



Impact of PUBG Game Addiction on Social Isolation and Narcissistic Tendencies among Gamers

Maria Waris Nawaz¹

Tooba Nadeem²

Sana Liaqat Rao³

Tahira Fatima⁴

Sidra Shoab⁵ 



(✉ Corresponding Author)

^{1,2,3,4,5}Institute of Professional Psychology, Bahria University Karachi, Campus, Pakistan.
Email: sidrashoab.ip@bahria.edu.pk

Abstract

The current research aimed to explore the relationship of PUBG game addiction with narcissistic tendencies and social isolation in gamers. For this correlation survey based research the data was conveniently collected from PUBG gamers (N= 101) age ranging from 13-30 years through online response method. The instruments included Online Game Addiction Scale (Kim, Namkoong, Ku, & Kim, 2008) Narcissistic Personality Inventory (Raskin & Hall, 1981) and Measures of Social Isolation (Zavaleta, Samuel, & Mills, 2017) for testing the hypothesis. According to the yielded results, an excellent reliability of these measures was established. The results also indicated that online game addiction, social isolation and narcissistic tendencies among PUBG game players are negatively correlated (<.05). It was concluded that online games do carry positive aspects of enhancing social skills and interactions among the players, while helping them exhibit behaviors and emotions that are not coherent with narcissistic tendencies. This paper also carries implications for families, friends, teachers and therapists of online gamers, who may use the findings to understand some of the positive aspects of playing online games.

Keywords: PUBG Game addiction, Social isolation, Narcissistic tendencies, Gamers.

JEL Classification: Gaming Addiction; Social Psychology; Clinical Psychology.

Citation | Maria Waris Nawaz; Tooba Nadeem; Sana Liaqat Rao; Tahira Fatima; Sidra Shoab (2020). Impact of PUBG Game Addiction on Social Isolation and Narcissistic Tendencies among Gamers. Asian Journal of Social Sciences and Management Studies, 7(3): 166-172.

History:

Received: 10 April 2020

Revised: 15 May 2020

Accepted: 8 June 2020

Published: 30 June 2020

Licensed: This work is licensed under a [Creative Commons](https://creativecommons.org/licenses/by/3.0/)

Attribution 3.0 License 

Publisher: Asian Online Journal Publishing Group

Acknowledgement: All authors contributed to the conception and design of the study.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no conflict of interests.

Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study was reported; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained.

Ethical: This study follows all ethical practices during writing.

Contents

| | |
|--|-----|
| 1. Introduction | 167 |
| 2. Method | 168 |
| 3. Results | 169 |
| 4. Discussion | 170 |
| 5. Conclusion | 171 |
| 6. Implications | 171 |
| 7. Limitations and Recommendations | 171 |
| References | 171 |

Contribution of this paper to the literature

This paper attempts to highlight the implications of excessive usage of technology, aided with games causing peer-pressure of meeting the latest trends that can further lead to hyperactive tendencies, self-control issues including impatient behaviors and lack of mindful decision making. These factors create opportunities for future researchers to conduct preventive work as according to some of the previous researches and the results of this current study may suggest that game addiction can polish mental skills of the players like enhancing their attentiveness and mental activity but playing games for long hours may promote sedentary lifestyle which may lead to health issues like diabetes, obesity or disturbed motor functioning in the long run.

1. Introduction

Online video games first appeared in 1990s and since then, they have become widely popular and accessible (Kenneth & Laura, 2014). The number of online games being played and players of these online games have increased significantly. A common characteristic of multiplayer online games is that, in virtual communities' players can assume any role they desire, collaborate with other players in the game to succeed in even more complex goals and accomplish missions of a fairly aggressive nature. Players have the power to talk online, make friends and conduct transactions involving real or virtual assets. The entertaining, interactive and real-time online games have become "killer applications" on the Internet, and these are the primary reasons some teenagers spend hours every day playing these games (Whang & Chang, 2004). However, as the popularity of the online games has grown, so has the concerns over their excessive use.

