

AN EMPIRICAL STUDY OF THE PSYCHOLOGICAL EFFECTS OF GAMING ON PAKISTANI PUBG PLAYERSZainab Ahmed¹, Munib Ahmed² (corresponding author), Ummul Baneen³**Original Article**

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Abstract

Online gaming is a source for entertainment played by people of all genders and ages. Gaming has both positive and negative psychological effects but the negative effects are far more than the positive effects. This study investigated the psychological effects of gaming on Pakistani PUBG players. No doubt people play gaming for entertainment purpose but excessive gaming can lead to gaming addiction which can further lead to psychological effects like sleeping disorders, stress and depression. Gaming addiction can also have damaging impact on physical, emotional and social health. It is also related with eating irregularities, exhaustion, mood disorders, social ineffectiveness, sleep deprivation, obesity, suicide and separation from family and friends. IGD can be depicted in individuals who play for a longer period of time and playing for longer periods can affect the daily routine of the individual along with poor performance in work and studies. The result of the current research study indicates that gaming does have an effect on the psychological health of the gamers. The results concluded that gaming does have an effect on concentration, aggression, empathy, stress and analytical ability of the players. In conclusion of the results, individuals can learn how to fulfill the psychological needs by the help of the psycho-training program and Cognitive Behavioral Therapy (CBT). It can be checked after the therapy that if there is any change in the levels of the gaming addiction in the individual.

Keywords: Gaming addiction, Psychological Effects, PUBG Game, Gaming, Aggression, Concentration, Stress, Empathy, Analytical Ability

Introduction

The psychological effects of media have been discussed and researched for centuries. Violent entertainment media started on television in the form of movies and films in the early 1900s. Since then, the effect of violent media content on aggression was demonstrated by the researchers (Bandura, Ross & Ross, 1963). Then video games began to emerge in 1970s and started to gain popularity. Prior researches on media, specifically on films and television, focused on aggression and violence, thus the researches on games followed the same suit (Dowsett & Jackson, 2019). The researches then conducted research on other elements of video games which were ignored in their relationship with violence and aggression.

Player Unknown's Battlegrounds (PUBG) is a multiplayer online video game which is developed by PUBG Corporation. PUBG was developed for gaming consoles in 2017 and for

smartphones in 2018. This game already has 100million+ downloads on Google Play Store. It is labeled for age 16+ and it involves digital purchases and user interaction (Nawaz, Nadeem, Rao, Fatima & Shoaib, 2020). PUBG have features to change the avatar, graphics, online voice-chat with other team members in game and these are the features that make these games addictive and gamers spend hours playing video games (Whang & Chang, 2004). This research study is important to investigate the psychological effects that are, concentration, aggression, empathy, stress and analytical ability of PUBG players. The psychological effects of games are less studied in Pakistan. The effects are unexplained and ignored among the gamers of violent video games.

Literature Review

First point studied is psychological effects of video games. Zhang, Cao and Tian (2021) concluded in the research, Effects of violent video games on players' and observers' aggressive cognitions and aggressive behaviors that the players exhibited more aggressive behaviors and cognition than observers. Another study investigated by Li et al. (2020) examined the affiliation between violent video game exposure (VVGE) and aggression in Chinese participants. Results were concluded that adolescent aggression and moral disengagement were positively related with VVGE. Anger, moral disengagement, parental rearing patterns and hostility might be the factors that increase the possibility of higher levels of violent behavior after exposure to violent video games. Another similar study performed by Teng et al. (2017) and indicated that levels of moral disengagement were higher in high school students than middle school students. Results also mentioned that exposure to violent video games was positively related with moral disengagement.

Second point studied is Internet Gaming Disorder (IGD). Fazeli et al. (2020) found that there was small to large major relation among the variables. Stress, anxiety and depression served as mediators in the relationship among IDG, insomnia and quality of life. Insomnia and quality of life were directly influenced by IDG among adolescents. In another study, Kamal and Wok (2020) found that Positive connection between gaming addiction and mental health (loneliness, anxiety and depression). Another similar study carried out by Columb et al. (2020) found that a low proportion of gamers in Ireland showed characteristics of disordered gaming and gaming disorder.

