An Analysis of the Causes and Impacts of Internet Gaming Disorder

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Abstract. With the acceleration of the pace of life and the intensification of competitive pressure, an increasing number of patients have psychological and behavioral abnormalities and mental disorders. In addition to common mental diseases, such as depression, anxiety, Internet game addiction is also a kind of mental illness. This article will discuss Internet Gaming Disorder from three aspects: cause, impact and therapy. Firstly, the causes of IGD are mainly composed of individual factors and social support factors. Genes and emotional states, as well as the quality of close family relationships and the number of friends, all play an important role in the formation of IGD. In addition, IGD will not only cause great harm to people's health, but also affect people's study and work performance, as well as life satisfaction. Finally, Treatment will also be the focus of subsequent research in this paper.

Keywords: Internet Gaming Disorder; Causes; Impacts; Therapies.

1. Introduction

With the rapid development of the Internet and the prosperity of the online game industry, more and more tragic events of physical and mental health damage caused by online game addiction have occurred. These events have been widely concerned and discussed from all walks of life. People with Internet Gaming Disorder have the following two main problems. In terms of behavior, they are addicted to online games and cannot extricate themselves. Once they stop using the network due to external forces, they will have a serious withdrawal reaction. In the psychological aspect, the performance is in the emotional and cognitive deviation, because of long-term excessive Internet and the real life has a serious sense of inadaptability, pessimism, depression, social fear, easy to nervous [1].

Existing studies reveal that men are more likely to suffer from the disease than women by a ratio of at least two to one. In the study of age, it is found that there is an inverted U-shaped curve between age and gaming disorder. Adolescents are the high-risk period for the onset of gaming disorder, and it shows a downward trend around the age of 30. These studies suggest that the main causes of IGD are innate genes, acquired personality formation and development, and external social support from family and friends [3, 4].

The need for effective treatment of IGD is growing. Many people suffering from pathological online gaming are increasingly concerned about their physical and mental health, seeking help from mental health professionals and receiving various forms of treatment. In some countries, special psychiatric clinics and centers have been opened to provide special treatment for people with IGD. The impact of IGD is not to be underestimated. It not only affects people's physical health, but also greatly affects people's social function. One of the most obvious features of being addicted to games is that it causes people's eyesight to deteriorate. Mobile phones, computers and other electronic products have great radiation to people, and the radiation can even affect the development of children. In addition, long-term addiction to games will affect people's normal rest or sleep time and quality, thus reducing people's academic and work performance, and reducing people's happiness and satisfaction with life [3]. In the case of adolescent children, addiction to games will also affect the relationship between them and their parents, and the shaping and formation of their three views will

also have different degrees of influence [5]. IGD is also commonly associated with other psychiatric disorders, such as depression, attention deficit and obsessive-compulsive disorder [3].

The author found that most of the previous studies on the cause and influence of IGD adopted questionnaire survey, which was greatly influenced by the subjective of the respondents, resulting in the difficulty in ensuring the objectivity of the data. Secondly, most of the papers lack comparative studies and do not make comparisons and analyses across time, regions and cultures. Therefore, when analyzing the causes and impacts discussed at present, the impact caused by the epidemic, cultural differences or regional differences is not excluded.

To sum up, this paper aims to integrate previous perspectives and explore the causes, effects and cures of IGD. Studying the causes and treatment methods of online game addiction in today's era is particularly important. By studying the causes, people will better to prevent the occurrence of addictive behaviors from the root. And at the same time, Analyzing the causes and effects of IGD will helpful to better cure the unfortunate patients who have suffered from the disease. It also provides advice to game companies on ways to ensure the physical and mental health of game participants when formulating game mechanics and rules.

2. Factors that affect IGD

2.1 Individual factors

Individual factors of IGD are predominately discussed from the following three aspects: Biological genes, mental disorder and Self-esteem.

Early predisposing variables include genetic and biological elements that affect human behavior. A person's core traits are influenced by predisposing factors, and they may remain largely consistent throughout time. Genetic characteristics and other biological determinants of human behavior, along with ontogenetic features, children's early experiences, and their influence on IGD experiences, are the earliest predisposing factors. Early adverse experiences can increase the risk of future stress responses, mental disorders and addictive behaviors [7, 15]. Approximately 48% of the characteristics of gaming disorder can be attributed to genetic factors [8].

