



PUBG Game Addiction, Social Connectedness and Aggression in Young Adults

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ARTICLE INFO

Article History:

Received: May 15, 2024
Revised: August 15, 2024
Accepted: August 16, 2024
Available Online: August 17, 2024

Keywords:

PUBG Game Addiction
Social Connectedness
Aggression
Mediator

Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

In today's technological era, millions of young adults worldwide engage in violent video s. This study explored how addiction to PUBG game affects aggression, with social connectedness serving as a mediator. Involving 293 PUBG game players (158 men and 135 women) between age of 18 to 25 years ($M = 22.21$, $SD = 1.89$), the research used the Gaming Addiction Scale, a revised Social Connectedness Scale, the Buss and Perry Aggression Questionnaire, and a demographic questionnaire. Finding depicts that PUBG game addiction significantly and positively correlates with aggression. However, while the relationship between PUBG game addiction and social connectedness was positive, it was not significant. Social connectedness, on the other hand, was significantly positively related to aggression. Mediation analysis revealed a partial mediation effect of social connectedness on the link between PUBG game addiction and aggression; the indirect path through social connectedness was not significant, though both direct and total effects of addiction on aggression were significant. Independent samples t-tests found significant gender differences in PUBG game addiction, with men scoring higher than women, but no significant differences in social connectedness or aggression. Employment status showed significant differences, with unemployed participants scoring higher in both PUBG game addiction and social connectedness compared to employed participants. However, no significant differences were found in aggression based on employment status, despite unemployed individuals having higher average aggression scores. The findings were compared with existing literature, and recommendations for future research were made, highlighting important implications for young adults' welfare.

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1. Introduction

Gaming addiction is marked by excessive or compulsive engagement with video games, resulting in significant disruptions to daily life and psychological distress (Jeong & Kim, 2011). This condition is known by various terms, including "Internet gaming disorder," "pathological video gaming," and "Internet gaming addiction" (Lemmens, Valkenburg, & Peter, 2009). Since the 1990s, online gaming has surged in popularity, leading many young adults to devote excessive time to gaming, impacting their daily routines and responsibilities (Singh, 2019). A prominent example of an addictive game is PlayerUnknown's Battlegrounds (PUBG), released in 2017. The game influenced from the Japanese film "Battle Royale," PUBG immerses players in a competitive environment where they parachute onto an island, scavenge for weapons, and fight for survival. As the game progresses, the playable area shrinks, increasing the challenge. Players who survive to the end and defeat all opponents feel a profound sense of achievement (Razzaq, 2021). The game's appeal stems from its intuitive learning curve, rewarding progression system,

and the thrill of advancement, enhancing its addictive potential (D'Souza, Manish, & Deeksha, 2019). Online multiplayer games provide players opportunities to maintain and form new social connections, though experiences differ between male and female players. Qualitative study (n=22) and focus groups (n=14) has shown how these differences affect social ties and suggested improvements for social tools. While all players face issues like toxicity and performance pressure, female players often encounter misogynistic targeting and stereotype threats. To cope, many choose to hide their gender, which hinders their ability to connect socially and fosters distrust of strangers (Vella, Klarkowski, Turkay, & Johnson, 2020).

Savci (2017) studied Internet, social media, digital game, and smartphone addictions as predictors of social connectedness among 201 adolescents. Using tools like Young's Internet Addiction Test and the Social Connectedness Scale, they found that these addictions accounted for 25% of the variance in social connectedness. Internet addiction had the most substantial impact, followed by social media, digital game, and smartphone addictions. This research highlights the significant influence of various technological addictions on social connectivity. Social connectedness is vital for adolescent mental health and often correlates with enhanced well-being. Cyberbullying, which is common among adolescents, can severely harm mental health (Archer, Holloway, & McLoughlin, 1995). Previous longitudinal research depicts that social connectedness may help mitigate the negative effects of cyberbullying. suggest that social connectedness mediates effect of cyberbullying on well-being. Structural equation modeling indicates that social connectedness reduces the harmful effects of cyberbullying and cybervictimization on well-being (Archer, Holloway, & McLoughlin, 1995). López-Mora, Carlo, López, González-Blázquez, and Gasch (2024) explored the relationships among cyber victimization, problematic smartphone use, aggressive behaviors, and altruistic tendencies in 601 young adults (mean age = 19.96 years; SD = 2.27; 69.1% female). Their study revealed that problematic smartphone use mediates the relationship between cybervictimization and both aggressive and prosocial behaviors. While the link between cybervictimization and problematic smartphone use aligns with prior research, the expected negative relationship between cybervictimization and altruistic tendencies was not supported. These findings stress the importance of fostering social connectedness to support identity development and reduce the effects of cybervictimization (López-Mora et al., 2024).