Third point is related to gaming addiction. In the research study of Esposito et al. (2020) found that addiction to video games is implicated by the increase in daily gaming time while increase in education and age implicated decrease in gaming addiction. Similar research study, analyzed by Bekir and Celik (2020) showed that emotional schemas of uncontrollability, rumination, demand for rationality, denial of emotions, dissimilarity, validation, acceptance of feelings, seeing emotions as dangers, guilt and consensus predicted addiction whereas emotional schemas of weakness against durations and emotions did not predict such result. It was concluded that video gaming addiction is higher in males than females. Online gaming addiction levels were assumed on games played but not assumed on where students lived. Another research study, Kumar and Priya (2020) concluded that most of the young gamers play PUBG for entertainment and there are no effects on their live. PUBG is an entertainment game and setting a time limit per day and following it can avoid getting addicted to it and developing health issues. According to Wang et al. (2019) that the game addiction in participants is positively related to depression, social anxiety and loneliness. It also showed that male adolescents reported mobile addiction and high level of depression, social anxiety and loneliness.

Fourth point studied is the effects of gaming in PUBG gamers. The research study by Mandagi et al. (2020) concluded that respondents get addicted to game because they think game increase their mechanism, dynamics and they can dress their avatar as they like. Fifth point studied is gaming and aggression. Tian et al. (2019) concluded that negative effect, aggressive behaviors and

hostile attributions are increased among shy individuals by playing violent video games. SEM also indicated that hostile attributions and negative affect were mediated by moderating role. Similar study carried out by Shahbaz et al. (2019) and found that duration is positively associated with aggression and negatively associated with cognitive ability. Aggression was found high among males and cognitive ability was found high among females. Another study was analyzed by Yao et al. (2019) mentioned that exposure of violent video games was positively associated with disinhibition, moral disengagement and four other aggressive traits that are, hostility, anger, physical aggression, and verbal aggression. Moral disengagement and disinhibition were positively associated with aggressive traits. Research study investigated by Adachi and Willoughby (2016) indicated that longitudinal association was demonstrated in relationship between game play and aggression in both groups. Competitive game play predicted higher level of aggressive affects which predicted aggressive behavior over time.

Hypotheses

- H1: The more time spent on PUBG gaming, the less concentrated players will be on surroundings.
- H2: The more time spent on PUBG gaming, the higher the aggression will be in players.
- H3: The more time spent on PUBG gaming, less empathic will be players.
- H4: The more time spent on PUBG gaming, the less stressed players will be.
- H5: The more time spent on PUBG gaming, the higher the analytical abilities in players.

Methodology

This research study was based on quantitative survey research. An online Google Form was used to gather information from the respondents. The questionnaire consisted of seven sections of 42 questions which included general information of the respondent, questions related to addiction, concentration, aggression, empathy, stress and analytical ability were asked. A sample of 303 individuals including male and female who play PUBG filled out the questionnaire. The current research applied combination of surveys and scales including game addiction scale (GAS), concentration scale (CS), aggression scale (AS), Empathy quotient (EQ), standard stress scale (SSS) and PUBG addiction test (PAT). The researcher used respondent driven sampling technique. It is a multistage technique and respondents increased gradually for his study. It is also known as network sampling where respondents are told to refer the researcher to other respondents. The network sample grows larger as the researcher connects to other people referred by the respondents. The important feature in this type that the respondents are connected with each other through any kind of linkage and mostly through web of linkages. As the research is about PUBG game and mostly players play online each other, hence network sampling is adopted in this research.

Findings

The research study was conducted to investigate the relationship between PUBG gaming and its psychological effects on Pakistani PUBG players. In order to analyze the data, SPSS 21 was used. Descriptive statistics were obtained for all the variables in the study. Mean, standard deviations and frequencies were obtained through descriptive statistics.

Zero order correlation matrix was used to examine the relationship between demographics and variables (concentration, aggression, empathy, stress and analytical ability).