Mental illness is one of the important factors causing IGD. The main feature of anxiety disorder is the patient's strong, excessive and persistent worry and panic behavior about daily situations. A survey was done in a previous study that was part of a comprehensive cross-sectional survey initiative on Australian teens' mental health and use of electronic media [9]. Internet addiction, smart phone addiction, and online game addiction were all related to with an individual’s social anxiety [10]. The high percentage of gamers with anxiety compared to non-gamers indicates that mental disorders and gaming addiction are interrelationships.

Low self-esteem has been proven one of the causes of IGD. In this context, "self-esteem" refers to a belief in one's own value and potential. Self-esteem is a useful indicator of Internet use. People who lack self-confidence may use the Internet as an escape. Self-esteem and internet addiction are strongly correlated with one another [11]. The current study also discovers that male teenagers who are less satisfied with their daily lives and have lower self-esteem are more likely to become online games addiction. Lower life satisfaction is linked to early-onset substance use [11]. Players can engage in games that make them feel more confident and allow them to escape from the unsatisfying reality of playing online games.

2.2 Social support

In terms of the formation of IGD, social support also has a great influence on IGD [1]. Social support is mainly analyzed and discussed from the following three factors: the marital relationship between parents， quantity, and quality of friends [4].

The marital relationship of parents has a prime influence on the growth and development of children. Exposing a child to perceived danger from family conflict due to parent marital problems

may increase the likelihood of risky sexual behavior and emotional problems later in life. Existing studies have measured the level of parental marital conflict through the child's perception of the intra-parental conflict Scale, which contains 19 items, measured from 4 dimensions, ranging from 1 (never to) to 5 (very often) [6]. The results show a direct effect between parental marital conflict and increased IGD traits in children [6]. There is a significant relationship between children growing up in families with perceived marital conflict and later developing addictive Internet behaviors [6]. Under the influence of parents' marital conflict, children are likely to be afraid of an uncertain future and more likely to develop pessimistic feelings about the future. Compared with children living in good marital status for a long time, children living in marital conflict have a more negative experience, difficulty to form a positive good parent-child relationship or intimate relationship, and are more likely to suffer from Internet addiction, academic decline and other problems. Unresolved conflicts between the couple in the family system will create a tense family atmosphere. Online games have become a compensatory means to cope with parents' conflicts. Children are more likely to regard the Internet world as a relatively safe and comfortable environment and are eager to find emotional warmth and support in the Internet world that is not satisfied in the real world. To escape the tension and pressure from the real world, children may try to spend more time in the virtual environment of online games. As a result, children who grow up in conflict-prone homes are more likely to develop a gaming addiction.

Previous research has shown a link between poor social skills, loneliness, and pathological gaming [3]. Through the interview, the respondents were asked the following questions to measure the relationship between online game addiction and the number of friends. The questions asked respondents whether they felt they had enough friends to spend time with, whether they felt lonely and whether they wished they had more friends. Previous studies have concluded that having enough friends feel negatively correlated with game addiction, and having enough friends can effectively reduce the probability of game addiction [4]. The lack of company will affect young people's transition from family to society. Due to the heavy study and the spread of family residence, teenagers lack the opportunity to communicate with friends face to face. Meanwhile, online games provide a good platform for teenagers to communicate directly with their emotions. Some of the most frequent gamers said online games had helped them build or strengthen relationships with friends, while others said they had helped them spend more time with their families. Therefore, online game addiction can be explained to some extent as a compensatory behavior to reduce loneliness.

Based on the above research, the author found that most of the literature on social support is not perfect. Social support not only comes from friends and parents, but also from partners, classmates, work partners and many other aspects. However, few papers have analyzed partners, classmates and work partners.

3. Impact on IGD

IGD can bring many negative effects to people and greatly affect people's lives. The effects of IGD will be discussed in this paper including personal health, academic performance, and life satisfaction well-being.

