

Problematic Online Gaming, Cyberbullying Perpetration and Aggression Among Pakistani University Students

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Problematic online gaming has become an increasing concern among students in recent years. The present study sought to investigate whether cyberbullying perpetration mediates the relationship between problematic online gaming and aggression. Using a cross-sectional correlational design, data were collected through purposive sampling technique from 310 university students aged 18 to 35 years ($M = 23.10$, $SD = 2.89$). The study utilized three questionnaires, namely Gaming Addiction Scale for Adolescents (Lemmens et al., 2009), Buss Perry Aggression Questionnaire (Buss & Perry, 1992), and the Cyberbullying Perpetration Subscale of the Cyberbullying Perpetration and Victimization Questionnaire (Lee et al., 2017). Correlational findings revealed that problematic online gaming was positively correlated with cyberbullying perpetration and aggression. Additionally, cyberbullying perpetration was positively correlated with aggression. Further analysis demonstrated that cyberbullying perpetration significantly mediated the relationship between problematic online gaming and aggression. These findings highlight the indirect pathway from problematic online gaming to aggression through cyberbullying perpetration, while the direct effect remained nonsignificant.

Keywords. Problematic online gaming, aggression, cyberbullying perpetration

Online gaming has become one of the most popular leisure activities among university students and can produce both beneficial

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and adverse results. The moderate gaming may improve cognitive skills, social interaction, and stress relief. However, excessive and uncontrolled gaming can develop into a problematic online gaming, which has been associated with maladaptive behaviors like cyberbullying perpetration and aggression (Kırcaburun et al., 2019). Evaluating these variables is particularly essential for Pakistani university students, where increasing access to internet and gaming engagement may cause behavioral problems that affect academic performance, peer relationships, and well-being. Online gaming means playing video games over the internet, either alone or with other players simultaneously (Amin et al., 2022; Hendrickson, 2018). These games often possess strategic challenges that need critical thinking, problem-solving, and persistence (Ahmad et al., 2021; Morris et al., 2013). Although online gaming provides several cognitive and recreational benefits, it may also become problematic when individuals lose control over their gaming habits and persist in gaming behavior despite experiencing negative consequences. Research indicates that proneness to boredom and using gaming as a coping mechanism for stress are among the major determinants contributing to problematic online gaming behavior (Melodia et al., 2022).

Individuals who problematically engage in online gaming may become emotionally dysregulated gradually due to prolonged exposure to competitive environments, frustration during gameplay, and consistent interaction with toxic online communication. Such situations may enhance irritability, impulsive reactions, and hostility which can subsequently foster the likelihood of aggressive behaviors as well as cyberbullying perpetration (Hu et al., 2025; Mestre-Bach & Potenza, 2025). University students are particularly vulnerable because they frequently use online games not only for entertainment but also as a coping strategy for academic stress, loneliness, and emotional escape (Batmaz & Çelik, 2021; Gao et al., 2024; Kuss & Griffiths, 2012; Mestre-Bach & Potenza, 2025). Therefore, problematic online gaming may act as an important behavioral risk factor that contributes to maladaptive behavior, i.e., aggression both online and offline.

According to previous studies, there was a positive correlation between problematic online gaming and cyberbullying and aggression (Bashir et al., 2024; Motiwala et al., 2025). A recent study conducted in Pakistan on young adults revealed that online gaming addiction is significantly associated with cyberbullying perpetration, which is defined as the use of technology to harass, threaten, embarrass, or target another person (Shahid et al., 2025c). A previous study

demonstrated that pathological or compulsive gaming among adolescents is associated with increased aggression, which is defined as behavior aimed at opposing or attacking something or someone, often with the intent to cause harm, regardless of the game's content (Lemmens et al., 2011). A meta-analysis examined the relationship between internet gaming disorder and aggression. Across 30 samples, results showed a moderate positive correlation. Findings revealed stronger associations in Asia, younger age groups, and recent years. These findings suggest that internet gaming disorder and aggression reinforce each other, highlighting implications for prevention strategies (Li et al., 2023). Recent studies also found that online Ludo game addiction influences aggression among university students through negative emotions and online social connectedness (Bashir et al., 2024; Shahid et al., 2024).