Teng, Li, and Liu (2014) examined how low self-control mediates the effects of violent online gaming, including PUBG game, and Internet addiction on aggression among 211 Chinese male young adults. Their findings revealed that many popular games are violent, with positive correlations identified between exposure to violent games, Internet addiction, low self-control, and aggression. Both violent gaming and Internet addiction directly influenced aggression, with low self-control acting as a mediator. The study emphasizes the need for educational programs focused on improving self-control to reduce aggression linked to violent gaming, while discussing its implications and limitations (Teng, Li, & Liu, 2014). Hilvert-Bruce and Neill (2020) studied whether gamers normalize aggression in gaming environments and how these beliefs affect their aggressive behavior. An online survey of 1,646 gamers revealed that verbal harassment is seen as more acceptable in online gaming than in offline settings. Normative beliefs about cyber aggression predicted both general and prejudiced cyber aggression, partially mediating the effects of age and gender on cyber aggression. This study underscores the importance of challenging beliefs that condone cyber aggression to prevent toxicity in gaming and suggests future research directions (Hilvert-Bruce & Neill, 2020). Deng et al. (2024) examined Internet Gaming Disorder (IGD) among Chinese adolescents and its association to aggression. In a survey of 9,306 junior and senior high school students, the study found a 1.78% prevalence rate of IGD symptoms. Adolescents with IGD displayed higher levels of psychological problems and aggression, while casual gamers reported lower levels. Logistic regression identified significant correlations between increased aggression and factors such as male sex, younger age, severe IGD symptoms, psychological distress, and exposure to violent games like PUBG game.

This study emphasizes that excessive online gaming heightens psychological distress and promotes aggressive behavior, with severe IGD symptoms and psychological distress being key predictors of aggression (Deng et al., 2024). Multiple studies have shown that online violent games like PUBG game are associated with increased aggression (Alvi, Asghar, & Alvi, 2023; Esmaeli, Emadian, Mahdinejad Gorji, & Sina, 2023; Karakoram International University & Nazir, 2021). Online gaming and social media addiction have been found to contribute to mental health

issues and aggression in young adults (Bashir, Shahid, & Salman, 2024; Shahid, Yousaf, & Munir, 2024). Men are more likely to become addicted to online networking sites and gaming, leading to aggression (Ogletree & Drake, 2007; Shahid, Yousaf, & Munir, 2024; Wartberg, Kriston, & Thomasius, 2017). The reviewed literature reveals a lack of research on social connectedness as a mediator between PUBG game addiction and aggression in young adults. However, it is evident that when players connect online, they may become aggressive due to competitive features and the drive to achieve objectives. Thus, to address this gap and clarify ambiguities, the present study aims to examine the relationship between PUBG game addiction and aggression, with social connectedness as a mediating variable among young adults. The objective is to understand how social connectedness among PUBG game players may contribute to aggression and to develop effective interventions. The study will also explore differences related to gender and employment status, as these factors have not been extensively examined in prior research.

1.1. Hypotheses

H1: Positive relationship is likely between PUBG game addiction, social connectedness, and aggression in young adults.

H2: Social connectedness is expected to mediate effect of PUBG game addiction on aggression in young adults.

H3: Gender differences are likely to exist among the study variables—PUBG game addiction, social connectedness, and aggression in young adults.

H4: Differences in employment status are likely to affect the study variables—PUBG game addiction, social connectedness, and aggression in young adults.

