Personality Traits and Online gaming Addiction: Mediating role of Mental Health

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Abstract

The purpose of this study was to examine how mental health may act as mediator and personality traits in online gaming addiction. It was hypothesized that personality traits and online gaming are likely to be related and mental health will mediate between personality and gaming addiction. The data was collected from students from Lahore city (N=300) with the age range 17-35 (M=24.6; SD=3.67) of which 160 were males and 140 were females. Big Five Inventory, Mental Health subscales of Problematic Online Gaming Questionnaire (POGQ) and Game Addiction Scale were used as assessment measures. Results revealed that all personality traits have negative correlation with gaming addiction except neuroticism. It has significant positive relationship with gaming addiction. The findings can be beneficial for online gamers' families and therapists, who may utilize the findings to evaluate some of the aspects of playing online games for therapeutic intervention.

Introduction

We may consider gaming addiction to be a type of behavioral fixation which is characterized by playing computer or online games excessively that one finds it hard to avoid them. It may influence a person's everyday life (Salahuddin & Muazzam, 2019). Specifically, among teenagers and adolescent, massive multi-user online role-playing games (MMORPG) are the leading form of Internet addiction. Serious problems have arisen with the excessive use of online gaming. Establishment of the first ever Center of detox for video game addiction in Holland (Gerlach, & Cenfetelli, 2020) was mainly because of prevalence of this disorder in adolescents. "Online or video games seem to be innocent and flattering, but their long term effect resemble to those of drug addicts and are hard to let go of," according to Keith Bakker, the founder of facility.

Most of the researches conducted on online addiction due to gaming suggested that females played lesser games than their counterparts i.e. males (Lopez-Fernandez et al., 2019). According to a research conducted on online game addiction, results showed about 70% users were males. As per one of the other study which focused on human population factors in computer gaming, it reported that more or less 81% of males were affected by such gaming (Lopez-Fernandez et al., 2019). Male university students often have higher scores in online gaming than female university students (Zahra et al., 2019).

It can also be inferred from it that it may be one of the reasons for males being un attracted to original world and more attracted to virtual world as they feel comfortable and secure in it (Stockdale, & Coyne, 2018). Males time and again use online world to keep them

away from original world while females do not use internet for such escape (Tateno et al., 2019).

According to a research, individual behavioral characteristics including personality traits can encourage individuals to increase their use of internet gaming, and previous research has also looked at consequences such as shy behavior (Mathew, 2020). In literature, it has been found the relation in between individual's personality and internet gaming disorder. Increased lonesome behavior and apprehensive associations have come to light, so much so increased neuroticism and shyness (Montag et al., 2019). Along with the harms, web based games also carry a positive aspect of increasing social interaction skills between the players, while facilitating them to develop such behaviors and feelings that against narcissistic tendencies (Shoaib, 2020). According to the finding of a research, extensive use of smart devices leads to psychopathology issues among users, such as, depressing (Cerniglia et al., 2019).

Online gaming has become pre-dominant in Pakistan, as well as, globally. Internet gaming disorder is becoming dominant in Pakistan just as globally around the world. The students tend to be at high risk of developing the symptoms of internet gaming disorder (Zahra et al., 2019). The students spending more time in playing games (i.e. more than 40 hours a week) are expected to have high risk of developing internet gaming disorder (Zahra et al., 2019).

The researches done on the related topic are mostly done in other parts of the world, the outburst of web based addiction to gaming in Pakistan, and the lack of researches on this topic are the main pillars on which this research is going to take place. The personality traits are added to check connection with gaming addiction. The current research focuses on online gaming addiction as it leads to more mental health problems in adolescents. This research

also focuses on big five traits of personality and the inter-relationship with reference to web based gaming. We also want to see gender difference.

Rationale of the Study

There are no universal clinical or physiological screening standards, and the use of contradictory and non-standardized criteria to diagnose mobile game addiction has affected the field. The majority of evaluation techniques have significant selection biases, relying very much on self-selected samples. Clearly, there is a knowledge gap in the current definition of gaming addiction.