3.1 Personal health

There are two main changes in brain structure caused by Internet addiction. One is the changes in the prefrontal lobe. The brain waves of children with IGD cannot be detected in 80% of cases, and the frequency of brain waves is 1.5Hz when they do not play games. The other is changes in dopamine production. Internet addiction causes dopamine to flood out of the amygdala. Too much dopamine can kill neurons in the brain. Neurobiological studies [12]. A meta-analysis of neuro activation studies in the brain function of game disorders showed that: excessive activation of the bilateral cingulate cortex, caudate nucleus and posterior inferior frontal gyrus (mainly related to reward, inhibitory control and cognition); There was insufficient activation in the inferior prefrontal gyrus (related to

motivation, risky decision-making and emotion regulation), and insufficient activation in the posterior insula, somatomotor and sensory cortices (related to reward) [13]. Further analysis revealed that IGD patients had different degrees of activation in certain brain regions compared with normal controls using different cue paradigms. Movement, executive functions, cognition, motivation, and reward are all biological and behavioral processes that are influenced by dopaminergic pathways. Recent research discovered that the brain mechanisms driving IGD are comparable to those of substance addiction in terms of dopamine release magnitude, reward inhibitory mechanism alterations, and loss of control.

Online gaming has negative consequences on people's health, particularly eye health, which can lead to eye fatigue. Boys with more dominance have a more dominating effect on eye health because they frequently use internet cafes and play online games. Human eyes have to work more than necessary to see the picture and words on the screen because of the low contrast and glare. Gaming junkies are more susceptible to digital eye strain because they must maintain continual focus when playing most video games as their eyes dart between characters and fight to keep up with the quick-moving, flashing graphics on the screen. With prolonged concentration, digital eye strain can lead to headaches and even having to wear glasses as human vision is impaired.

3.2 Academic performance

A large number of studies have pointed out that IGD is negatively correlated with academic performance [5]. Some teenagers are addicted to online games and spend so much time on completing the tasks in the games that they neglect the tasks in their daily studies. In the existing game mechanism, many game companies have created a lot of linear serial tasks in order to attract game users continuously and stably. Each task is connected with each other, and game players will get a good sense of accomplishment and satisfaction after completing a series of tasks. This part of psychological experience just makes up for the psychological needs of the teenagers with poor academic performance who are ignored by school teachers and classmates because their academic performance is not good enough. Thus, these teenagers are more addicted to online games and fall into a vicious circle. However, the link between poor academic performance and online game addiction is not absolute [5]. The author found that there are a lot of research shows that good students are also at high risk of online game addiction. Students with good academic performance are often expected to be high by their parents and teachers, so their pressure is also increased. Children are vulnerable to stress maladjustment due to their immature psychological mechanisms, which make them escape from real life, where they find it difficult to breathe, and escape into the relaxed world of online games.

3.3 Life satisfaction

Life satisfaction mainly refers to how individuals evaluate their life status, which is a subjective evaluation of people. Previous studies have shown an inverse relationship between life satisfaction and IGD [3]. Previous studies have shown that excessive addiction to online games can lead to lower life satisfaction. Patients with game addiction may suffer from bad psychological states, such as depression, social anxiety and loneliness, etc [3]. At the same time, excessive addiction to the Internet world will also lead to the breakdown of interpersonal relationships and the decline of career or academic performance, etc [5]. Taking these effects into account, it can be seen intuitively that out-of-control game behavior will lead to the decline of people's life satisfaction.

However, life satisfaction is an attitude affected by many dimensions. When assessing the impact of IGD on life satisfaction, it is difficult to determine whether the respondents are experiencing other hardships during the same period. Therefore, the authors believe that the conclusions drawn from these studies need to be further explored.

4. Therapy

CBT is thought to be an effective treatment for internet gaming disorder (IGD). The IPACE model and other gaming disorder models suggest that CBT approaches may be particularly effective in addressing the dysfunctional processes that lead to IGD. CBT differs from other treatments, including pharmacological therapy, in that it may target and change maladaptive cognitions that underlie harmful or distressing gaming behaviors. In numerous clinical investigations of patients with alcohol dependence and patients with pathologic gambling problem, CBT has been thought to be beneficial. The results of numerous studies on IGD have indicated that CBT is useful for symptom alleviation [16]. CBT was more successful in treating a group of adolescents than individual treatment. Adults who received CBT for eight sessions saw improvements in their internet addiction symptoms that lasted for six months. In the study by Kim, Han, Lee, and Renshaw, CBT proved effective in reducing IGD symptoms [14].