The compulsive indulgence in multiplayer online gaming is mostly seen among the age group of 13–25 years with gaming abuse being more common in boys as compared to girls. The increasing trend of mass shootings, have also been associated with excessive use of violent video games, which has fueled the debate of possible effects that violent video games may have on adolescents and young adults (Singh, 2019). Given the prevalence of internet use and online gaming among youth, there is a rising concern that a subset of Internet-using youth may exhibit problematic or addictive patterns of internet while using and gaming online (Mei, Yau, Chai, Guo, & Potenza, 2016). The urge and compulsion for digital and video gaming has been classified as a mental health disorder by the World Health Organization (WHO) in 2018. Additionally, online game addiction is also defined as a distinct behavioral addiction characterized by excessive or compulsive use of computer games or video games that interferes with a person's everyday life (World Health Organization, 1992).

In recent years, several studies have demonstrated that gamers have trouble controlling their video game playing (Chiu, Lee, & Huang, 2004; Hussain & Griffiths, 2008; Smahel, Blinka, & Ledabyl, 2008; Wan & Chiou, 2006). The resulting excessive amounts of time spent on playing video games can be severely disruptive to school, work and 'real life' social contacts (Chappell, Eatough, Davies, & Griffiths, 2006; Thalemann, Wölfling, & Grüsser, 2007; Wan & Chiou, 2006).

Recently, a new game addiction PlayerUnknown's Battlegrounds (PUBG) is becoming very popular. It is a multiplayer shooter game where up to one hundred players fight in a 'battle royale' and the last person or team alive wins. One can play the game with either friends or unknown people. Most of the gamers are addicted to this game and spend an excessive amount of time playing this game. A lot of children play this game even though it is marked for people who are above sixteen as it involves user interaction and digital purchases. A study conducted on gamers reported that 47% of the participants had played one or more intensely violent games (Allahverdipour, Bazargan, Farhadinasab, & Moeini, 2010).

Cole and Griffiths (2007), concluded that online multiplayer games provide a highly social environment where strong friendships and sometimes even romantic relationships are forged. In this regard, online gaming provides a medium in which players can explore different aspects of their personality in a safe and anonymous environment (Hussain & Griffiths, 2008) but on the other hand, the excessive screen time is leading to lack of human interactions, low emotional connect between children and adults because both are hooked to their own virtual worlds (Ferguson, Coulson, & Barnett, 2011). Some teenagers may lock themselves for hours to ensure uninterrupted indulgence in games which may cause different health related issues (Kuss & Griffiths, 2012). Various previous studies have suggested that individual psychological characteristics (including personality traits) may predispose certain individuals to overuse the Internet, and past research has chiefly examined the effects of shyness (Chak & Leung, 2004) loneliness, and self-consciousness on the level of Internet use so far (Engelberg & Sjöberg, 2004; Shapira, Goldsmith, Keck Jr, Khosla, & McElroy, 2000; Whang, Lee, & Chang, 2003; Yuen & Lavin, 2004). Moreover, risk factors for the development of pathological gaming included personality styles marked by neuroticism, social isolation and diminished self-control, as well as mental health problems related to depression, anxiety and ADHD (Ferguson et al., 2011).

Zavaleta et al. (2017), defined social isolation as the inadequate quality and quantity of social relations with other people at different levels where human interaction takes place. A narrative analysis revealed that the students who are addicted to online video gaming admitted that, they are spending less time with their families and are failing to control emotions with other family members (Yarasani, Shaik, & Myla, 2018).

Several researches have been conducted in this regard to see the impact of online gaming on the physical and psychological health of the players. Williams, Yee, and Caplan (2008), reported that online gamers have a lower body mass index (BMI) when compared to the general population. As far as psychological health of gamers is concerned, a number of studies have shown narcissistic trends in the gamers. Along with all other aspects of personality, gamer's perception of themselves is also affected (Kim et al., 2008; Ng & Wiemer-Hastings, 2005). Individuals with narcissistic personality traits are preoccupied with a grandiose sense of self-importance, fantasies of success, power and that they require excessive admiration and recognition as presented in American Psychiatric Association (2013) it can be reasonably predicted that people with a greater narcissistic personality trait will collect valuable items and upgrade their skills to advance other players in the game (Song, Larose, Eastin, & Lin, 2004). Narcissistic personality trait was considered to be important for the understanding of the online game addiction process. For some people, with a narcissistic personality trait, multiplayer online games may be reinforcing because