There should be a research done to check the list either there is relation between personality traits and online gaming addiction and any specific type of personality traits is leading these adolescents towards gaming addiction.

Objectives of the study

- To investigate if online gaming addiction is present in Pakistani adolescent

- To explore the factors that predict online gaming addiction

Hypotheses

It was hypothesized that,

H1: There is a significant relationship between personality traits and online gaming

H2: Mental health will likely to mediate between personality and gaming addiction.

Method

Sample and Sampling Technique

Data for the current study were gathered using the purposive sampling technique. Sample of interest in this study were students who are in their late adolescence and early adulthood, who play multiplayer online games. The participants of the study were online gamers (N = 300; boys =160 girls =140) with age range of 17 to 35 years (M=24.6; SD=3.67) were

selected from Lahore city. The sample size was determined on the basis of general rule that is fifteen cases of data per predictor (Field et al., 2012). The number of predictors in this study was twenty, therefore, 300 was the appropriate sample size for conducting mediation analysis.

Measures

Big Five Inventory (BFI)

The Big Five Inventory's 21-item abbreviated version was used to examine personality traits (Rammstedt & John, 2007). The scale assesses five characteristics of personality (extraversion, neuroticism, conscientiousness, agreeableness, and openness), with two items for each. The response is a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The reliability of BFI-21 subscales extraversion, agreeableness, conscientiousness, neuroticism, and openness is.86, .64, .70, .74, and.66 respectively (Kovaleva et al., 2013).

Problematic Online Gaming Questionnaire (POGQ)

This 18-item scale was developed by Demetrovics et al. (2013) to measure the problems brought on by online gaming. Preoccupation, Immersion, Withdrawal, Overuse, Interpersonal Conflict, and Social Isolation are its six subscales. With the author's consent, the remaining subscales were utilized as measures of mental health, whereas social isolation was used independently. Ratings range from 1 (strongly disagree) to 5 (strongly agree) on a 5-point Likert scale, with a possible score of 18 to 90. A cut-off score of 32 was established for problematic players; a high score denoted more problematic gaming. According to the author, the scale's Cronbach's alpha was.91.

Game Addiction Scale (GAS)

The authors of this scale are Lemmens et al. (2009). Preoccupation, withdrawal symptoms, tolerance, issues, conflict, loss of interest, and mood modification are the seven main symptoms that are measured by the scale. On a five-point Likert scale from 1 (never) to 5 (very often), participants were asked how frequently they had encountered each of the scenarios mentioned over the previous six months. A cumulative score of all items was used to indicate the degree of gaming addiction, while a monothetic approach was employed to suggest gaming addiction with a rating of 3 or higher for all things. According to the author, the scale's Cronbach alpha was.94. (Lemmens et al., 2009).

Procedure

The random data was collected from Lahore city. After informing the participants and obtaining their consent, the confidentiality of their answers was guaranteed. The goal of the study was explained to the participants. Questionnaires were individually administered and were completed in the researcher's presence. Approximately each participant took 20 to 25 minutes to fill questionnaires.

The survey was also carried out on Google and was shared on various Facebook and WhatsApp groups. Participants were briefed and explained about the objective and purpose of the research along with the advantage and societal benefit. They were informed about the survey's voluntary nature and their freedom to discontinue participation at any moment, and their informed consent was obtained. Following their decision, they were required to complete the self-report questionnaire and the demographic information form, both of which were created using Google Forms and included instructions.

Results

The present research aims to evaluate the relationship between personality and online gaming addiction in adolescents, with mental health serving as a mediator. A sample of 300

adolescents was selected for research. Data analysis steps include; (i) using Cronbach's alpha to assess scale reliability (ii) Pearson Product Correlation moment analysis was applied to examine the relationship between personality and gaming addiction. (iii) Mediation analysis (iv) An independent sample t-test was also used to investigate gender differences. The psychometric properties of the tools are given in table 1.

