researched rate of video game addiction in Southeast Asia, and it revealed that eye strain affected 19% of the participants [17]. This situation is found more severe in social groups of adolescents and pre-adolescents because there are studies that demonstrated that it will increase the risk of getting Digital Eye Strain (DES) if someone spends more time on digital screens, especially smartphone screens [17]. As ergonomic practices evolve, it is even easier for people to spend time staring at digital screens. The upgrade of handheld devices and chair positions provides a chance for people to stay in a comfortable posture and not move their eyeballs from the screens. All studies and tests which is mentioned have demonstrated that looking at a digital screen can have a detrimental effect on vision. The progress of ergonomic practices leads the situation worse, as it can make users stay in comfortable postures for a longer time. This means it may lengthen the average time that eyeballs keep on screens, and it will cause a higher rate of DES.

3.2 Mental health

For a very long time, clinical and psychological research has investigated the link entre mental health and video game addiction. The two most controversial factors are depression and anxiety. A long-term study finds a reciprocal association between depression and video game addiction [3]. People with depression may often opt to play video games to help them deal with their emotional depression and misery, but excessive gaming can lead to addiction and sever people from their real-world relationships. This will cause severe mental depression [3]. A systematic review reveals the association between IGD and psychopathology. 13 previous studies reported a complete association between IGD and depression, and 8 cross-sectional studies found a complete association between IGD and anxiety. As a result, in the literature related to the presentation of video gaming disorder on views of psychology and psychopathology, 92% of the previous research has documented a prominent relationship between gaming addiction and anxiety, and 89% between gaming addiction and depression [4].

Adolescents are also said to develop gaming ideas and self-esteem in the video game world, which can cause psychological pain. This suggests that adolescents with video game disorder would have specific, problematic thinking about gaming, and it could result in addiction [4]. The references mainly focus on adolescence and pre-adolescence and provide specific results through analyses of experiments and questionnaires. Although the researchers conclude generally the impacts of video game addiction, the limitation of experiments on different social groups is still not filled up. Future researchers might infer the possibility of impacts on other social groups through the conclusion of the teenage groups.

4. Conclusion

This study suggests that factors including personality, mental health, environmental factors, and gender could lead to video game addiction. People with poor self-esteem, poor self-control, and poor mental health such as stress and anxiety, have a higher risk to be addicted to video games. In addition, problematic parenting interactions, including parental behavioral control, parental psychological control, and worse parent-child relationship quality can exacerbate gaming addiction. Addiction to games compromises vision and leads to DES. Addiction to video games affects people both physically and mentally as it will lead to or aggravate depression.

Since the popularization of electronic devices, the research on video game addiction had been greatly enriched, however, there are still gaps needed to be filled up. The elements such as environment and self-control that impact the development of video game addiction should be further explored. There is also a blank space for the conclusion of impacts on both mental and physical areas, which is explained in this paper.

In light of these recent studies, our results summarize the findings of previous studies on causes and impacts. And this study could bestow a superior grasp of the current research status and trends, and provides clarity for the ongoing debate on the evaluation of video game addiction, which is good preparation for future research.

But this paper also has some limitations. This study does not distinguish between various video games like the content and form of the games. The differences in the content and form of games have a certain connection with the causes and impacts of addiction. In addition, this study does not put forward and analyze all existing factors. Besides, the concern of various therapies for video game addiction caused by different factors needs to be answered.

Overall, this paper analyzes and reviews some current research and findings on gaming addiction, including causes and impacts. For future research, the impacts on physiology mentioned in this study need to be deeper explored in view of neuroscience, experiments on the impacts of different types of video games can be built up, especially the differences between games which are gained socialization function and those not gained it should be researched separately. Further research could focus on different social groups, exploring prevention measures for each different type of social group,

adapting the criteria to people from different cultures and ages, and designing interventions with more lasting effects.

References

[1] China internet network information center. 2022. 50th statistical survey report on the internet development of china. http://www.cnnic.cn/n4/2022/0916/c38-10594.html.

[2] Griffiths, M. A 'components' model of addiction within a biopsychosocial framework. Journal of Substance use, 2005, 10(4): 191-197.

[3] Wang, J. L., Sheng, J. R., & Wang, H. Z.. The association between mobile game addiction and depression, social anxiety, and loneliness. Frontiers in public health, 2019, 247.

[4] Kuss, D. J., & Griffiths, M. D. Internet and gaming addiction: a systematic literature review of neuroimaging studies. Brain sciences, 2012, 2(3): 347-374.

[5] He, W.X. The Relationship Between Parental Psychological Control and Adolescent Online Game Addiction: A Mediated Model With Moderation. Guangzhou University. 2022.

[6] Lemmens, J. S., Valkenburg, P. M., & Peter, J. Psychosocial causes and consequences of pathological gaming. Computers in human behavior, 2011, 27(1): 144-152.

[7] He, C., Xia, M., Jiang, G. R., & Wei, H. Mediation role of self-control between Internet game addiction and self-esteem. Chinese Journal of Clinical Psychology, 2012, 20(1): 58-60.

[8] Brunborg, G. S., Mentzoni, R. A., Melkevik, O. R., Torsheim, T., Samdal, O., Hetland, J., ... & Palleson, S. Gaming addiction, gaming engagement, and psychological health complaints among Norwegian adolescents. Media Psychology, 2013, 16(1): 115-128.

[9] Chen, M., Huang, S.H., Chen, Z., Xu, N., & Hou, X.H. Relationship Between Cognitive Reappraisal and Internet Gaming Disorder of Adolescents: Mediating Role of Self-esteem. China Journal of Health Psychology, 2022, 30(9): 1350-1354.

[10] Kim, E. J., Namkoong, K., Ku, T., & Kim, S. J. The relationship between online game addiction and aggression, self-control and narcissistic personality traits. European Psychiatry, 2008, 23(3): 212-218.

[11] Mathews, C. L., Morrell, H. E., & Molle, J. E. Video game addiction, ADHD symptomatology, and video game reinforcement. The American journal of drug and alcohol abuse, 2019, 45(1): 67-76.

[12] Chou, C., & Hsiao, M. C. Internet addiction, usage, gratification, and pleasure experience: the Taiwan college students' case. Computers & Education, 2000, 35(1): 65-80.

[13] Wang, P., Gan, Y., & Li, M. Research on relationship between tendency to computer game addiction and parental rearing styles in senior high school students. Chinese Journal of Clinical Psychology. 2006.

[14] Ko, C. H., Yen, J. Y., Chen, C. C., Chen, S. H., & Yen, C. F. Gender differences and related factors affecting online gaming addiction among Taiwanese adolescents. The Journal of nervous and mental disease, 2005, 193(4): 273-277.

[15] Zaman, M., Babar, M. S., Babar, M., Sabir, F., Ashraf, F., Tahir, M. J., ... & Pakpour, A. H. Prevalence of gaming addiction and its impact on sleep quality: A cross-sectional study from Pakistan. Annals of Medicine and Surgery, 2022,78, 103641.

[16] Mylona, I., Deres, E. S., Dere, G. D. S., Tsinopoulos, I., & Glynatsis, M. The impact of internet and videogaming addiction on adolescent vision: a review of the literature. Frontiers in public health, 2020, 8, 63.

[17] Balhara, Y. P. S., Mahapatra, A., Sharma, P., & Bhargava, R. Problematic internet use among students in South-East Asia: Current state of evidence. Indian journal of public health, 2018, 62(3): 197.