it bolsters self-esteem as well as provides status and respect with a lower chance of rejection. Therefore, narcissistic people are likely to have a high chance of being addicted to online games (Kim et al., 2008). One of the consensus reached among online game addicts is that the main attractive feature of multiplayer online games like PUBG and Ever quest, is its system of goals and achievements. As you play, your character advances by gaining experience points, “levelling-up” from one level to the next while collecting valuables and weapons and becoming wealthier and stronger. In this social setting, excellent players receive “the recognition and attention of others” and gain power and status. Considering all this, the possibility that people with narcissistic personality traits use the access of numerous relationships available through the internet as a way of gaining an admiring audience is plausible (Kim et al., 2008; Ng & Wiemer-Hastings, 2005). Moreover, various narrative analysis suggest that, the students have admitted concerns related to sleep disturbances caused by mainly spending more hours being awake and even if sleeping then waking up restless in the middle of the night with anxiousness related to scoring higher and crossing levels to get admiration in return (Bartel & Gradisar, 2017; Hawi, Samaha, & Griffiths, 2018; Satghare et al., 2016).

From the above literature it can be concluded that, online game addiction has been increased significantly among adolescents and young adults which is severely disrupting the functioning of individuals. Excessive gaming is not only causing physical issues but psychological issues as well. As reported in several studies that there indeed is a link between violent video game exposure and psychopathic traits and strongly associated with the interpersonal-affective deficits (Kimmig, Andringa, & Derntl, 2018). Hence, the current study aims to explore the relationship of online game addiction with social isolation and narcissistic tendencies in adolescents and young adults. Furthermore, it can be observed that PUBG game addiction has been increased significantly in recent times and there have been complaints about students by teachers from school, increased divorce cases have been reported and parent-child conflicts have also surfaced as a result of increased aggression. So there is a need for more researches which can identify the behavioral trends of gamers and interventions for reducing addiction can be designed effectively. Based on the previous researches it is hypothesized that there would be a significant relationship of PUBG game addiction with narcissistic tendencies and social isolation in gamers.

2. Method

2.1. Research Objective

- To explore the relationship of PUBG game addiction with social isolation and narcissistic tendencies.
- To find out the predicting role of PUBG game addiction on the social isolation and narcissistic tendencies.

2.2. Research Question

- What is the relationship of PUBG game addiction with social isolation and narcissistic tendencies?
- What is the impact of PUBG game addiction on the social isolation and narcissistic tendencies?

2.3. Research Hypothesis

There will be a significant relationship of PUBG game addiction with social isolation and narcissistic tendencies.

2.4. Research Design

The current research is based on quantitative research approach which utilizes the correlational survey design to study the relationship between PUBG game addiction, Social isolation and Narcissistic tendencies through self-report questionnaires.

2.5. Sample

Through convenient sampling, which is a technique of the non-probability sampling, 160 participants were approached online.

2.6. Inclusion Criteria of Research Participants

- Participants living in Pakistan were included in this study.
- Participants within the age range of 13 to 30 were selected for this study.
- Participants who played PUBG game were included in this study.
- Participants who played PUBG game for 1 to 24 hours a day were included.

2.7. Exclusion Criteria of Research Participants

- Participants of other nationalities were not included in this study.
- Participants who were below the age 13 and above the age 30 were not selected.
- Participants who did not play PUBG were not included in this study.
- Participants with any other online game addiction apart from PUBG were not included in this study.

2.8. Measures

2.8.1. Informed Consent Form

The Informed Consent form was used to provide participants with sufficiently detailed information about the research so that they can make a voluntary, informed and rational decision to participate. It included the information of researchers, the purpose of the study, information about any risk or discomfort, assurance of confidentiality of any shared personal information and their right to decline or withdraw any time from the research without any consequence or penalty.

2.9. Demographic Information Form

The demographic information form was formulated to collect data about psychosocial variables that could possibly affect the results. This form included information related to age, gender and number of hours of playing PUBG. It was administered only on PUBG gamers.

