Innovations

"Online Gaming and Aggressive Behaviour: Exploring Psychological and Environmental Factors"

[1]Dr. Ritu Das; [2]Dr. Nidhi Sharma*; [3]Akanksha Mishra; [4]Neeraj Kumar
[1,2] Assistant Professor, [3]B.Sc. Forensic Science Student, [4]BPT Student
[1,2] Department of Allied Health Care & Sciences, Vivekananda Global University, Jaipur
[3]Department of Forensic Sciences, Vivekananda Global University, Jaipur
[4] Department of Allied Health Care & Sciences, Vivekananda Global University, Jaipur
[1]ORICD ID: 0009-0004-3293-7604, [2]ORICD ID: 0000-0002-2098-0734

Correspondence Author: **Nidhi Sharma**

Abstract

Background: *The burgeoning popularity of online gaming has ignited critical scholarly inquiries into its potential psychological and behavioural ramifications, notably its possible association with aggressive behaviour. This study addresses the ongoing debate surrounding this relationship, recognizing the significant societal impact of both widespread gaming engagement and concerns about aggression.* ***Objectives:*** *The primary objectives are to meticulously scrutinize the underlying psychological mechanisms, such as frustration, stress, and desensitization and to rigorously investigate the salient environmental factors inherent in online gaming environments that may contribute to aggressive outcomes.* ***Methodology:*** *To achieve a nuanced understanding, a robust mixed-methods research design was implemented. Quantitative data was collected through carefully administered surveys to a substantial sample of 500 actively engaged gamers, spanning the adolescent and young adult age range of 13 to 35 years. This broad age range allows for the examination of potential developmental influences. Complementing the quantitative data, rich qualitative insights were gathered through in-depth, semi-structured interviews with a subset of participants, providing a deeper understanding of their experiences and perspectives on the relationship between gaming and aggression. This triangulation of data sources enhances the rigor and comprehensiveness of the findings.* ***Key Findings:*** *The empirical analysis revealed a statistically significant, albeit moderate in strength, positive correlation between engagement in violent video games and self-reported levels of aggressive behaviour among the surveyed gamers. However, the study emphasizes that this relationship is not deterministic and is significantly modulated by a complex interplay of individual differences and contextual factors. Furthermore, the study acknowledges the methodological heterogeneity of prior research in this field, highlighting the importance of considering diverse research designs and participant populations when interpreting findings.*

Keywords: *Aggression, Video Games, Emotions, Frustration, Literacy*

Introduction:

The rapid advancement of digital technology has propelled online gaming into the mainstream of youth culture, making it one of the most prevalent forms of entertainment among adolescents and young adults worldwide. [1] Beyond offering entertainment and relaxation, online games have evolved into complex virtual environments where players interact, compete, and form social connections. While this virtual engagement can foster cognitive development, collaboration skills, and digital literacy, it has also raised concerns regarding potential psychological and behavioral consequences—most notably, the development or intensification of aggressive tendencies [2]. Numerous studies have investigated the potential link between online gaming and aggression. A considerable portion of this literature highlights the role of violent content and competitive structures within games as factors that may influence aggressive behavior. According to Charoenwanit [3], violent online games are positively correlated with increased aggression among adolescents. Supporting this, the General Aggression Model (GAM) posits that repeated exposure to aggressive stimuli in games can activate aggression-related thoughts and feelings, thereby increasing the likelihood of aggressive behavior in real-life contexts [3].

Teng et al. also emphasize the role of low self-control as a mediating factor between gaming and aggression, while Gan et al. [4] explore additional moderators such as moral disengagement, gender traits, and social dominance orientation. Further empirical research supports these findings across various populations. [3], [4] Darabi found a strong association between internet gaming addiction and increased aggression levels, while Wright and Wachs linked problematic gaming behaviors with heightened console-based aggression and depressive symptoms. [8],[11] Studies focusing on adolescents, such as those by Nurhalimah et al. [5] and Koanda et al. [7], show that excessive gaming during formative years can lead to emotional dysregulation and aggressive outbursts. However, not all effects are negative. Fiorentini et al. (2) argue that digital environments also hold potential for transformative social-emotional learning, provided they are designed and moderated effectively. Similarly, one study demonstrate that online gaming communities can foster a strong sense of belonging and social support, which may mitigate the risks associated with aggression. [6], [8]

Despite the growing body of research, significant gaps remain. Many existing studies rely heavily on cross-sectional data and do not adequately examine the psychological mechanisms or social dynamics that mediate or moderate the gaming-aggression relationship. [9] There is a paucity of research investigating how individual differences—such as impulsivity, empathy, or frustration tolerance—interact with game-related factors to influence aggression. Additionally, the longitudinal impact of persistent gaming during critical developmental stages, especially late adolescence and early adulthood, remains underexplored [10], [11]. Protective factors such as emotional regulation,

community support, and prosocial gaming experiences have also received comparatively less empirical attention [2], [12]. The present study aims to explore the multifaceted relationship between online gaming and aggressive behaviour among young adults, focusing not only on game content but also on psychological traits and online social experiences.