Cyberbullying perpetration can be defined as the intentional use of technology, such as mobile devices or computers, by an individual or group to harass, threaten, humiliate, harm, or defame another person or group of individuals in a repeated manner, where the victim is unable to defend themselves (Khan & Bibi, 2025). For example, Hu et al. (2025) reported that competitive gaming motivations encourage cyberbullying behaviors as a means of gaining in-game strategic or performance-related advantages compared to other players. Similarly, a study conducted in Pakistan reported that problematic use of information and communication technology significantly enhances cyberbullying perpetration among undergraduate students (Shaikh et al., 2021). One of the reasons for cyberbullying perpetration is that many games allow real-time communication during gameplay, and the use of anonymous usernames further facilitates such behaviors by reducing accountability (Prasetyaningtyas & Prayogo, 2021; Tanrikulu et al., 2021).

Furthermore, cyberbullying perpetration may serve as a behavioral pathway through which problematic online gaming predict aggression. Individuals who problematically engage in hostile online interactions, verbal abuse, humiliation and harassment during gaming may gradually consider aggressive communication patterns as norm. Over time, these online hostile behaviors may translate into offline aggressive tendencies due to reduce empathy for others and desensitization toward aggression (Lee et al., 2024). This argument is aligned with the General Aggression Model, which suggests that repeated exposure to aggressive stimuli and aggressive enactment can foster aggressive cognition, maladaptive emotions, and behaviors (Bushman & Anderson, 2002).

General Aggression Model ([Bushman & Anderson, 2002](#)), postulates that repetitive exposure to violent content in games can elevate aggression among gamers. Empirical evidence also supported this model, which indicates that habituation to online internet games like Clash of Clans and PUBG aggravate aggression among students ([Shahid & Yaseen, 2025b](#); [Shahid et al., 2025c](#)). Another similar study was conducted in Pakistan on young adults shows a strong positive bond between disturbing online games and aggression ([Batool et al., 2025](#)). Moreover, [Motiwala et al., \(2025\)](#) found a significant positive correlation among problematic online gaming and cyberbullying perpetration. The prevalence of problematic online gaming in young adults has increased due to convenient internet accessibility, widespread use of smartphone, social interaction through multiplayer games, coping-oriented motivations, escapism, and the highly rewarding features of online gaming ([Kuss & Griffiths, 2012](#); [Wang et al., 2023](#)). The Uses and Gratifications Theory demonstrates that individuals are involved in online gaming to fulfill psychological and social needs like entertainment, achievement, and emotional escape, which may elevate excessive gaming behaviors ([Kardefelt-Winther, 2017](#)). Additionally, the Social Learning Theory states that repeated exposure to aggression, toxic communication, and challenging gaming environments may normalize hostile behaviors and enhance the probability of cyberbullying perpetration among young adults ([Bandura, 1977](#); [Shahid et al., 2025](#)). Excessive gaming may also impair emotional regulation and diminish empathy, making individuals more probable to aggressive online behaviors, such as cyberbullying ([Lee et al., 2024](#); [Mussawar et al., 2024](#)).

Although previous research has independently investigated positive associations between problematic online gaming, cyberbullying perpetration, and aggression, limited research has explored the underlying psychological factor associating these variables, particularly in collectivistic societies like Pakistan. Existing literature has majorly focused on direct relationships, while the indirect process through which problematic online gaming may predict aggression through cyberbullying perpetration remains overlooked ([Bashir et al., 2024](#); [Motiwala et al., 2025](#)). Researchers have suggested the need to investigate mediating mechanisms associating problematic online gaming with maladaptive psychosocial outcome such as aggression among young adults and university students ([Coyne et al., 2023](#)).

In Pakistan, young adults particularly university students are considered important population due to increasing internet accessibility, problematic smartphone usage, growing popularity of

multiplayer online games, and limited awareness about healthy digital behavior. These factors may increase susceptibility to problematic online gaming and associated behavioral problems like cyberbullying and aggression. Despite this growing concern, empirical evidence assessing these relationships among Pakistani university students remains overlooked. Therefore, current examination purpose is to analyze whether cyberbullying perpetration mediates the association among problematic online gaming and aggression among Pakistani university students.