2.10. The Online Game Addiction Scale (Kim et al., 2008)

The online game addiction scale has 20 items associated with online gaming including compulsive use, withdrawal and psychological dependence, as well as the related problem of sleep, work, school, family and time management (for each item, a graded response is selected from 1 = 'rarely' to 5 = 'always'). The total score was in the range of 20-100, and higher score implies a tendency towards addictive usage. The Cronbach's alpha reliability for the scale was 0.91.

2.11. Narcissistic Personality Inventory (Raskin & Hall, 1981)

It was used to measure the narcissistic personality tendencies. The Narcissistic Personality Inventory was developed by Raskin and Hall in 1979, since its initial development NPI has evolved from 220 items to NPI-40 (1984) and NPI-16 (2006) as well as the novel NPI-1 inventory (2014). It comprises of 16 items. According to the reliability and validity of the research conducted by Raskin and Hall, the NPI has strong construct validity and ecological validity. The Cronbach's alpha reliability for the scale was 0.74.

2.12. Measures of Social Isolation (Zavaleta et al., 2017)

It was used to measure social isolation comprising of 15 items, scoring was graded as every day, most days, few days and never. The domains describe a set of indicators of social connections, range of different relationship as well as the quality of those relationships and the resulting outcomes for people (i.e., emotional and financial support, job opportunities, social isolation) and for society (i.e., trust in others and tolerance). The Cronbach's alpha reliability for the scale was 0.72.

2.13. Procedure

The survey was made on google form then it was posted on different groups of Facebook and WhatsApp initially. Later on, it was posted on official home page of two well-known websites i.e., www.surveycircle.com and www.reddit.com/r/sampleize for several days in May. In informed consent participants were clarified about the objective of the study along with the risk and benefit involved. They were given details regarding voluntary participation and their right to withdraw at any time. Once they agreed to participate in the study, they were asked to fill demographic information form and each self-report questionnaire which had its own instructions written on top of the google form. The questionnaires were in this order, firstly Online Game Addiction Scale (Kim et al., 2008), Narcissism Personality Inventory (Raskin & Hall, 1981) and lastly, Measures of Social Isolation (Zavaleta et al., 2017). As the survey was conducted only on PUBG gamers from popular forums on social media, the participants can be regarded as representative participants of PUBG gamers in Pakistan. Also, the questionnaires which did not fulfil the inclusion criteria were excluded from the study. Lastly, the yielded results obtained were analyzed using Statistical Package for Social Sciences (SPSS-22) to test their statistical significance of variables.

2.14. Ethical Consideration

The research was conducted keeping in mind the research ethics. At the beginning, consent was obtained from the participants after giving the basic description about the purpose and nature of the study. They were briefed about their right to withdraw from the study at any time. The participants were informed about the research's nature in detail. In the end they were thanked for their cooperation. Furthermore, they were also given researcher's contact details in case if they wanted to know about the results of the study.

3. Results

In results, demographic variables of participants are discussed along with descriptive statistics of the main variables. The data was coded and analyzed through the statistical package for Social Sciences (SPSS, V. 22)

To examine the relationship among PUBG game addiction, social isolation and narcissistic tendencies, correlational analysis was used.

Table-1. Frequency and percentages of demographic variable (N=101).

| Variables | Frequency | % |
|-------------------------------------|-----------|------|
| Gender | | |
| Male | 81 | 80.2 |
| Female | 20 | 19.8 |
| Approximately time spent on playing | | |
| 1-6 hours | 90 | 89.1 |
| 7-12 hours | 5 | 5.0 |
| 13-18 hours | 3 | 3.0 |
| 19-24 hours | 3 | 3.0 |

Table-2. Descriptive statistics and alpha reliability coefficient, univariate normality of study variables.

| Variables | Items | N | Alpha | M | SD | Skew | Skew Std.Error | Kurt | Kurt Std.Error |
|-----------|-------|-----|-------|------|-----|-------|----------------|-------|----------------|
| OGA | 20 | 101 | 0.9 | 2.59 | .92 | .196 | .240 | -.523 | .476 |
| NPI | 16 | 101 | 0.7 | 1.63 | .21 | -.112 | .240 | -.795 | .476 |
| SI | 15 | 101 | 0.7 | 2.99 | .29 | -.578 | .240 | -.620 | .476 |

Mean, standard deviation, skewness and Cronbach's alpha reliability coefficient has been reported in Table 2. Skewness shows the normal distribution of the data.

