

The Relationship between Online Gaming, Emotional Regulation and Impulsivity in Adolescents

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ABSTRACT

Today's rapidly evolving technological environment exposes teens to a variety of online gaming-related activities. In the virtual world, online gaming takes a major chunk of leisure time activities equally among adolescents and adults. This research explored the relationship between online gaming, emotional regulation, and impulsivity among adolescents. The sample of the study consisted of 90 adolescents (34 males and 56 females). Data was collected through Internet Gaming Disorder Scale–Short Form (IGDS9-SF), Difficulties in Emotion Regulation Scale (DERS) and Barratt Impulsiveness Scale (Revised). Spearman correlation, Mann-Whitney, and t-test were used to analyse the data. Results indicate that there is a significant relationship between online gaming, emotional regulation, and impulsivity. There is also a significant gender difference in online gaming. The study contributes to understanding the effects of online gaming and can help to tackle addictions.

Keywords: *Online Gaming, Emotional Regulation, Impulsivity, Adolescents*

Numerous stressors, hormonal imbalances, and alterations in physiological structure influence the adolescent period. The period of human development that spans from childhood to maturity is referred to as adolescence. The period typically commences at the age of 10 and concludes at approximately the age of 19. Physiological, psychological, and cognitive changes and transitions are the hallmarks of this period. A variety of transformations, including puberty, relationships, school, and talents, as well as an increase in risk-taking behaviours, are indicative of adolescence (Michael and Ben-Zur, 2007). Problem behaviour may be perceived as a means for individuals of a specific age to attain age-specific objectives, including adult status and Teenagers are exposed to a diverse range of online gaming-related activities in the swiftly changing technological environment of today. Indoor games have gradually replaced outdoor games, which have been entirely supplanted by internet games. The positive aspects of the online gaming industry have been the subject of numerous studies. It is regarded as a method for establishing social connections, enhancing thought processes, integrating technology into daily life, improving mental speed, memory, and concentration, and alleviating boredom. Multiplayer has the potential to enhance cooperation and increase confidence. Conversely, research has been conducted on the adverse effects of online gaming. Various studies have identified addiction, an increase in aggression,

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Received: November 07, 2024; Revision Received: November 10, 2024; Accepted: November 14, 2024

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an increase in depressive symptoms, and detrimental health effects (Groves, et al., 2015; Prot, et al., 2014; Kuss, 2013)

The Compensatory Internet Use Theory (CIUT) asserts that individuals may utilise the internet as a coping mechanism for adverse feelings, including loneliness (Kardefelt-Winther, 2014). Online gaming provides an accessible and simple means to satisfy psychological demands, reduce stress, and establish virtual connections, perhaps acting as a substitute for real-world interactions (Simcharoen et al., 2018). Individuals suffering increased loneliness may be more inclined to participate in online gaming to alleviate feelings of isolation (Snodgrass et al., 2018), hence elevating their risk of developing Online Gaming Addiction (OGA) (Ang et al., 2018; Lee et al., 2019).

Research has emphasised the necessity of acknowledging Internet Gaming Disorder as a mental health condition, illustrating its possible detrimental effects on the psychosocial development of adolescents. (Teng et al., 2020). Previous research indicate that social isolation hinders the maintenance of healthy social interactions, thereby increasing the likelihood of online social involvement, which may subsequently result in Internet Gaming Disorder. Moreover, social connections with family and friends may help mitigate the symptoms of Internet Gaming Disorder. A notable correlation exists between loneliness and Online Game Addiction, underscoring the possible influence of social isolation on this form of addiction (Gao et al., 2024).

A research comparing adolescent and adult gamers indicated that adolescent gamers were primarily male, less inclined to change their character's gender, and markedly more likely to abandon academic or professional responsibilities. Violence was a considerable attraction for many young gamers. The study also revealed that younger gamers often allocated more time to gaming each week (Griffiths et al., 2004). In a similar vein, Gentile (2009) examined pathological video game usage among individuals aged 8 to 18 and discovered that pathological gamers devoted twice the amount of time to gaming relative to non-pathological gamers. These people also indicated inferior academic performance and concentration difficulties. Their daily activities were profoundly affected by excessive online gaming. A study on Internet Gaming Disorder and psychiatric symptoms in Bengaluru, India, revealed that participants with Internet Gaming Disorder had elevated levels of depression, anxiety, and stress (Archana et al., 2019).