Table 1

Psychometric properties of Personality, Gaming Addiction scale and Problematic Online Gaming Questionnaire

Variable	M	SD	Range	α
Personality				
Extraversion	10.17	3.95	4-20	.75
Agreeableness	11.40	3.14	5-19	.70
Conscientiousness	11.81	2.91	6-20	.61
Neuroticism	13.7	2.92	4-20	.58
Openness	16.1	4.45	7-25	.59
Gaming Addiction				
Salience	10.08	2.98	3-15	.82
Tolerance	10.55	2.89	3-15	.83
Mood Modification	11.17	2.72	3-15	.78
Relapse	10.31	3.20	3-15	.84
Withdrawal	9.78	3.33	3-15	.89
Conflicts	9.88	2.92	3-15	.83
Problems	10.00	2.99	3-15	.84

Variable	M	SD	Range	α
POGQ				
Preoccupation	6.57	2.00	2-10	.64
Immersion	13.98	3.78	4-20	.79
Withdrawal	12.8	3.99	4-20	.86
Overuse	10.03	3.13	3-15	.81
Interpersonal Conflicts	6.46	2.27	2-10	.82

The descriptive statistics of assessment measures and psychometric properties used to access personality with gaming addiction were sought using cronbach's alpha and mean, standard deviation and ranges. Table 1 display mean and standard deviation of gaming addiction and personality traits. It also describes internal consistency (alpha coefficient) for all sub-scales used in this research. The findings revealed that all tools used in the current study are internally consistent, as the alpha coefficients for all tools were more than 0.5.

Main Analysis

Table 2

Correlation between Demographic Variables and Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1.age	-	.26***	.26***	.24***	.25***	.28***	.16**	.22***	-.19**	-.15**	-.14*	.20***	-0.08	.28***	.24***	.22***	.28***	.27***	.25***
2. GAsalience		-	.745***	.585***	.733***	.761***	.783***	.642***	.597***	.561***	.427***	.377***	.346***	.819***	.717***	.706***	.760***	.723***	.699***
3. GAtolerance			-	.625***	.799***	.715***	.687***	.731***	.534***	.476***	.522***	.403***	-.183**	.840***	.707***	.843***	.809***	.693***	.658***
4. GAmoodmodification				-	.593***	.525***	.444***	.539***	.435***	.282***	.445***	.424***	-.155**	.628***	.465***	.560***	.621***	.566***	.572***
5. GArelapse					-	.794***	.791***	.706***	.536***	.584***	.468***	.372***	.319***	.834***	.775***	.761***	.810***	.668***	.670***
6. GAwithdrawal						-	.850***	.702***	.566***	.573***	.444***	.385***	.359***	.821***	,.769***	.671***	.783***	.699***	.695***
7. GAconflict							-	.702***	517***	.644***	.451***	.391***	.340***	.786***	.718***	.671***	.711***	.692***	.645***
8. GAproblems								-	.379***	.452***	.359***	.338***	-.165**	.723***	.615***	.691***	..699***	.542***	.612***
9. extraversion									-	.491***	.510***	-.458***	.383***	-.589***	-.410***	-.556***	-.535***	-.552***	-.532***
10. agreeableness										-	.387***	-.129*	.543***	-.602***	-.527***	-.468***	-.600***	-.505***	-.454***
11. conscientiousness											-	-.469***	.336***	-.500***	-.373***	-.466***	-.434***	-.441***	-.417***
12. neurticism												-	0.045	.423***	.350***	.370***	.375***	.440***	.387***
13. openess													-	-.322***	-.203***	-.147*	-.315***	-.331***	-.340***