In the light of above mentioned scales the alpha reliabilities of all scales are excellent. The value of mean, standard deviation, skewness and kurtosis indicated that the data is normally distributed.

Table-3. Relationship between online game addiction, narcissistic tendencies and social isolation.

| | | Online Game Addiction | Narcissistic Tendencies | Social Isolation |
|-------------------------|---------------------|-----------------------|-------------------------|------------------|
| Online Game Addiction | Pearson Correlation | 1 | -.318** | -.257** |
| | Sig. (2-tailed) | | .001 | .010 |
| | N | 101 | 101 | 101 |
| Narcissistic Tendencies | Pearson Correlation | -.318** | 1 | .236* |
| | Sig. (2-tailed) | .001 | | .018 |
| | N | 101 | 101 | 101 |
| Social Isolation | Pearson Correlation | -.257** | .236* | 1 |
| | Sig. (2-tailed) | .010 | .018 | |
| | N | 101 | 101 | 101 |

Note: **. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The coefficient Pearson correlation shows the negative relationship between online game addiction, narcissistic tendencies and social isolation. The sig value of scales is below the standard value of .05 which indicates there is significant relationship which is negative between predictor and criterion.

4. Discussion

This study primarily focused on exploring the relationship of online game addiction of participant's psychological characteristics such as narcissistic personality traits and attributes of social isolation in adolescents and young adults. One of the misconceptions surrounding online game playing is that, the games appeal only to children and adolescents, this belief has been proven quite wrong as one of the most globally popular games of today's time, PUBG has fully shaken the idea by indulging gamers of all ages into its realm. The results of this study suggested that, there is a significant negative relationship between online gaming addiction and psychological characteristics of narcissistic personality traits and social isolation, which has been measured by the significant value of scales which is below the standard value of .05. This means that players who play online games will have good social and interpersonal skills will others. Also, the results show that an excellent reliability has been yielded from the questionnaires used in this study.

Considering the sample's age range, 13 to 30 years, it can be justified that most of the participants were either school going, university students or have been already working in their professional life so while observing Table 1, it can be seen that the average time spent on playing PUBG in a day by majority of participants was reported to be 6 hours to 7 hours. Hence, it can be said that these participants might have certain responsibilities to fulfil rather than getting involved in online gaming. Furthermore, the discrepancy of the supporting relationship shown in the results of previous researches which are quoted in the literature review section above might be because Pakistan follows a collectivist culture. In another study by Memon, Mahar, Dhomeja, and Pirzado (2015), factors related to Pakistani's living priorities and attributes were discussed. It also mentioned that most individuals falling between the ages 13-30 years either live with their caretakers and guardians, or are married. They may also face strict work environment if they are working which might ultimately play a vital role in having a specified routine of spending less time on online games.

Another factor pertaining to participants and their caretakers, guardians or other authorities present at their academic or professional environment is that, they might be taking decisions for these participants and these participants might also be directed to follow a proper routine and work according to their priorities based on social norms. The age range and the average number of hours spent on playing PUBG by majority of the participants may also justify that these participants might be able to manage their personal and professional life, as they have been giving 6-7 hours that might be their actual leisure time in which they can do anything that interests them but they have chosen to play PUBG. In another study conducted on gamers, showed that participants spent an average of 6.3 hours per week playing video games (Allahverdipour et al., 2010). This indicates that many individuals in today's fast paced era, are able to sustain and control their wants and emotions in order to meet the needs as suggested by Abraham M, psychosocial variables that could possibly effect the results. Maslow's hierarchy of needs and wants, which discusses about transcending to next level of needs only when the basic needs are met (Fallatah & Syed, 2018).