Emotion regulation is the mechanism via which individuals adjust the duration and intensity of their emotional states to effectively respond to environmental demands (Aldao et al., 2010). Emotional regulation is founded on four primary principles: awareness and comprehension of one's emotions, tolerance of one's sentiments, the ability to manage impulsive behaviours, and the capacity for adaptability. Problem resolution, emotional recognition, and adaptation exemplify adaptive emotion regulation techniques, while suppression, rumination, and emotional avoidance represent maladaptive emotional regulation strategies. Numerous studies have demonstrated that activities such as gambling and video gaming are associated with the regulation or evasion of undesirable emotions. This represents a maladaptive strategy employed in emotional control (Wood & Griffiths, 2007).

Impulsivity is a multifaceted notion encompassing several dimensions. This encompasses exhibiting behaviours in response to positive or negative emotions, engaging in actions without regard for consequences, struggling to maintain concentrate/concentration on monotonous or difficult tasks, and pursuing stimulating activities. Impulsivity is associated

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with an incapacity to assess alternative choices, engaging in spontaneous actions without weighing the repercussions, and a deficiency in self-regulation when faced with a reward or punishment. Impulsivity is recognised as a predictor of the development of maladaptive actions that function as a coping mechanism for unpleasant emotions (Cyders & Smith, 2008). The investigation into the neural mechanisms connecting impulsivity and emotion dysregulation in individuals with Internet Gaming Disorder (IGD) revealed that IGD patients demonstrated diminished emotional response inhibition and working memory capacity, which correlated with their online gaming duration (Shin et al., 2021).

Previous research indicated that adolescents with internet addiction exhibit increased impulsivity and elevated incidences of comorbid psychiatric disorders, implying a possible connection to the underlying psychopathology of the condition (Cao et al., 2007). Furthermore, impulsivity was shown as a predictor of internet use disorder in longitudinal investigations (Billieux et al., 2011). Moreover, adolescents with Internet Gaming Disorder frequently demonstrate challenges in behavioural regulation when engaging in executive or impulse control tasks (Dong & Potenza, 2014). Considering that impulsive behaviour can result in significant disruptions to psychological and social processes, including suicide attempts and criminal activity, it is essential to examine the brain substrates underlying heightened impulsivity in adolescents with Internet Gaming Disorder (IGD).

Given the aforementioned assessments regarding the remarkable rise in internet gaming among teens, especially during the epidemic, there is heightened concern about its possible adverse psychological effects. Excessive gaming can result in addictive behaviours, marked by challenges in emotional regulation and impulse control. This study seeks to examine the complex interaction between impulsivity and emotional control within the realm of online gaming. This research aims to explore the relationship among gaming behaviours, emotions, and impulsivity to discover key linkages that can guide the creation of effective therapies and methods for addressing problematic online gaming behaviours.

Due to rapid technical progress and enhanced internet accessibility, especially during and during the pandemic, adolescents are now more exposed to online gaming than at any previous time. It is essential to comprehend the fundamental principles that lead to online gaming addiction and its possible effects on mental health. This research will yield significant insights into the intricate relationship among online gaming, emotional regulation, and impulsivity, thereby aiding in the formulation of evidence-based therapies to alleviate the adverse effects of excessive gaming. In this context the study has come up with the following objective.

To explore the relationship between online gaming behavior, emotional regulation, and impulsivity among adolescents

METHODOLOGY

Sample

The sample for the study comprises of 90 adolescents. The study included adolescents aged 16 to 18 who have been actively playing online games for at least a month. Adolescents who have recently ceased playing for more than a month were excluded from the study. The sample was collected from the adolescent population through snowball sampling method. Through the sampling method, 34 males and 56 females were selected and provided with the questionnaire.