14. POGQ	-	.862***	.905***	.933***	.868***	.869***
15. preoccuption		-	.752**	.803**	.678**	.711**
16. immersion			-	.815***	.697***	.747***
17. withdrawal				-	.760***	.768***
18. overuse					-	.706***
19. interpersonalconflicts						-

Table 3

Fit Indices for personality traits (extraversion, agreeableness, conscientiousness, neuroticism, openness), predicting gaming addiction with mental health as Mediator

Model	χ^2	P	df	CFI	NFI	RMSEA
1. Initial Model	296.32	.000	106	0.67	.69	0.22
2. Final Model		.000	153	.96	.98	0.05
$\Delta\chi^2$	.28					

Mental health served as a mediator between personality and game addiction. As Figure 1 shows, the correlation coefficient between personality traits and gaming addiction was statistically significant. The Root Mean Square Error of Approximation (RMESA) for the initial modal was 0.23, while the NFI and CFI values were 0.67 and 0.68, respectively. Hu and Bentlar (1999) recommend RMSEA value below 0.8 and CFI, ISI and TLI values of 0.9 or higher. On the basis of non-significant paths from extraversion to preoccupation, agreeableness to overuse and immersion, conscientiousness to preoccupation, immersion and withdrawal, neuroticism to immersion, openness to withdrawal and overuse, preoccupation to tolerance and problem, immersion to mood modification and withdrawal, overuse to relapse and problem, interpretation to relapse, conflict and problem were deleted. After deleting the paths, the range of modal fit CFI, NFI were .96 and .98 respectively with RMSEA of 0.05 and the fit index of absolute fit was satisfactory as chi square was 296.32 with p=.000. The chi square change is .28 for model 2 was satisfactory and was less than 3.
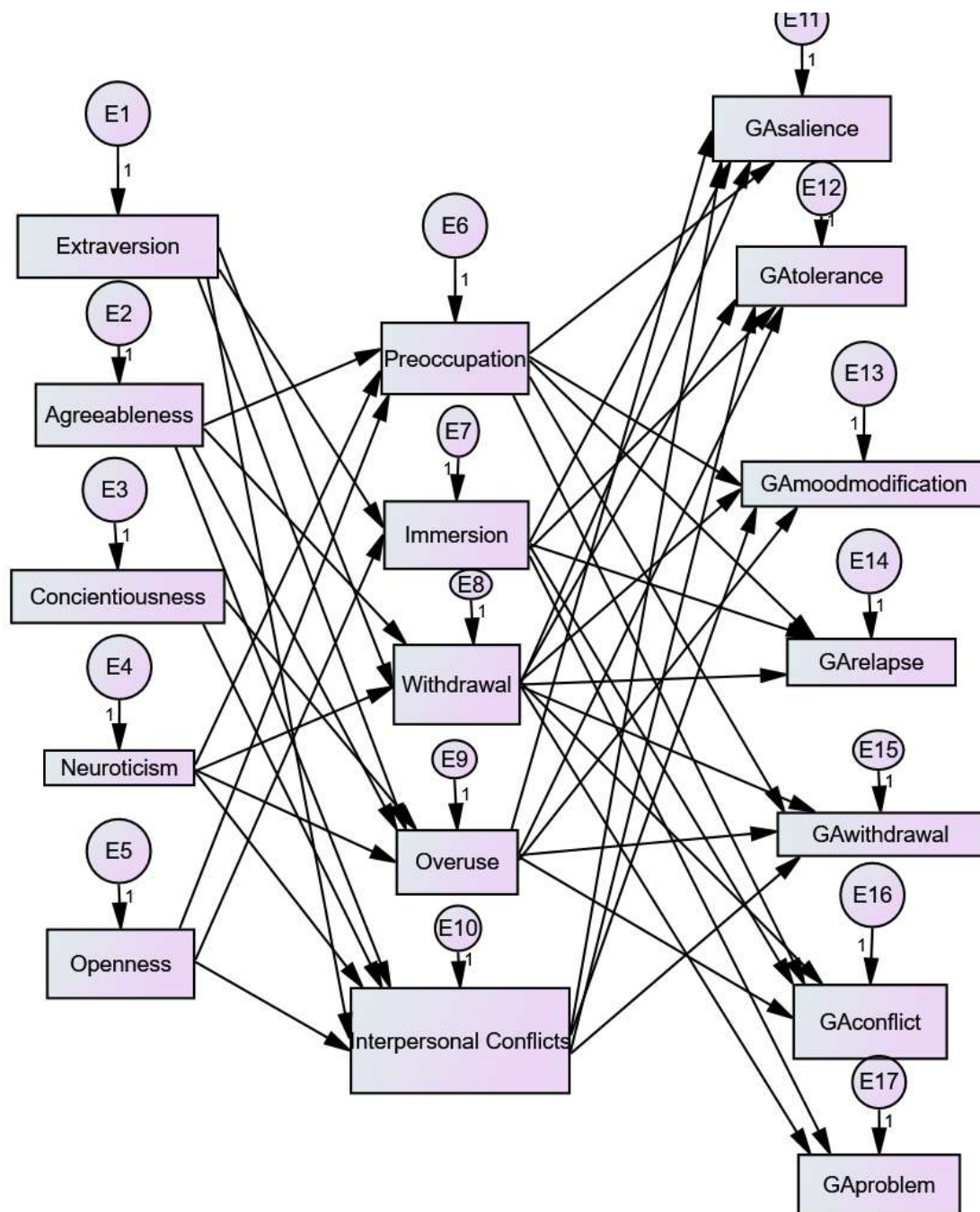
Figure 1 Emerged Modal after mediation analysis