Since Pakistan is a developing country, where due to limited resources, individuals might get opportunities that require more of their time and opportunities for fulfilling their household responsibilities so that they are able to meet societal norms and pressures, these individuals tend to be more focused on meeting their basic needs while avoid getting into crises situations, this factor is very important to consider the Pakistani living standard where online gaming might be a secondary need for many individuals which justifies the number of participants found for this study (Memon et al., 2015).

The inclusion criteria of this study was to have PUBG gamers to fill the questionnaires, the focus was to have only Pakistani population to fill the survey so that a true relationship between online gaming and the other two variables can be established so that further research can be done in the future to address the issues related to it, but during the course of conducting the survey online it was found that many people living in Pakistan did not have any idea about PUBG, the responses were recorded in the "others" section where they reported that according to them they have never even heard the name of this game thus those responses were discarded from the study as they did not fulfil the inclusion criteria of PUBG players only.

According to Weinstein and Weizman (2012), online video games can be rewarding for players as online gaming activates dopaminergic neurotransmitters in the players' brain's reward circuit which may influence their excitatory synapses, resulting in happy and congenial behavior with others. This may also mean that having fresh and pleasing mood can boost their brain's smartness which might be helping them manage their schedules for leisure and work related activities. This can be one of the reasons why negative relationship was established between the variables.

Another aspect of the literature provided by Cole and Griffiths (2007) supported the findings of this study as according to them social interactions are highly established in such online games, where people play the game in a group online and create chat rooms to discuss strategies for winning the game and later practice when they are involved on any missions altogether as a group to fight the enemies (mission is defined as any important duty assigned to anyone). In a game like PUBG, people play and interact with each other on chat or even on voice chat, they may talk about their item skins, form alliances or think or talk about strategies on how to reach the top 5 or top 10. After which it becomes a survival of the fittest among the friends or alliances, because they help each other in improving their odds against the other competitors but it does not mean that one lucky player would not win the whole "battle royale" without even attacking anyone because at the end every player strives for winning (Lin, 2018). This game is as adventurous as it sounds, and increases game plans and strategic discussions among friends and other regular players who get to know each other online as they play the game and later may decide to meet in person if they want. The players also get involved in discussions related to their winning streaks and also seek tips from their peers present in their daily life thus establishing good interpersonal skills which also reduces any feelings of ego or pride (Xu, 2018).

In our study, most of the respondents were categorized as having good social bonds and also open personality while sparing a balanced and calculated amount of time on playing PUBG, as for them it was more of a leisure activity that is supposed to be done in their spare time rather than played as an addiction. Moreover, further studies are needed so that other potential relationships can be examined to address online gaming and other health outcomes.

5. Conclusion

The results from this study suggest that online game addiction and gamer's psychological characteristics pertaining to social isolation and narcissistic tendencies have a negative relationship, which suggests that playing online games like PUBG can boost social interactions and establish good interpersonal skills among peers.

6. Implications

This paper carries implications for families, friends, teachers and therapists of the online gamers, who may use the findings to understand some of the positive aspects of playing online games. Parents of these gamers can be told to limit the game playing time rather than totally omitting it from their routine as games can help individuals in establishing critical thinking. Government policies can be divided to control the usage of games in a way that addictive patterns are not exhibited for example levels of the games can be limited to control the addictive continuous play. Psychologists and healthcare professionals need to spread awareness about games and their effects among the society.

7. Limitations and Recommendations

The results of the study show a strong relationship between the two variables. For future researches on PUBG, a greater sample size would show more significant results. Furthermore, to find the impact of any specific game, an intervention based study can be designed. Many participants who were excluded from the study, reported through emails that the questionnaires used in the study were lengthy and they discontinued it due to boredom. Hence, a precise questionnaire can help researchers to record more responses from the gamers. In this study, PUBG was researched with narcissism and social isolation. For future researches, PUBG and other online games can also be studied with other personality traits. Also that, PUBG is a violent video game, so longitudinal studies can be designed to see its effect on gamers in the long run. Moreover, studies can be conducted to see personality changes before and after game addiction.