Instruments

Three measures were used for the study which are given below

- 1. Internet Gaming Disorder Scale–Short Form (IGDS9-SF)-** Internet Gaming Disorder Scale–Short Form (IGDS9-SF) was developed by Pontes and Griffiths is a nine-item scale that measures the gaming behaviour. The IGDS9-SF showed adequate internal consistency, excellent criterion validity, and the ability to distinguish different subgroups with measurement invariance being supported across gender and age. The scale has a desirable reliability estimated by Cronbach's alpha ($\alpha = 0.82$).
- 2. Difficulties in Emotion Regulation Scale (DERS)-** This scale is developed by Gratz and Roemer in 2004. The scale is a self-report measure used to find any difficulties in emotional regulation. The scale has six subscales including: Nonacceptance of emotional responses 2. Difficulty engaging in Goal-directed behaviour 3. Impulse control difficulties 4. Lack of emotional awareness 5. Limited access to emotion regulation strategies and 6. Lack of emotional clarity. The DERS was discovered to have strong internal consistency, acceptable test–retest reliability, and appropriate construct and predictive validity during its development (Gratz & Roemer, 2003)
- 3. Barratt Impulsiveness Scale (Revised)-** This scale, developed by Ernest Barratt in 1995, assesses impulsiveness through 30 items categorised into three facets: Attentional, Motor, and Planning facets. The internal consistency coefficients for the BIS-11 total score, as reported by Patton et al., vary from 0.79 to 0.83 across diverse populations, including undergraduates, substance abusers, general psychiatric patients, and criminals. A pilot study conducted by Idris Salisu Rogo et al. with 100 students revealed an overall reliability index of 0.830 for the Barratt Impulsivity Scale, signifying that the instruments are reliable, as the Cronbach's Alpha value of 0.830 above the minimum threshold of 0.70.

Procedure

Upon selecting and completing the sample and instruments for data collection, the questionnaires were distributed to the participants via Google Forms. The data was gathered using the Internet Gaming Disorder Scale–Short Form (IGDS9-SF), the Difficulties in Emotion Regulation Scale (DERS), and the Revised Barratt Impulsiveness Scale. The form included the parents' consent form, participants' consent form, and a section for collecting the participant's personal information, such as name, age, gender, and residence. Participants are required to respond to all questions without omission. They must respond to the questions truthfully, as there are no correct or incorrect responses. The participant is guaranteed that their comments will solely be utilised for research purposes and will remain totally confidential. Every participant fills out the Google Forms and sends their responses. The normality of the distribution is identified through the tests of normality. The test of Shapiro-Wilk test is used to check if the data is normally distributed or not for the scales used in the study. The correlation between the variables is found through the Spearman correlation tests.

RESULTS

The study used a correlational design and the obtained results are explained the following sessions. Shapiro-Wilk test was used for finding normality and analysis were used accordingly.

Table 1 Correlations between online gaming, emotional regulation, impulsivity and its corresponding subscales

Variables	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.Total IGD	18.64	7.911												
2.Non-accept	14.54	6.108	.331*											
3.Goals	15.33	4.705	.713	.584**										
4.Impulse	16.66	5.467	.295**	.745**	.919**									
5.Awareness	17.37	5.080	.096	-.109	-.193	.233*								
6.Strategies	20.09	6.563	.247*	.802**	.707**	.814**	.017							
7.Clarity	11.81	3.819	.247*	.438**	.210*	.310**	.452**	.552**						
8.Total DERS	95.80	22.623	.335**	.852**	.772**	.868**	.131	.937**	.629**					
9.Attentional facet	17.10	3.264	.231*	.211*	.125	.232*	.081	.275**	.371**	.296**				
10.Motor facet	21.10	4.383	.493**	.211*	.236*	.282**	.059	.347**	.249*	.331**	.215*			
11.Planning facet	26.38	4.880	.107	.079	.078	.101	.243*	.105	.155	.150	.038	.133		
12.Total Impulsivity	64.58	8.029	.413**	.272**	.279**	.359**	.192	.390**	.373**	.416**	.528**	.720**	.637**	

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

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

Table 1 shows the correlation between Internet Gaming Disorder, Emotional regulation, and impulsivity in adolescents. From the results, Internet gaming disorder was found to have a strong positive correlation with emotional regulation (0.335) and impulsivity (0.413). Similarly, there is also a strong positive correlation between emotional regulation and impulsivity (0.416).