5. Conclusion

In conclusion, IGD impacts one's life and is associated with personality, social support, and the dopaminergic system. Because of its symptoms and the results of brain imaging, IGD has been classified as a behavioral addiction in a number of studies. However, since the brain imaging investigations of IGD are primarily cross-sectional studies without baseline measurements, the neurobiological causes of IGD groups need further investigation. They depend on associations between structural and functional brain changes and Internet gaming characteristics, but these associations cannot infer causality. Also, future studies should consider other factors like family function, culture, gender, and different gaming types. The negative and positive effects of IGD may bring the public a new recognition of the internet and gaming. Finding IGD cognitions may assist practicing healthcare professionals in creating a clinical formulation and guiding treatment plans for the client who is an adolescent and their family. In the new and expanding field of study into the cognitive aspects causing Internet gaming problem, it is hoped that this first work will serve as a model for several other investigations.

References

[1] Zhaojun Teng, Halley M. Pontes, Qian Nie, Guangcan Xiang, Mark D. Griffiths, Cheng Guo. Internet Gaming Disorder and Psychosocial Well-Being: A Longitudinal Study of Older-Aged Adolescents and Emerging Adults. Addictive Behaviors, 2020(110), 106530.

[2] Pontes, H. M., & Griffiths, M. D. Measuring DSM-5 Internet gaming disorder: Development and validation of a short psychometric scale. Computers in Human Behavior, 2015(45) 137–143.

[3] Wang J-L, Sheng J-R and Wang H-Z. The Association Between Mobile Game Addiction and Depression, Social Anxiety, and Loneliness. Front. Public Health, 2020, 7:247.Amjady N. Short-term hourly load forecasting using time series modeling with peak load estimation capability. IEEE Transactions on Power Systems, 2001, 16(4): 798-805.

[4] Frida Andr´e , Niroshani Broman, Anders Hakansson, Emma Claesdotter-Knutsson. Gaming Addiction, Problematic Gaming and Engaged Gaming – Prevalence and Associated Characteristics. Addictive Behaviors Reports, 2020(12), 100324.

[5] Sacip Toker, Meltem Huri Baturay. Antecedents and Consequences of Game Addiction. Computers in Human Behavior,2016(55): 668–679.

[6] Jeong, H., Yim, H.W., Lee, SY. et al. A partial mediation effect of father-child attachment and self-esteem between parental marital conflict and subsequent features of internet gaming disorder in children: a 12-month follow-up study. BMC Public Health 2020(20): 484.

[7] Tieqiao Liu, Min Zhao, Wei Hao .Research status and Prospect of gaming disorders [J].Chinese , 2020(4):187-191,197.

[8] MATTHIAS B, YOUNG K S, LAIER C, et al. Integrating psychological and neurobiological considerations regarding the development and maintenance of specifific Internet-use disorders: an interaction of person-affect-cognition-execution (I-PACE) model. Neuroscience and Biobehavioral Reviews, 2016(71): 252-266.

[9] Gaming disorder in adolescence. J Abnormal Child Psychol. 2016 (44):1635–45.

[10] 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(7).

[11] Aydm, B., & San, S. V. (2011). Internet addiction among adolescents: The role of self-esteem. Procedia - Social and Behavioral Sciences, 2011(15), 3500–3505.

[12] MATTHIAS B, YOUNG K S, LAIER C, et al. Integrating psychological and neurobiological considerations regarding the development and maintenance of specific Internet-use disorders: an interaction of person-affect-cognition-execution (I-PACE) model.

[13] Fayazi M, Hasani J. Structural relations between brain-behavioral systems, social anxiety, depression and internet addiction: with regard to revise Reinforcement Sensitivity Theory (r-RST). Computers Human Behav. 2017(72):441–8.

[14] Han, J., Seo, Y., Hwang, H., Kim, S. M., & Han, D. H. Efficacy of cognitive behavioral therapy for internet gaming disorder. Clinical Psychology & Psychotherapy .2019.

[15] National Drug Abuse Surveillance Annual Report (2016) [EB/OL]. http: //www. sfda.gov.cn/WS01/CL1033/175995.html.

[16] Kim, S. M., Han, D. H., Lee, Y. S., & Renshaw, P. F. Combined cognitive behavioral therapy and bupropion for the treatment of problematic on-line game play in adolescents with major depressive disorder. Computers in Human Behavior, 2016, 28(5):1954–1959.