2. Method

2.1. Ethics

The study followed ethical standards established by the APA. Before data collection commenced, all necessary permissions were carefully obtained from the authors of the scales used, and institutional approvals were secured. Participants were thoroughly briefed on the study's objectives to minimize potential biases, and their anonymity and confidentiality were meticulously maintained through informed consent. They were also informed of their right to withdraw from the study at any time and we informed that they are not forced; no psychological or physical harm happened to participants during data collection since these issues were addressed and appropriate measure were applied i.e., safe environment and professional behaviour of researchers. Only participants who met the inclusion criteria and provided consent were included in the study. The survey, which took approximately 15 minutes to complete, ended with appropriate acknowledgment of the participants. Throughout the research, ethical principles were rigorously upheld in accordance with the APA's 7th edition ethical code of conduct.

2.2. Research Design and Sample

The present study utilizes a correlational research design to examine the relationships between PUBG game addiction, social connectedness, and aggression among young adults. The sample consists of 293 individuals, both employed and unemployed.

2.3. Sampling Strategy

Data for the current study were collected using purposive sampling because young adults usually play well known PUBG game and the population is almost possible to reach however we have use minor screening (playing PUBG game for last 6 months since we are using addiction scale).

2.4. Inclusion and Exclusion Criteria

Participants aged 18 to 25 were included, provided they had played PUBG game within the last six months. The study comprised both male and female young adults and the minimum qualification was required was intermediate.

2.5. Assessment Measures

2.5.1. Gaming Addiction Scale for Adolescents (GASA)

GASA was developed by Lemmen, Valkenburg, and Peter in 2009, is a 21-item Likert scale designed to measure gaming behavior, with responses ranging from "never" (1) to "very often" (5). The scale has demonstrated high reliability, with a Cronbach's alpha of 0.94. It was employed in the study to assess PUBG game addiction.

2.5.2. Social Connectedness Scale (SCS-R)

The Revised Social Connectedness Scale (SCS-R), a 20-item questionnaire developed by Lee in 2001, uses a scoring range from 1 to 6, with 1 indicating "strongly disagree" and 6 indicating "strongly agree." The scale has demonstrated strong internal consistency, with a reported Cronbach's alpha of 0.92.

2.5.3. Buss Perry Aggression Questionnaire (BPAQ)

Buss and Perry developed BPAQ in 1992, comprises 29 items, with items 6 and 19 requiring reverse scoring. It employs a five-point Likert scale. The questionnaire exhibits high internal consistency, with a Cronbach's alpha of 0.91. In this study, BPAQ was used to measure aggression. This questionnaire was selected since it is widely used across the globe and free to use while the scale did not required translation to Urdu since educated population was targeted in this study.

3. Result

Table 1: Sociodemographic Characteristics of Participants (N=293)

Sample Characteristics	Frequency	Percentage	Mean	Standard Deviation
PUBG game Player	293	100		
Playing PUBG game for the last six months	293	100		
Age			22.21	1.89
Gender				
Men	158	54		
Women	135	46		
Employment Status				
Employed	140	47		
Unemployed	153	53		

The demographic table indicates that the study comprised 293 participants who have played PUBG game for the past six months. Of these, 158 (54%) are men and 135 (46%) are women. The mean age of participants is 22.21 years and 1.89 of standard deviation. The employment status depict that 139 (47%) are employed and 154 (53%) are unemployed.

Table 2: Correlation among study variables in Young Adults (N=293)

Variables	1	2	3
1. PUBG game addiction	-	.11	.15**
2. Social connectedness		-	.16**
3. Aggression			-

Note: * $p < .05$. ** $p < .01$

The table illustrates the relationships between study variables. PUBG game addiction is significantly positively related to aggression. However, PUBG game addiction is positively but not significantly related to social connectedness. Additionally, there is a significant positive relationship between social connectedness and aggression.