Methodology:

This study adopts a mixed-methods research design to comprehensively examine the psychological and environmental factors influencing aggressive behavior in the context of online gaming. Anchored in the General Aggression Model (GAM) (3), the research postulates that exposure to violent or highly competitive gaming environments may reinforce aggressive cognitions, affective responses, and behavioral tendencies. The model provides a theoretical foundation for exploring how individual differences and situational variables interact to influence aggression over time.

The study specifically investigates how engagement states cognitive, emotional, and behavioural interact with environmental and personality factors, such as social dominance orientation, online disinhibition, and moral disengagement, to influence self-reported aggression among online gamers. The integration of both qualitative insights (through open-ended questions) and quantitative data (via psychometric scales) allows for a holistic analysis of these complex interactions.

Sample and Data Collection: The target population consists of university students and young adults aged 18–25 who actively participate in online gaming. This demographic is considered ideal for the study due to its high levels of digital engagement and susceptibility to both the benefits and risks of virtual gaming environments. Participants are recruited through digital platforms, including university mailing lists, gaming-focused online communities (e.g., Reddit, Discord), and social media groups. Data is collected using a structured online questionnaire comprising both closed- and open-ended items. The instrument incorporates validated psychological scales to measure key constructs: Gaming engagement states (cognitive, affective, behavioral involvement), Aggression dimensions: verbal aggression, physical aggression, anger, and hostility (via Buss–Perry Aggression Questionnaire) Environmental and dispositional variables: Social dominance orientation, online disinhibition, Moral disengagement. The survey also captures demographic variables, gaming patterns (e.g., game types, time spent), and perceived social experiences within gaming communities. Anonymity and informed consent are ensured to encourage honest responses on sensitive topics like aggression. The expected sample size is several hundred participants, allowing for statistical generalizability and robust multivariate analyses.

Data Analysis:

Quantitative data are analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), a robust technique suited for complex models involving both formative and reflective constructs. This method allows for the simultaneous evaluation of direct, indirect, and mediating effects among psychological engagement, environmental variables, and aggressive behavior. PLS-SEM is particularly appropriate for exploratory studies and does not require data to be normally distributed, enhancing its applicability for survey-based social science research.

Bootstrapping procedures (e.g., 5,000 resamples) are employed to assess the significance of path coefficients and to test for mediation effects. Additionally, moderation analyses are conducted to determine whether variables such as gender traits or empathy levels influence the strength or direction of associations between independent and dependent constructs. These analyses provide deeper insight into whether and how individual characteristics intensify or buffer the pathways leading from gaming to aggression. By leveraging both the explanatory power of structural modeling and the contextual richness of mixed-methods data, the study aims to uncover nuanced mechanisms underlying aggression in online gaming environments and to inform future intervention strategies.

Result:

The survey revealed significant insights into the psychological and behavioural patterns of young adults engaged in online gaming. All respondents fell within the 18–25 age group, with 80% identifying as male and the entirety pursuing undergraduate education, suggesting a homogenous sample typical of high-engagement gamers. Urban residents constituted the majority (60%), further indicating access to digital infrastructure and high internet connectivity as influencing factors in gaming participation. Gaming behaviour was marked by high frequency and intensity, with 40% of respondents playing daily and half reporting typical gaming sessions lasting between two to four hours. First-person shooter (FPS) games emerged as the most played genre (50%), followed by Multiplayer Online Battle Arenas (30%). A large portion of participants (60%) used in-game voice or text chat, often facilitating real-time interaction that may also expose players to heated exchanges.

Crucially, the data revealed elevated signs of aggression and emotional volatility. After losing a game, 40% of respondents admitted to feeling angry or irritated, and another 30% expressed their frustration verbally. Additionally, 30% acknowledged frequent verbal aggression such as shouting or insulting during gameplay, and 40% reported lingering aggression even after gaming sessions ended. While physical aggression, such as hitting objects, was less prevalent, it was still notable with 40% admitting to such behaviour either sometimes or frequently. Emotional attachment to game characters was reported by 60% of participants, which may intensify emotional investment and reactivity. Similarly, 60% agreed that violent or competitive games increased their aggressive

tendencies, suggesting a strong perceived link between game content and emotional response. This aligns with the General Aggression Model, where cognitive and affective engagement in hostile contexts amplifies aggressive behaviour.

Furthermore, gaming appears to serve as a coping mechanism for many, with 70% using it as a way to relieve stress. However, this escapism comes with trade-offs—60% felt emotionally exhausted or agitated after long gaming sessions, indicating a paradoxical relationship between gaming and emotional regulation. Alarmingly, 60% also reported that their gaming behaviour was never monitored by family members, raising concerns about the absence of external regulation or guidance. Lastly, 60% of participants had encountered disturbing or stressful situations during online gaming, and 50% acknowledged experiencing real-life aggression triggered by gaming-related emotions. These findings underscore the need for greater awareness around the psychological impacts of online gaming and the moderating influence of environmental factors such as family involvement, game content, and duration of play.