DISCUSSION

The correlation between internet gaming disorder and emotional regulation indicates that the individuals engaged in higher levels of gaming have difficulties in regulating their emotions. This might be because gaming is used as a way of escaping negative emotions. Individuals experiencing different emotions such as anger, frustration, sadness and less social support (Uçur & Dönmez, 2021), may turn to video games as a temporary escape. Using video games as a continuous escape will not allow individuals to learn adaptive coping strategies. Inadequate coping strategies, in turn, lead to weak emotional regulation. This creates addictive behaviours such as online gaming, substance abuse etc. People who have trouble controlling their emotions are unable to alter emotional triggers.

The findings align with the research conducted by Amendola et al. (2018), which demonstrated an association between problematic internet use and emotional dysregulation, including its subscales: non-acceptance, objectives, impulse, awareness, clarity, and methods. He also discovered that adolescents who struggle with emotional regulation are more likely to employ new technology in detrimental manners. A study conducted by Casale et al. in 2016 demonstrated a direct correlation between emotional dysregulation and problematic Internet use among 293 university students (P.-Y. Lin et al., 2020; Marchica et al., 2019; Spada & Marino, 2017; Yen et al., 2017). (Estévez et al., 2017) added to the above findings stating that emotional dysregulation is also a factor in both substance-related (drug abuse, alcohol abuse) and non-substance behavioural addictions (video game addictions, problematic Internet usage, gambling).

In the present study, subscales of non-acceptance, impulse, strategies and clarity was seen to be correlated to Internet gaming disorder. This indicates that with higher internet gaming

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addictions non-acceptance of emotional responses, impulse control difficulties, limited access to emotion regulation strategies and lack of emotional clarity is predicted. Study by Uçur et al (2020) showed that Adolescents with problematic internet gaming had greater difficulties in all of the Difficulties in Emotional Regulation sub-dimensions (awareness, clarity, non-acceptance, strategies, impulse, and goals). The research revealed that in Problematic Internet Gaming adolescents lacked emotional clarity, was unaware of their emotional reactions, refused to accept their negative emotions, struggled to come up with efficient coping mechanisms, was unable to control impulsive behaviour, and could not carry on with goal-directed behaviour when confronted with negative emotions.

Based on the results of the study, the sub-scales non-acceptance, clarity, impulse and strategies are correlated with Internet gaming disorder. This indicates that adolescents with problematic internet gaming have difficulties in accepting their emotional responses, lack of emotional clarity, difficulties in controlling impulse, and limited access to emotional regulating strategies. However, the sub-scales goals and awareness did not show correlation. The changes in the results of the present study can be due to other intermediating factors such as cultural differences, school climate (D. Li et al., 2016), strong peer relationships and social support, healthy family environment, insight into their behaviours, resilience (Robertson et al., 2018), behaviour control, Self-control and competence (Gentile, 2009; Kim et al., 2018; Lemmens et al., 2010).

Impulsivity is the inability to control one's impulses. Individuals with impulsivity may act without thinking about the consequences and have difficulty to control their behaviours. In the present study, impulsivity is found to be positively correlated to internet gaming disorder in the adolescent sample. This indicates that individuals with internet gaming disorder have difficulties in controlling their impulses(L. Li et al., 2021). Lack of impulse control can lead to addictive behaviours. This might be because individuals are not able to control the amount of time spent online and have a compulsion to continue playing. This can further lead to withdrawal symptoms, tolerance and failed attempts to stop gaming. Impulsivity is known to be a predictor of the emergence of maladaptive behaviours that serve as a form of coping with unpleasant feelings (Cyders and Smith 2008). Studies have also shown that when doing tasks involving impulse control, addicted gamers have abnormal frontal, insular, temporal, and parietal cortical activations in comparison to healthy controls (Dong et al, 2012)

A study (Ryu et al., 2018) on internet gaming group showed a substantial correlation between impulsivity across all subscales and internet gaming disorder symptoms in young adults. Another study (Bargeron & Hormes, 2017), showed significant elevation in the levels of motor and attentional impulsivity in respondents meeting criteria for internet gaming disorder. Lee et al., (2012) conducted a study on the comparison of impulsivity of internet addiction and pathological gambling in patients diagnosed with internet addiction and healthy controls. Based on the study, the group with Internet addiction had elevated levels of trait impulsivity, which were equivalent to those seen in individuals with compulsive gambling. In addition, among those with an Internet addiction diagnosis, the degree of impulsivity was strongly connected with the severity of Internet addiction. According to Cao et al. (2007), impulsivity and Internet addiction are positively connected, supporting the idea that impulsivity is a risk factor for developing Internet addiction(Bargeron & Hormes, 2017; Choi et al., 2014; Dalbudak et al., 2013; K.-Y. Lin & Lu, 2011).