Additional Analysis

Table 4

Independent sample t-test showing Gender differences in Gaming Addiction

	Male (n=160)		Female (n=140)				95%Cl		
Variables	M	SD	M	SD	t(298)	p	LL	UL	Cohen's d
Gaming Addiction	74.84	17.55	68.29	18.15	3.2	.002	2.4	10.6	0.3
GA Salience	10.6	2.88	9.46	2.99	3.4	.001	.48	1.8	0.4
GA Tolerance	11.0	2.55	9.96	3.15	3.3	.001	.45	1.7	0.4
GA Mood	11.46	2.64	10.8	2.79	2.0	.043	.01	1.2	0.2
GA Relapse	10.76	3.02	9.79	3.33	2.6	.009	.24	1.7	0.3
GA Withdrawal	10.45	3.29	9.02	3.22	3.8	.000	.69	2.2	0.4
GA Conflict	10.21	2.92	9.5	2.89	2.1	.035	.05	1.3	0.2

The mean difference was tested by using independent sample t-test. Positive significant difference was found in gaming addiction on the basis of gender.

Table 5

Independent sample t-test showing Mean Differences in Family System and Gaming Addiction

Variables	Nuclear (n=232)		Joint (n=68)				95%CL		
	M	SD	M	SD	t(298)	P	LL	UL	Cohen's d
Salience	10.4	2.8	8.7	3.1	4.2	.000	.93	2.5	0.4
Tolerance	10.8	2.8	11.0	2.8	2.9	.003	.39	1.9	0.3
Moodmodification	11.5	2.5	9.9	2.9	4.1	.000	.81	2.2	0.4
Relapse	10.7	3.0	8.8	3.1	4.4	.000	1.0	2.7	0.5
Withdrawal	10.1	3.2	8.4	3.3	3.8	.000	.85	2.6	0.4
Conflict	10.2	2.6	8.6	3.3	3.9	.01	.79	2.3	0.4
Problems	10.2	2.8	9.1	3.4	2.5	.000	.23	1.8	0.2

There is significant difference in family systems and gaming addiction (salience, tolerance, mood modification, relapse, withdrawal, conflict, problems). Nuclear family system is more significantly with gaming addiction as compared to joint family system.