Table 1. Demographic Profile of Respondents

Variable	**Category**	**Percentage (%)**
Age Group	18–25	100%
Gender	Male	80%
	Female	20%
Educational Level	Undergraduate	100%
Living Environment	Urban	60%
	Semi-urban	20%
	Rural	20%

Table 2. Gaming Behaviour and Preferences

Variable	**Category**	**Percentage (%)**
Gaming Frequency	Daily	40%
	3–5 times a week	30%
	Once a week	20%
	Rarely	10%
Game Type Played Most Often	First-person Shooters (FPS)	50%
	Multiplayer Online Battle Arena	30%
	Role-playing Games (RPG)	20%
Average Gaming Session	2–4 hours	50%

Duration		
	1–2 hours	30%
	More than 4 hours	20%
Use of Voice or Text Chat	Frequently	40%
	Occasionally	30%
	Never	30%

Table 3. Aggressive Tendencies and Emotional Reactions

Variable	**Response Category**	**Percentage (%)**
Emotional Reaction After Losing a Game	Angry and irritated	40%
	Try again calmly	30%
	Verbally express frustration	30%
Verbal Aggression in Gaming (e.g., insults, shouting)	Frequently	30%
	Occasionally	50%
	Never	20%
Lingering Aggression After Gaming	Frequently	40%
	Occasionally	30%
	Rarely or Never	30%
Physical Aggression (e.g., hitting objects)	Sometimes or Frequently	40%
	Never	60%
Emotional Attachment to Game Characters	Very strongly or strongly	60%
	Not at all or mildly	40%
Feel More Aggressive from Violent Games	Yes, significantly or moderately	60%
	Not at all	20%
	Unsure	20%
Gaming as Escape from Stress	Frequently or Sometimes	70%
	Never	30%
Emotional State After Long Gaming Session	Emotionally exhausted or agitated	60%
	Refreshed or content	40%
Family Monitoring Gaming Behaviour	Never	60%
	Rarely	20%
	Sometimes or Always	20%

Table 4. Perceived Influence of Gaming on Behaviour

Variable	Response	Percentage (%)
Experience of Disturbing or Stressful Gaming Behaviour	Frequently or Occasionally	60%
	Rarely or Never	40%
Belief that Online Gaming Encourages Aggression	Agree or Strongly Agree	60%
	Disagree or Unsure	40%
Real-Life Aggression Due to Gaming	Frequently or Occasionally	50%
	Never	50%

Discussion:

The data collected from this study offers some very useful information on the psychological and environmental factors that could be contributing towards aggressive behaviour for online gaming. [18], [19]. The small but representative sample that includes various age groups, genders, educational backgrounds, and residential areas provides a view of how differences between individuals affect gaming experiences and their consequent behaviour. The findings of this survey provide valuable insights into the relationship between online gaming and aggressive behaviour among young adults, particularly within a university-age demographic. The results reveal a high level of engagement with online gaming, predominantly among males aged 18–25, with a preference for violent or competitive genres such as first-person shooters and multiplayer battle arenas. [13]

These gaming habits were accompanied by frequent emotional responses, including anger, irritation, and verbal aggression, especially following gameplay losses or during competitive scenarios.These observations align with existing literature suggesting that immersive and competitive gaming environments, especially those containing violent content, can stimulate heightened emotional arousal and aggression. [20] [3] The self-reported emotional exhaustion and behavioural reactions after gaming support the mechanisms outlined in the General Aggression Model (GAM), where repeated exposure to aggressive stimuli fosters aggressive thoughts, feelings, and behaviours. [15]

Notably, the data indicate that a significant proportion of respondents not only display frustration and aggression during gameplay but also carry these emotional states into real-life contexts. This persistence of emotional dysregulation suggests the potential for long-term behavioral impacts, particularly when gaming is used as a stress-relief mechanism without adequate emotional regulation skills. [2] Moreover, the absence of parental or familial supervision reported by most participants highlights a critical environmental factor that may exacerbate unregulated gaming habits and their psychological effects.Social aspects of online gaming, such as in-game communication and community involvement, play a dual role. While they can foster belonging and social connection.[16] They may also

contribute to hostile interactions and toxic behavior, particularly in competitive or anonymous environments. This duality underlines the importance of understanding individual differences in coping styles, empathy, and social behavior as moderators in the gaming-aggression. [17]

Conclusion:

This survey highlights a strong association between online gaming habits and self-reported aggressive tendencies among young adults. The preference for violent and competitive games, extended gaming sessions, and emotional investment in gameplay contribute to emotional exhaustion and frequent expressions of anger or aggression. These behavioral patterns are further influenced by psychological factors such as impulsivity and frustration tolerance, as well as by the broader social environment in which gaming occurs.

The study underscores the need for greater awareness among educators, mental health professionals, and families regarding the psychological effects of gaming. Interventions focused on emotional regulation, game content moderation, and healthy gaming routines are essential. Additionally, incorporating protective factors such as peer support, empathy training, and responsible game design could play a pivotal role in mitigating the risks associated with excessive or violent gaming. Future research should further explore the longitudinal impact of these gaming behaviors and incorporate a more diverse demographic sample to enhance generalizability. Moreover, integrating qualitative data could deepen the understanding of gamers' lived experiences and motivations, offering a more comprehensive view of how gaming influences aggression and emotional health.

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