Hypotheses

The following are the hypotheses of the study:

1. Problematic online gaming will be positively associated with aggression and cyberbullying perpetration among Pakistani university students.
2. Cyberbullying perpetration will be positively associated with aggression among Pakistani university students.
3. Cyberbullying perpetration will mediate the relationship between problematic online gaming and aggression among Pakistani university students.

Method

Research Design

The study employed a cross-sectional correlational research design to explore the relationship between problematic online gaming, cyberbullying perpetration, and aggression among Pakistani university students. The rationale for using certain design was that it enabled the researchers to assess the associations among study variables among the sampled participants at a single stage of data collection.

Sample

The study sample consisted of 310 Pakistani university students recruited through a purposive sampling technique from public and private universities located in Lahore and Islamabad, Pakistan. Participants included both men and women aged between 18 and 35 years who had been playing online games for at least one year prior to participation in the study. Among the participants, 139 (45%) were enrolled in bachelor's programs, 143 (46%) were studying in master's programs, and 28 (9%) were PhD scholars. Regarding gender

distribution, 194 (63%) participants were men and 114 (37%) were women. The mean age of the participants was 23.10 years ($SD = 2.89$). Additionally, 210 (67.74%) participants belonged to Lahore, whereas 100 (32.25%) participants were from Islamabad. Most participants play online games for 1–4 hours daily (42.9%), followed by 2–8 hours (39.7%). Fewer students play for 8–12 hours (13.9%), and only a small proportion (3.5%) play for more than 12 hours.

Measures

Following measures were used to assess the study variables.

Gaming Addiction Scale for Adolescents

The Gaming Addiction Scale for Adolescents (Lemmens et al., 2009) is a self-report measure comprising 7 items ($\alpha = .92$), designed to assess problematic online gaming behaviors. “The scale uses a 5-point Likert scale ranging from 1 (*Never*) to 5 (*Very Often*). Higher scores on the scale demonstrate greater levels of problematic online gaming behavior. The Cronbach alpha of the scale in this scale is .72 which is satisfactory.

Buss-Perry Aggression Questionnaire

The Buss-Perry Aggression Questionnaire (Buss & Perry, 1992) is a self-report measure comprising 29 items ($\alpha = .91$), developed to assess aggression. The scale is based on a 5-point Likert scale ranging from 1 (*Extremely Uncharacteristic of Me*) to 5 (*Extremely Characteristic of Me*). Higher scores indicate higher levels of aggression. The Cronbach alpha of the scale in this scale is .72 which reflects satisfactory responses by the participants.

Cyberbullying Perpetration Questionnaire

The Cyberbullying Perpetration Subscale of the Cyberbullying Perpetration and Victimization Questionnaire (Lee et al., 2017) is a self-report measure consisting of 18 items ($\alpha = .93$), developed to assess cyberbullying perpetration and victimization behaviors. Participants rate their responses on a 5-point Likert scale ranging from 1 (*Never*) to 5 (*Always*). In this study subscale cyberbullying perpetration is used to measure cyberbullying perpetration. Higher scores on the scale reflect greater engagement in cyberbullying perpetration behaviors. The reliability of the scale in this study is .85 which depicts higher internal consistency.

Demographic Sheet

The demographic sheet consisted of various demographic variables including age, gender, educational level, residency and daily duration of online games.

Procedure

Before commencing data collection, participants were approached physically in universities of Lahore, and Islamabad. The purpose of the study was to be briefed to the participants, and they were informed that participation was completely voluntary. After obtaining informed consent in written form, participants were asked to complete the demographic and study questionnaires. Researchers aided whenever participants required clarification during the data collection process. Participants were informed that they could withdraw from the study at any stage without facing any aversive consequences. The questionnaires required approximately 15-20 minutes to complete. Upon completion of the questionnaires, participants were thanked for their cooperation and contribution to the study. The study strictly followed the ethical principles and guidelines of the American Psychological Association i.e., authorization for the use of study instruments was also obtained from the original authors of the scales. Informed consent was obtained from all participants before data collection process. Participants were informed about the objectives of the research, confidentiality and anonymity, voluntary nature of participation, and their right to withdraw from the study at any juncture without any aversive consequences. No physical, psychological, emotional, or physical harm occurred during participation. Participants who required assistance during questionnaire completion were provided appropriate help in understanding the study measures.