Table 1

	1	2	3	4	5	6	7	8	9	10
1. Gender	1									
2. Age	-.094	1								
3. Qualification	.130*	.256**	1							
4. Time Spend on PUBG Gaming	.010	.036	-.045	1						
5. Addiction	.010	-.025	-.064	.401**	1					
6. Concentration	-.059	-.099	-.049	.178**	.154**	1				
7. Aggression	-.109	-.026	-.015	.166**	.466**	.110	1			
8. Empathy	.087	-.077	-.103	.062	.163**	.118*	.106	1		
9. Stress	.250**	-.067	.067	.037	.210**	.046	.238**	.380**	1	
10. Analytical Ability	-.035	.008	-.019	-.018	-.068	.209**	-.188**	.275**	-.039	1

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

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

N=303

In table above shows the zero-order correlation between the demographic, independent, dependent variables. In the correlation between gender, age and qualification the correlation between gender and qualification $r = .130$ and $p \leq .05$ shows a positive correlation while correlation between age and qualification also shows a significant positive correlation at $r = .27$ and $p \leq .01$.

The correlation between addiction and time spent on PUBG gaming at $r = .401$ and $p \leq .01$ which shows a statistically positive correlation where, when time spent on PUBG gaming increases the addiction in players will also increase.

The correlation between independent variable time spent on PUBG gaming and dependent variable concentration showed a statistically positive correlation at $r = .178$ and $p \leq .01$, which means that the more time players' spent playing PUBG it seems that they are more concentrated. The correlation between two criterion variables concentration and addiction showed a positive correlation at $r = .154$ and $p \leq .01$.

The correlation between aggression and time spent on PUBG gaming at $r = .166$ and $p \leq .01$, which statistically shows that players who spent more time playing PUBG will be more aggressive. The correlation between aggression and addiction at $r = .466$ and $p \leq .01$, which indicates a positive correlation between two criterions which statistically shows that players with higher addiction will likely be more aggressive.

The correlation between empathy and addiction at $r = .163$ and $p \leq .01$ indicates a positive correlation between the two variables. The correlation between empathy and concentration at $r = .118$ and $p \leq .05$

.05, which showed statistically significant correlation between the two dependent variables which shows that the more empathic players in real life will be more concentrated in there surrounding.

The correlation between stress and gender at $r = .250$ and $p \leq .01$, which indicates a positive correlation between stress and gender. The correlation between stress and addiction at $r = .210$ and $p \leq .01$, which showed a positive correlation between the two criterion variables where players who are addicted to PUBG playing will be more stressed. The correlation between stress and aggression at $r = .238$ and $p \leq .01$, statistically positive correlation which shows that with the increase in stress, aggression will also increase in PUBG players.

The correlation between analytical ability and concentration at $r = .209$ and $p \leq .01$, which showed positive correlation between two criterions. The correlation between analytical ability and aggression at $r = .188$ and $p \leq .01$, which showed significant correlation between the variables. The correlation between analytical ability and empathy at $r = .275$ and $p \leq .01$, which indicated a positive correlation between two criterions.

Testing hypothesis 1

Table 2: Partial correlation of Time spent on PUBG Gaming and Concentration

Predictors	Concentration (DV) (N=303)	
	Zero order correlation	1 st order partial correlation (addiction)
Time spent on PUBG gaming	.178**	.128*

* Correlation is significant at .05 (1-tailed)

** Correlation is significant at .01 (1-tailed)

In table 2, the zero order and partial correlation were carried out while controlling for the effect of addiction. In zero order correlation between time spent on PUBG gaming and concentration showed a positive correlation at $r = .178$ and $p \leq .01$. After controlling for the effect of addiction in 1st order partial correlation, it indicated a statistically positive correlation between the variables at $r = .128$ and $p \leq 0.5$. This which shows that players spend more time playing PUBG is to be more concentrated towards their surroundings. Hence, hypothesis 1 is stated to be “the more time spent on PUBG gaming; the less concentrated players will be on surroundings” was partially supported.

Testing hypothesis 2

Table 3: Partial correlation of Time spent on PUBG Gaming and Addiction

Predictors	Aggression (DV) (N=303)	
	Zero order correlation	1 st order partial correlation (addiction)
Time spent on PUBG gaming	.166 **	-.025

* Correlation is significant at .05 (1-tailed)

** Correlation is significant at .01 (1-tailed)

In table 3, the zero order and partial correlation were carried out while controlling for the effect of addiction. In zero order correlation between time spent on PUBG gaming and aggression showed a positive correlation at $r = .166$ and $p \leq .01$, which shows that the more players spend time playing PUBG their aggression will also increase. After controlling for the effect of addiction in 1st order partial correlation which showed a statistically positive correlation between the independent variable and dependent variable at $r = -.025$ and $p > 0.5$, this indicated that addiction had a significant effect in the relationship between time spent on PUBG gaming and aggression. When this effect of addiction was controlled, the relationship became insignificant. Thus, hypothesis 2, “the more time spent on PUBG gaming, the higher aggression will be in players” was supported in the zero order correlation.