3.1. Mediation Analysis

Table 3: Regression Coefficients for Study Variables in Sample of 293 Young Adults

Antecedent	Consequent				A (Y)	Consequent		
	SC (M)	B	SE	P		B	SE	P
PGA (X)	A	.20	.07	<.01	c'	.24	.10	<.01
SC (M)		-	-	-	b	.11	.08	.16
Constant	I	54.61	5.88	<.001	I	49.45	9.31	<.001
		$R^2 = .02$				$R^2 = .03$		
		$F = 7.88, p = <.01$				$F = 4.47, p = <.01$		

Note: PGA= PUBG GAME Addiction, SC= Social Connectedness, A= Aggression ** $p < .01$, *** $p < .001$

The mediation analysis' result depicts significant total direct effect of PUBG game addiction on social connectedness ($\beta = .20^{**}$, $SE = .07$, $p < .01$). Furthermore, findings also

depict nonsignificant direct effects of social connectedness on aggression ($\beta = .11, SE = .08, p > .05$). Findings indicate that PUBG game addiction significantly affect aggression via direct path ($\beta = .24^{**}, SE = .10, p < .01$).

3.2. Indirect Effect

Table 4: Indirect effect (N=250)

Indirect Path	Effect	Standardized Estimate	Lower Level	Upper Level
Social Connectedness	.02	.01	-.004	.04

Indirect effects depict that the total indirect effect of PUBG game addiction on aggression vs social connectedness is statistically insignificant since there is sign difference between lower and upper level bootstrap.

3.3. Independent Sample T-Test

Table 5: Mean difference of Gender among the Study variables

Variable	Gender				t(291)	P	Cohen's d
	Men(n=158)	Women(n=135)	M	SD			
PGA	81	10.78	77.68	10.07	2.69	.007	0.31
N SC	71.58	14.29	70.31	12.36	.81	.42	0.09
Aggression	77.3	18	76.83	19.45	.21	.83	0.02

Note: M= mean, SD= Standard Deviation, PGA= PUBG Game Addiction, SC= Social connectedness
 $**p < .01$. $***p < .001$,

There is a positive and significant gender difference in PUBG game addiction, with men scoring significantly higher than women. However, there are no significant gender differences in social connectedness and aggression. Despite this, men score higher on average in both aggression and social connectedness compared to women.

3.4. Independent Sample T-Test

Table 6: Men difference in Employment Status among the Study Variables (N=293)

Variable	Employment Status				t(291)	P	Cohen's d
	Employed(n=140)		Unemployed(n=153)				
	M	SD	M	SD			
PGA	76.60	8.94	82.12	11.28	-4.62	<.001	0.54
N SC	67.76	11.01	73.96	14.73	-4.1	<.001	0.47
Aggression	75.48	18.33	78.55	18.87	-1.41	.16	0.16

Note: M= mean, SD= Standard Deviation, PGA= PUBG game addiction, SC= Social connectedness
 $**p < .01$. $***p < .001$,

There is a positive and significant employment status difference in PUBG game addiction and social connectedness, as unemployed participants scoring significantly higher than employed participants. However, there are no significant employment status differences in aggression despite this, unemployed score higher on average in both aggressions than employed participants.

4. Discussion

PUBG game addiction is increasing, mainly because of its violent content and competitive nature. The game also has a reward system that ranks players, creating a more intense environment. Although there is significant research on how PUBG game addiction relates to aggression, the impact of social connectedness as a possible mediator has been largely overlooked. This study aims to explore how social connectedness might influence the relationship between PUBG game addiction and aggression in young adults. The primary assumption of the study states likely association between PUBG game addiction, social connectedness, and aggression among young adults. Our findings support previous studies showing that PUBG game addiction is linked to higher aggressive behavior, which can escalate to severe outcomes, such as suicide (Mamun, Ullah, Usman, & Griffiths, 2022). Research indicates that exposure to violent video s and active participation can increase aggression (Griffiths, 1999). Recent studies have also found a connection between social media addiction and higher aggression in young adults (Shahid, Yousaf, & Munir, 2024). Additionally, our results confirm that online rs may become addicted due to their relationships with online friends (Chapagai, Wangmo, & Gyem). Furthermore, online social connections can lead to aggressive behavior in teenagers and young