Results

To determine relationship among the study variables, Pearson Product Moment Correlation was tabulated.

Table 1: *Correlation Between Problematic Online Gaming, Cyberbullying Perpetration and Aggression (N = 310)*

Variables	1	2	3
1. Problematic Online Gaming	-	.19**	.14**
2. Cyberbullying Perpetration		-	.80**
3. Aggression			-

** $p < .01$.

The above Table depicts that problematic online gaming has significant positive relationship with cyberbullying perpetration and aggression. Furthermore, cyberbullying has also significant positive relationships with aggression.

To determine the mediating role of cyberbullying perpetration, mediation analysis was conducted.

Table 2: *Mediating Role of Cyberbullying Perpetration in Predicting Aggression From Problematic Online Gaming (N = 310)*

Antecedents	Consequences							
	M (CP)				Y (Aggression)			
		<i>B</i>	<i>SE</i>	<i>p</i>		<i>B</i>	<i>SE</i>	<i>p</i>
POG (X)	a	.41	.11	.001	c'	-.02	.08	.80
CP (M)	-				b	.91	.03	.001
Constant	<i>I</i>	42.46	2.38	.001	<i>I</i>	40.49	2.29	.001
		<i>R</i> ² = .03				<i>R</i> ² = .65		
		<i>F</i> (1, 308) = 11.93, <i>p</i> < .001				<i>F</i> (2, 307) = 288.78, <i>p</i> < .001		

Note. POG = Problematic Online Gaming, CP = Cyberbullying Perpetration.

Problematic online gaming shows a significant positive effect on cyberbullying perpetration, but nonsignificant direct effect on aggression. Cyberbullying perpetration, however, has a significant positive effect on aggression. This demonstrates that aggression is indirectly influenced by problematic online gaming through cyberbullying perpetration, supporting a mediation effect.

Discussion

The finding of the study supported the first hypothesis as the Pearson product correlation analysis of the study depicted strong positive relationship between problematic online gaming and aggression among the university students. This finding is similar to older research showing that Ludo game habituation has a strong positive association with aggression among university students (Bashir et al., 2024). Previous findings also revealed significant positive associations between online Ludo game addiction and PUBG game addiction with aggression among young Pakistani students (Shahid & Yaseen, 2025; Shahid et al., 2024). Furthermore, recent studies have also reported that Clash of Clans and PUBG addiction have positive and significant relationship with aggression among Pakistani students (Shahid & Yaseen, 2025; Shahid et al., 2025).

The second hypothesis of the study is also supported as the finding demonstrated strong positive correlation between problematic

online gaming and cyberbullying perpetration. The findings align with the recent study conducted by [Shahid et al. \(2025\)](#), it was revealed that online gaming addiction was significantly associated with cyberbullying perpetration among young adults. A possible explanation for these results is that online gaming exposes players to violent content and highly competitive situations, which may reduce self-control and increase aggressive tendencies ([Olejarnik & Romano, 2023](#); [Zheng et al., 2021](#)). Excessive gaming is also associated with greater impulsivity, particularly when players fail to achieve their objectives or goals, which may heighten aggression in online environments ([Hammad & Al-Shahrani, 2024](#); [Müller et al., 2023](#)).

The third hypothesis of the study was also supported, as the findings revealed a strong positive relationship between cyberbullying perpetration and aggression among university students. A possible explanation for this result is that gamers involved in cyberbullying may develop hostile attitudes and emotional dysregulation, which can enhance aggressive behavior in both online and offline contexts ([Kowalski et al., 2019](#); [Zhu et al., 2024](#)). The anonymous and less accountable nature of online platforms may further encourage aggressive communication and impulsive reactions among students ([Rehman et al., 2025](#)). Previous studies have also indicated that cyberbullying perpetration is significantly associated with higher levels of aggression among young adults particularly university students ([Aparisi et al., 2023](#); [Tabuk & Akbaş, 2025](#)).