Based on the present study, it was found that the subscales of impulsivity, that is, attentional facet and motor facet was seen to have correlation with the internet gaming disorder variable

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while the subscale planning facet did not show any correlations. This shows that the individuals with internet gaming issues shows inability to concentrate and focus attention and has a tendency to act without thinking. However, based on the present study they did not show any difficulties in future planning. This is in contrast with the study by Ryu et al (2018) which found a significant relationship between the subscales with internet gaming disorder.

The study also found a significant relationship between emotional regulation and impulsivity. This might be because difficulties in emotional regulation lead to impulsive behaviours as the individual would not be able to control their impulses and emotions. Individuals with emotional regulation difficulties have maladaptive emotional coping strategies. Hence, they have the tendency to react impulsively. Lack of emotional strategies and lack of clarity of emotions are predictive of impulsive behaviours.

Based on a research(Schreiber et al., 2012), people with high degrees of emotion dysregulation were found to have considerably higher scores on two self-report impulsivity tests (Barrett impulsivity scale attentional and non-planning impulsivity subscales). Additionally, the study discovered strong positive relationships between self-report impulsivity scores and emotion dysregulation.

Another factor affecting the relationships obtained for the study is based on the motives of the person doing the gaming. Different gamers have different motives for playing online. (Yee, 2006) Though the gaming activities may be similar, the experiences of reinforcement that each individual receives from the gaming activity differ based on individual personality factors.(*The Social Psychology of Emotional and Behavioral Problems*, 1999) Escapism is said to be utilized to unwind or release tension from the outside world and to be independent of socializing objectives(Yee, 2006). According to another study, the most frequent reasons for playing online games are: having fun or being sociable; meeting demands from others or gaining prestige, and escaping from other issues in one's everyday life. Online gaming increased the risk of poor social outcomes including obtaining less sleep, not having enough time to complete schoolwork, and having disagreements with parents and/or siblings. These outcomes included gaming to escape, acquire status, or in response to requests from others.

CONCLUSION AND IMPLICATIONS

The study demonstrated substantial correlations between online gaming behaviours and both emotional regulation and impulsivity, suggesting that those who engage in elevated levels of gaming experience challenges in managing their emotions and controlling their impulses. Higher internet gaming addictions are projected to correlate with non-acceptance of emotional responses, difficulty in impulse control, restricted ability to regulate emotion, and a lack of emotional clarity. The results indicated that persons with internet gaming problems exhibit diminished concentration and attentional focus, together with a propensity for impulsive behaviour.

The findings of this research have far-reaching implications, particularly at the community and academic levels. On a practical level, the results suggest the potential for effective psychoeducational interventions to address internet gaming addiction, emotional regulation, and impulsive behaviors. These interventions are not only cost-effective but also easy to implement in standard settings. Furthermore, the study highlights the influence of cultural and social norms on emotional regulation and impulsivity, particularly in relation to gender differences. By implementing targeted training programs from an early age, it may be possible to address these underlying factors and promote healthier coping mechanisms. Ultimately, a

deeper understanding of the issues associated with online gaming, emotional regulation, and impulsivity can empower individuals to develop adaptive coping strategies tailored to their unique needs.

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Acknowledgement

We acknowledge all those who have contributed to the smooth conduct of the study, the participants and all well-wishers.

Conflict of Interest

We have no conflicts of interest to disclose.

How to cite this article: Joy, E.A. & Mathai, S.M. (2024). The Relationship between Online Gaming, Emotional Regulation and Impulsivity in Adolescents. *International Journal of Indian Psychology*, 12(4), 1241-1250. DIP:18.01.116.20241204, DOI:10.25215/1204.116