References

- Allahverdi-pour, H., Bazargan, M., Farhadinasab, A., & Moeini, B. (2010). Correlates of video games playing among adolescents in an Islamic country. *BMC Public Health*, 10(1), 1-7. Available at: <https://doi.org/10.1186/1471-2458-10-286>.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Bartel, K., & Gradisar, M. (2017). New directions in the link between technology use and sleep in young people. In *sleep disorders in children* (pp. 69-80): Springer, Cham.
- Chak, K., & Leung, L. (2004). Shyness and locus of control as predictors of internet addiction and internet use. *Cyber Psychology & Behavior*, 7(5), 559-570.
- Chappell, D., Eatough, V., Davies, M. N., & Griffiths, M. (2006). EverQuest—It's just a computer game right? An interpretative phenomenological analysis of online gaming addiction. *International Journal of Mental Health and Addiction*, 4(3), 205-216. Available at: <https://doi.org/10.1007/s11469-006-9028-6>.
- Chiu, S.-I., Lee, J.-Z., & Huang, D.-H. (2004). Video game addiction in children and teenagers in Taiwan. *Cyber Psychology & Behavior*, 7(5), 571-581.
- Cole, H., & Griffiths, M. D. (2007). Social interactions in massively multiplayer online role-playing gamers. *Cyber Psychology & Behavior*, 10(4), 575-583.
- Engelberg, E., & Sjöberg, L. (2004). Internet use, social skills, and adjustment. *Cyber Psychology & Behavior*, 7(1), 41-47.
- Fallatah, R. H. M., & Syed, J. (2018). A critical review of Maslow's hierarchy of Needs. In *employee motivation in Saudi Arabia* (pp. 19-59). Cham: Palgrave Macmillan.
- Ferguson, C. J., Coulson, M., & Barnett, J. (2011). A meta-analysis of pathological gaming prevalence and comorbidity with mental health, academic and social problems. *Journal of Psychiatric Research*, 45(12), 1573-1578. Available at: <https://doi.org/10.1016/j.jpsychires.2011.09.005>.