The fourth hypothesis of the study was also supported. Findings revealed that cyberbullying perpetration significantly mediates the relationship between online gaming addiction and aggression among university students in Pakistan. While the direct effect was not significant, the indirect paths (a and b) were significant, indicating that cyberbullying perpetration serves as a significant mediator in this relationship. This finding aligns with prior studies, such as [Shahid et al. \(2024\)](#), who found that PUBG game addiction has a significant positive effect on aggression among Pakistani students. Another study showed that PUBG addiction was positively associated with aggression through the mediator of social connectedness, which may include cyberbullying behaviors that contribute to aggression ([Kausar et al., 2024](#)). Similarly, [Wong et al. \(2022\)](#) demonstrated that cyberbullying significantly mediates the relationship between social media addiction and aggressive behavior.

The findings can further be understood within the perspective of General Aggression Model ([Bushman & Anderson, 2002](#)), which postulates that repeated exposure to violent and highly competitive gaming environments contributes to personal and situational factors

related with aggression. In the context of problematic online gaming, prolonged gaming may foster hostile cognitions, emotional dysregulation, frustration, irritability, impulsivity, and diminished self-control, which can enhance cyberbullying behaviors in digital interactions. These repeated aggressive online interactions may subsequently extend to offline aggressive behavior among university students.

From an indigenous perspective, increasing internet access and the widespread use of multiplayer games like PUBG, Class of Clans, Ludo Star Game, and Free Fire have placed Pakistani youth in hostile digital environment where insulting interactions and competitive hostility are common. In collectivistic cultures like Pakistan, peer approval and social status may motivate cyberbullying behaviors, which can further foster aggression among students. Inadequate parental supervision and poor digital literacy may also contribute to these behaviors (Kausar et al., 2024; Saleem et al., 2021; Shahid & Yaseen, 2025; Shahid et al., 2024).

From a global perspective, international research has indicated that problematic online gaming is associated with antisocial tendencies, emotional dysregulation, and aggression due to continual contact with violent content and hostile online interactions. Competitive gaming settings may also trigger reactive behaviors and retaliatory responses, which can further reinforce aggression across time. Thus, cyberbullying perpetration may function as a significant mechanism connecting online gaming addiction with aggression among university students (Kim et al., 2022; Mestre-Bach & Potenza, 2025; Wang et al., 2023).

Limitations and Recommendations

The study adopted purposive sampling techniques i.e., only university students of Lahore and Islamabad, which limited the generalizability of the study. The study only included university students with a limited age range of 18 to 35 years. It is possible that individuals above the age of 35 also engage in problematic online gaming; for example, PhD students may be older than 35. The study also did not differentiate between violent and nonviolent video games, which is a limitation. Future studies should collect data using a stratified sampling technique from university students across other regions of Pakistan, like Peshawar, Karachi, Multan, via an online Google Form to improve generalizability. Future studies should also compare adolescents and young adults with respect to the study variables, including school and college students, to provide broader

insights. The age range could be extended, and comparisons could be made across adolescents, young adults, and middle adulthood (e.g., PhD students over the age of 35). Future research should specify the names of games as well and may also compare violent and nonviolent games with respect to study variables.

Implications

Results of this research have important implications for Pakistani university students. Mental health specialists need to raise insights via media campaigns, workshops, and webinars, as well as by establishing mental health support systems in universities to encourage students to seek psychological help. Spending less time on playing online games may improve academic performance and alleviate aggression and cyberbullying. The government also needs to enforce strict laws against cyberbullying perpetration and ensure proper implementation to eliminate the issue.

Conclusion

A cross-sectional correlational study concluded that online gaming addiction has a significant positive relationship with both cyberbullying perpetration and aggression. Findings revealed that cyberbullying perpetration significantly mediates the relationship between online gaming addiction and aggression, as the direct effect was not significant, but the indirect and total effects were significant. This indicates that the proposed statistical model is fully supported. Therefore, the study successfully addressed the identified gap in the literature and contributed meaningful insights to the field.

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