adults (Kırcaburun, Kokkinos, Demetrovics, Király, Griffiths, & Çolak, 2019). The second hypothesis proposed that social connectedness would mediate the relationship between PUBG game addiction and aggression in young adults. Our results showed a partial mediating effect of social connectedness. While the total effect was significant, the indirect path was not. This aligns with research indicating that addiction to s like Ludo Star negatively impacts psychological well-being through social connectedness (Bibi, Bashir, Shahid, & Mukhtar, 2024). Psychological well-being is inversely related to aggression (Kaur, 2018). This suggests that although online players may act aggressively due to the 's nature or conflicts, social connectedness plays only a partial role. Different online rs have varied experiences, and good gaming experiences may reduce aggression. Thus, social connectedness may not significantly predict aggression.

The third hypothesis states expected gender differences in the study variables among young adults. Findings revealed that men scored significantly high on PUBG game addiction than their counterpart women. Although not statistically significant, men also scored higher on social connectedness and aggression. These findings support Pugalendhi and Janet (2019), which showed that boys are more likely to play PUBG game and display higher aggression. Similarly, research indicates that social media addiction and aggression are more common among male (Shahid, Yousaf, & Munir, 2024). The non-significant difference in aggression may be due to biases in the aggression questionnaire, as the data was collected from an educated population that might have felt the study could negatively impact their gaming. Additionally, playing PUBG gamers can help connect globally, potentially reducing loneliness and anxiety, which may lower aggression. However, mean score of PUBG game addiction and aggression among men is higher which reflect cultural norms in Pakistan, where societal expectations often position men as dominant.

The fourth hypothesis suggests there would be significant differences in PUBG game addiction, social connectedness, and aggression based on employment status. The independent samples t-test showed that unemployed participants scored significantly higher on PUBG game addiction and social connectedness than employed individuals. Although there was no significant difference in aggression based on employment status, unemployed individuals had higher average aggression scores. This aligns with several studies that indicate unemployed individuals often use gaming to cope with stress (Lee & Chen, 2023), frequently due to living with parents or experiencing social isolation (Engelstätter & Ward, 2022). Unemployed individuals might also show higher aggression levels due to financial concerns that lead to conflict (Archer, Holloway, & McLoughlin, 1995). However, the lack of significant difference in aggression could be due to biases in the aggression questionnaire, as the data came from educated individuals who may have believed the study could negatively impact their future PUBG gameplay.

4.1. Limitation and Recommendations

Sample size of only 293 participants is a major shortcoming that restricts the robustness of the results. The study employed cross sectional correlational research design, longitudinal design is recommended in future studies to collect more accurate data and know how changes happens over time. Additionally, the findings are not generalizable since the data were collected exclusively from young adults based solely on employment status, with educational qualifications being overlooked. Future research should include variables such as educational qualifications and financial status to enhance generalizability. Furthermore, the use of lengthy scales in the questionnaires may have led to participant fatigue. The self-reported data collection might cause biases of researchers as well as participants therefore double blind data collection is recommended in future studies.

4.2. Implications

This study aims to develop intervention strategies to address problematic PUBG game usage that fosters aggression through social connectedness in young adults. Effective approaches include reinstating pre-addiction routines, seeking medical and psychological support, and enhancing parental involvement to monitor and engage with children. Implementing a structured schedule can help reduce excessive PUBG GAME play, while relaxation techniques such as deep breathing and progressive muscle relaxation may aid in managing aggression among addicts. The importance of parental awareness is crucial, as insufficient parental involvement can worsen video addiction in young adults; community based training and awareness through social media would also be fruitful to parents and their children. Educating youth about the harmful effects of

PUBG game can improve their awareness and psychological well-being. This study is expected to provide valuable insights into the relationship between PUBG game addiction, aggression, and social connectedness. These insights will offer medical and academic professionals the evidence needed to conduct seminars in educational and healthcare settings on the negative impacts of excessive gaming, effective coping strategies, and the critical roles of cognitive behavioral therapy and mindfulness practices.

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