Summary of the Findings

According to the above findings, the psychometric properties and descriptive statistics of assessment measures illustrate internal consistency (alpha coefficient) for all of the sub-scales used in this study. The findings showed that all tools of the present research are internally consistent as alpha coefficient of all tools were above .5. Gender and family system were negatively correlated with gaming addiction. The emerged mediation modal is fit and significant.

Discussion

In our demographic variables, age has not been found to be significant factor contributing to gaming addiction. People in any phase of their life are prone to development of addiction to the game. The contributing factors could either be general, or personality related factors. As we inferred that young adolescents were more prone to online addiction of games but the findings have not found it a significant factor contributing to addiction to the game. So, it can be inferred that it is not age bound and can occur any time to anyone at any stage of their life as per social or individual environment.

One of the myths surrounding online game playing is that the games attract exclusively to youngsters and teenagers. This assumption has been proven rather wrong by one of the most internationally popular games of today's time, PUBG, which has completely shook the idea by entertaining gamers of all ages. (Nawaz et al., 2020). We should further research on this factor relating to age in online gaming addiction. More work is needed in this regard and research can lead to more findings in this regard. As per current findings age is not a contributing factor.

This research is based on Pakistani culture, as per findings, the results have shown that online gaming addiction is more prevalent in males as compared to females. The results of the current study are consistent with earlier studies indicating male students often score higher on online gaming than female students (Zahra et al., 2019). This can be due to the fact that in Pakistan culture there is slightly an advantage to boys/males over their counter parts. As we can see in the culture that males are dominant in society and gender discrimination is observed. For instance, females are always reminded of their delicate nature and domestic responsibilities as compared to males and online games being played by females is considered as wasting of their time.

Excessive use of online platform has seen to be causing serious personality affects in the people involved. As per our study we have come to the analysis that according to the Big Five

personality traits people tend to behave differently and online gaming addiction have varied effects on people exhibiting different personality traits. As per our research it is safe to say that online gaming is more of an addiction than recreational activity as the literature tells us that gamers show signs of addiction identical to addicts of alcohol and drugs (Montag et al., 2019). It has severely affected personal lives of its users. But it is more dependent on the personality traits of the individual exhibiting it.

For instance, people low on extraversion and low on openness to experience may face more serious consequences of online gaming addiction as compared to their counter parts. Similarly, people scoring low on agreeableness and conscientiousness may seem to sway away from the help or guidance their mentors tend to give regarding online gaming and may not adhere to their advices (Abbasi et al., 2020).

7.1. Strengths and Limitations of the Study

The study explores that there are different traits and pattern of gaming addiction between age groups and the characteristics of males and females. For data collection, long version of questionnaire with high reliability were used in order to get significant results.

Quantitative approach has its drawbacks and can influence the actual responses. In order to get more genuine and significant result, qualitative research design or mixed method should use. The present findings are limited in their generalizability due to convenient sampling and a relatively low response rate among gamers of one nationality. Self-reported measures can potentially cause response biases and issues with social desirability.

7.2. Suggestions for Future Research

The same analysis could be performed on private university and government university students and then comparisons could be made between the findings. Longitudinal research along with qualitative approach will provide more understanding about gaming addiction

The relation between gaming addiction and attachment style and parenting style would also be important to discover. Other risk factors which leads to gaming addiction like low self-esteem should also be studied. Future studies should look at the percentage of time spent playing online versus offline.

7.3 Implications of the Findings

This study was an exploratory research in the domain of gaming addiction. This paper can be useful for online gamers' families and therapists, who can utilize the findings to consider certain aspects of online gaming. Instead of completely eliminating gaming addiction from their lives, parents of these gamers should be urged to limit their game playing time, as games can assist people develop thinking skills.

The government should restrict the usage of games so that addicted behaviors are not reflected, such as limiting game levels to regulate persistent addictive play. Psychologists and medical workers must raise awareness of games and their impact on society.

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