- Hawi, N. S., Samaha, M., & Griffiths, M. D. (2018). Internet gaming disorder in Lebanon: Relationships with age, sleep habits, and academic achievement. *Journal of Behavioral Addictions*, 7(1), 70-78.
- Hussain, Z., & Griffiths, M. D. (2008). Gender swapping and socializing in cyberspace: An exploratory study. *CyberPsychology & Behavior*, 11(1), 47-53.
- Kenneth, P. R. M. D., & Laura, C. F. P. (2014). *Behavioral addictions: Criteria, evidence, and treatment*. United States of America, USA: Academic Press.
- Kim, E. J., Namkoong, K., Ku, T., & Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *European Psychiatry*, 23(3), 212-218. Available at: <https://doi.org/10.1016/j.eurpsy.2007.10.010>.
- Kimmig, A.-C. S., Andringa, G., & Dertnl, B. (2018). Potential adverse effects of violent video gaming: Interpersonal-affective traits are rather impaired than disinhibition in young adults. *Frontiers in Psychology*, 9(736), 1-11. Available at: <https://doi.org/10.1089/cpb.2007.0020>.
- Kuss, D. J., & Griffiths, M. D. (2012). Internet and gaming addiction: A systematic literature review of neuroimaging studies. *Brain Sciences*, 2(3), 347-374. Available at: <https://doi.org/10.3390/brainsci2030347>.
- Lin, C. (2018). *Multiplayer online first person shooter game focused on creating strategic play: Snowball fighter*. Doctoral Dissertation, Northeastern University.
- Mei, S., Yau, Y. H., Chai, J., Guo, J., & Potenza, M. N. (2016). Problematic Internet use, well-being, self-esteem and self-control: Data from a high-school survey in China. *Addictive Behaviors*, 61, 74-79. Available at: <https://doi.org/10.1016/j.addbeh.2016.05.009>.
- Memon, S., Mahar, S., Dhomeja, L. D., & Pirzado, F. (2015). *Prospects and challenges for social media in Pakistan*. Paper presented at the International Conference on Cyber Situational Awareness, Data Analytics and Assessment (CyberSA) (pp. 1-5). IEEE.
- Ng, B. D., & Wiemer-Hastings, P. (2005). Addiction to the internet and online gaming. *CyberPsychology & Behavior*, 8(2), 110-113.
- Raskin, R., & Hall, C. S. (1981). The narcissistic personality inventory: Alternative form reliability and further evidence of construct validity. *Journal of Personality Assessment*, 45(2), 159-162. Available at: https://doi.org/10.1207/s15327752jpa4502_10.
- Satghare, P., Abdin, E., Vaingankar, J. A., Chua, B. Y., Pang, S., Picco, L., . . . Subramaniam, M. (2016). Prevalence of sleep problems among those with Internet gaming disorder in Singapore. *ASEAN Journal of Psychiatry*, 17(1), 1-11.
- Shapira, N. A., Goldsmith, T. D., Keck Jr, P. E., Khosla, U. M., & McElroy, S. L. (2000). Psychiatric features of individuals with problematic internet use. *Journal of Affective Disorders*, 57(1-3), 267-272. Available at: [https://doi.org/10.1016/s0165-0327\(99\)00107-x](https://doi.org/10.1016/s0165-0327(99)00107-x).
- Singh, M. (2019). Compulsive digital gaming: An emerging mental health disorder in children. *The Indian Journal of Pediatrics*, 86(2), 171-173. Available at: <https://doi.org/10.1007/s12098-018-2785-y>.
- Smahel, D., Blinka, L., & Ledabyl, O. (2008). Playing MMORPGs: Connections between addiction and identifying with a character. *CyberPsychology & Behavior*, 11(6), 715-718.
- Song, I., Larose, R., Eastin, M. S., & Lin, C. A. (2004). Internet gratifications and Internet addiction: On the uses and abuses of new media. *CyberPsychology & Behavior*, 7(4), 384-394.
- Thalemann, R., Wöfling, K., & Grüsser, S. M. (2007). Specific cue reactivity on computer game-related cues in excessive gamers. *Behavioral Neuroscience*, 121(3), 614-618. Available at: <https://doi.org/10.1037/0735-7044.121.3.614>.
- Wan, C.-S., & Chiou, W.-B. (2006). Psychological motives and online games addiction: A test of flow theory and humanistic needs theory for Taiwanese adolescents. *CyberPsychology & Behavior*, 9(3), 317-324.
- Weinstein, A., & Weizman, A. (2012). Emerging association between addictive gaming and attention-deficit/hyperactivity disorder. *Current Psychiatry Reports*, 14(5), 590-597. Available at: <https://doi.org/10.1007/s11920-012-0311-x>.
- Whang, L. S.-M., & Chang, G. (2004). Lifestyles of virtual world residents: Living in the on-line game Lineage. *CyberPsychology & Behavior*, 7(5), 592-600.
- Whang, L. S.-M., Lee, S., & Chang, G. (2003). Internet over-users' psychological profiles: a behavior sampling analysis on internet addiction. *CyberPsychology & Behavior*, 6(2), 143-150.
- Williams, D., Yee, N., & Caplan, S. E. (2008). Who plays, how much, and why? Debunking the stereotypical gamer profile. *Journal of Computer-Mediated Communication*, 13(4), 993-1018. Available at: <https://doi.org/10.1111/j.1083-6101.2008.00428.x>.
- World Health Organization. (1992). *The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines*. Geneva: World Health Organization.
- Xu, L. (2018). Exploiting psychology and social behavior for game stickiness. *Communications of the ACM*, 61(11), 52-53. Available at: <https://doi.org/10.1145/3239544>.
- Yarasani, P., Shaik, R. S., & Myla, A. R. R. (2018). Prevalence of addiction to online video games: Gaming disorder among medical students. *International Journal of Community Medicine and Public Health*, 5(10), 4237-4241. Available at: <https://doi.org/10.18203/2394-6040.ijcmph20183830>.
- Yuen, C. N., & Lavin, M. J. (2004). Internet dependence in the collegiate population: the role of shyness. *CyberPsychology & Behavior*, 7(4), 379-383.
- Zavaleta, D., Samuel, K., & Mills, C. T. (2017). Measures of social isolation. *Social Indicators Research*, 131(1), 367-391. Available at: <https://doi.org/10.1007/s11205-016-1252-2>.