Testing hypothesis 3

Table 4: Partial correlation of Time spent on PUBG Gaming and Addiction

Empathy (DV) (N=303)		
Predictors	Zero order correlation	1 st order partial correlation (addiction)
Time spent on PUBG gaming	.062	-.474

In table 4, the zero order and partial correlation were carried out while controlling for the effect of addiction. In zero order correlation between time spent on PUBG gaming and empathy showed a positive correlation at $r = .062$ and $p \leq .01$, which shows that the more players spend time playing PUBG their empathy will also increase. After controlling for the effect of addiction in 1st order partial correlation which showed a statistically significant correlation between the independent variable and dependent variable at $r = -.474$ and $p > 0.5$, this shows that addiction had a significant effect in the relationship between time spent on PUBG gaming and empathy. When this effect of addiction was controlled, the relationship became insignificant. Hence, hypothesis 3 is stated to be “the more time spent on PUBG gaming, less empathic will be players” was not supported in the zero order correlation.

Testing hypothesis 4

Table 5: Partial correlation of Time spent on PUBG Gaming and Addiction

Stress (DV) (N=303)		
Predictors	Zero order correlation	1 st order partial correlation (addiction)
Time spent on PUBG gaming	.037	-.053

In table 5, the zero order and partial correlation were carried out while controlling for the effect of addiction. In zero order correlation between time spent on PUBG gaming and stress showed a positive correlation at $r = .037$ and $p \leq .01$, which shows that the more players spend time playing PUBG their stress will also increase. After controlling for the effect of addiction in 1st order partial correlation which showed a statistically significant correlation between the independent variable and dependent variable at $r = -.053$ and $p > 0.5$, this shows that addiction had a significant effect in the relationship between time spent on PUBG gaming and stress. When this effect of addiction was controlled, the relationship became insignificant. Therefore, hypothesis 4 is stated to be “the more time spent on PUBG gaming, less stressed players will be” was not supported in the zero order correlation.

Testing hypothesis 5

Table 6

Predictors	Analytical Ability (DV) (N=303)	
	Zero order correlation	1 st order partial correlation (addiction)
Time spent on PUBG gaming	-.018	.010

In table 6, the zero order and partial correlation were carried out while controlling for the effect of addiction. In zero order correlation between time spent on PUBG gaming and analytical ability showed a negative correlation at $r = -.018$ and $p \leq .01$, which shows that the more players spend time playing PUBG their analytical ability will decrease.

After controlling for the effect of addiction in 1st order partial correlation which showed a statistically significant correlation between the independent variable and dependent variable at $r = .010$ and $p > 0.5$, this shows that addiction had a significant effect in the relationship between time spent on PUBG gaming and analytical ability. When this effect of addiction was controlled, the relationship became insignificant. For this reason, hypothesis 5 is stated to be “the more time spent on PUBG gaming, less higher the analytical abilities in players” was not supported in the zero order correlation.

Discussion

In this current era, gaming has become widely popular among the young generation around the world. Gaming is the most addicting internet activities these days. Many people spend their time on gaming for entertainment purpose but spending more time on gaming can lead it to gaming addiction which can further lead to many psychological effects like depression, anxiety, stress, eating disorders, etc. Numerous studies have been done around the world but this study was specifically done with the Pakistani perspective to analyze the effects of gaming on the population.

The aim of this study was to investigate the psychological effects that are concentration, aggression, empathy, stress and analytical ability, of PUBG gaming on Pakistani players. The population selected for the current study was Pakistani PUBG players. Sample of 303 Pakistani PUBG players filled out the questionnaire. For survey analysis, an online questionnaire was developed on Google Forms comprising of demographic information, questions related to PUBG gaming and items to measure the psychological effects (concentration, aggression, empathy, stress and analytical ability). Data was analyzed using SPSS 21 by using zero order correlation matrix.

Research had 5 questions which were analyzed:

For testing hypothesis 1, zero order correlation between time spent on PUBG gaming and concentration showed a positive correlation. After controlling the effect of addiction, 1st order partial correlation showed a statistically positive correlation between the PUBG gaming and concentration which shows that players spend more time playing PUBG are to be more concentrated towards their surroundings. On the basis of the above-mentioned results, hypothesis 1 was partially supported in the current study.

For hypothesis 2, zero order correlation between time spent on PUBG gaming and aggression showed a positive correlation, which shows that the more players spend time on PUBG gaming, their aggression also increases. After controlling for the effect of addiction in 1st order partial correlation which showed a statistically positive correlation between the aggression and PUBG gaming. This

indicated that addiction had a significant effect in the relationship between time spent on PUBG gaming and aggression. When this effect of addiction was controlled, the relationship became insignificant. Hence, hypothesis 2 was supported in the zero order correlation.

For hypothesis 3, zero order correlation between time spent on PUBG gaming and empathy showed a positive correlation, which shows that the more players spend time playing PUBG, their empathy increases. After controlling the effect of addiction in 1st order partial correlation, a statistically significant correlation was indicated between the independent variable and dependent variable. This implied that addiction had a significant effect in the relationship between time spent on PUBG gaming and empathy. When the effect of addiction was controlled, the relationship became insignificant. Therefore, hypothesis 3 was not supported in the zero order correlation.

For hypothesis 4, zero order correlation between time spent on PUBG gaming and stress showed a positive correlation which shows that the more players spend time playing PUBG, their stress will also increase. After controlling for the effect of addiction in 1st order partial correlation which showed a statistically significant correlation between the PUBG gaming and stress, this shows that addiction had a significant effect in the relationship between time spent on PUBG gaming and stress. When the effect of addiction was controlled, the relationship became insignificant. So, hypothesis 4 was not supported in the zero order correlation.

For hypothesis 5, zero order correlation between time spent on PUBG gaming and analytical ability showed a negative correlation, which demonstrated that the more players spend time playing PUBG, their analytical ability will decrease. After controlling the effect of addiction in 1st order partial correlation which showed a statistically significant correlation between the independent variable and dependent variable, this shows that addiction had a significant effect in the relationship between time spent on PUBG gaming and analytical ability. When this effect of addiction was controlled, the relationship became insignificant. On the basis of the above results, hypothesis 5 was not supported in the zero order correlation.

Out of 5 hypotheses, 3 were not supported, 1 was partially supported and 1 was supported. This study provides evidence that players have less concentration around them, more aggression due to gaming, more empathy, more stress and less analytical abilities in players due to PUBG gaming. Moreover, in future studies, same psychological effects can be studied for a different population as well.

Conclusion

Online gaming is a source for entertainment played by people of all genders and ages. The main goal of gaming industry is to entertain people and indirectly make them addictive to improve the industry. Gaming has both positive and negative psychological effects but the negative effects are far more than the positive effects. This study investigated the psychological effects of gaming on Pakistani PUBG players. No doubt people play gaming for entertainment purpose but excessive gaming can lead to gaming addiction which can further lead to psychological effects like sleeping disorders, stress and depression. Gaming addiction can also have damaging impact on physical, emotional and social health. It is also related with eating irregularities, exhaustion, mood disorders, social ineffectiveness, sleep deprivation, obesity, suicide and separation from family and friends. IGD can be depicted in individuals who play for a longer period of time and playing for longer periods can affect the daily routine of the individual along with poor performance in work and studies. Gaming industry is one of the largest profits generating industry these days. The previous literature indicated that there is a significant relationship between gaming and psychological effects. The result of the current research

study indicates that gaming does have an effect on the psychological health of the gamers. Convenient sampling or snowball sampling was used in this research study. The results concluded that gaming does have an effect on concentration, aggression, empathy, stress and analytical ability of the players. Games that include violence, control and power captivate more males than females and there are various violent shooting video games designed for male gamers. The most profitable and popular videogames contain aggressive content like first person shooters, car racing games and sports stimulators. In conclusion of the results, individuals can learn how to fulfill the psychological needs by the help of the psycho-training program and Cognitive Behavioral Therapy (CBT). It can be checked after the therapy that if there is any change in the levels of the gaming addiction in the individual. For future gaming addiction studies, the addiction and personality types can be studied collectively to determine the personality types which are more exposed to the risk of gaming addiction.

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