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Effect of Violent E-Gaming on Sleep Quality and Impulsivity among University Students: Role of Emotional Regulation as Mediator

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Abstract: The present study aimed to explore the effect of violent e-gaming on sleep quality and impulsivity among university students, with emotional regulation as a mediator. Using a snowball sampling technique, data were collected from 100 university students (male=50 and females=50) aged 19-23 years with game type Pubg (n=58) are higher in number as compared to others (n=42). Participants completed the Game Addiction Scale, Sleep Quality Scale, Barratt Impulsiveness Scale, and Difficulties in Emotional Regulation Scale. The results of correlation analysis revealed that gaming addiction was negatively correlated with emotional regulation and sleep quality, while emotional regulation was positively correlated with sleep quality($p<0.01$). Impulsivity demonstrated weak positive, yet non-significant, associations with gaming addiction, emotional regulation, and sleep quality. Linear regression analysis showed that gaming addiction significantly predicted emotional regulation, impulsivity, and sleep quality. Furthermore, emotional regulation mediated the relationships between gaming addiction, impulsivity, and sleep quality. The t-test analysis indicated no significant gender differences in gaming addiction, emotional regulation, sleep quality, or impulsivity. This research contributes to understanding the psychological impacts of violent e-gaming and underscores the importance of emotional regulation in mitigating its negative effects.

Keywords: Game Addiction, Sleep Quality, Impulsivity, Emotional Regulation

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Introduction

In the digital age, violent e-gaming has become a dominant form of entertainment among university students, raising concerns about its potential impact on mental and physical health. This study examines the effects of playing violent video games on impulsivity and sleep quality, with emotional control acting as a significant mediating factor (Yao et al., 2019).

Emotion regulation refers to the ways people consciously or unconsciously manage their emotions to achieve specific goals. Research has indicated that poor emotional regulation strategies can contribute to the onset and persistence of mental health issues. Video games with a strong emphasis on violence, such as combat, weaponry, and other aggressive activities, are referred to as violente-games. Playing violent video games has been connected to increased aggression, decreased empathy, and desensitization to violence in some people, particularly in young people (Von Salisch et al., 2011). There was a cross-sectional study recently carried out in the greater Montreal area

(Canada) on 1843 grade 5 students who were 10–12 years old at the time of inception. Here, the relationships between teenage sedentary time, sleep, and screen (computer, videogame, TV) and onscreen (talking on the phone, doing schoolwork, reading), were investigated. When the effects of video gaming on sleep alone were taken into consideration, it was shown that playing videogames for longer than two hours a day was linked to shorter sleep durations (Brunetti et al., 2016).

For highly impulsive individuals, gaming may act as a self-soothing mechanism to alleviate boredom Temporal impulsivity, strongly associated with boredom intolerance, leads individuals to seek activities like gaming that provide immediate rewards. This can explain why impulsive individuals are more likely to develop gaming disorders and experience higher relapse rates (Zhai et al., 2019). Sleep deprivation has typically been shown to increase the experience of unpleasant emotions, reduce the occurrence of good emotions, and affect people's understanding, expression, and control of these emotions. Studies have focused growing on uncovering emotionally related processes as explanatory mechanisms relating sleep and psychological risk, because the inability to feel and control emotions in context-appropriate ways is a fundamental feature of many forms of psychopathology (Gross & Jazaieri, 2014).

Numerous research works have documented the moderating impacts of empathy inside the relationship. Emotional competence has three subscales named as behavioral self-control, emotional regulation, and empathy. These subscales are based on ideas from Social-Emotional Learning (SEL) research. Therefore, the second objective of this research was to investigate how three emotional competence subscales mediate the relationship between violent video games and social behaviors (You et al., 2014).

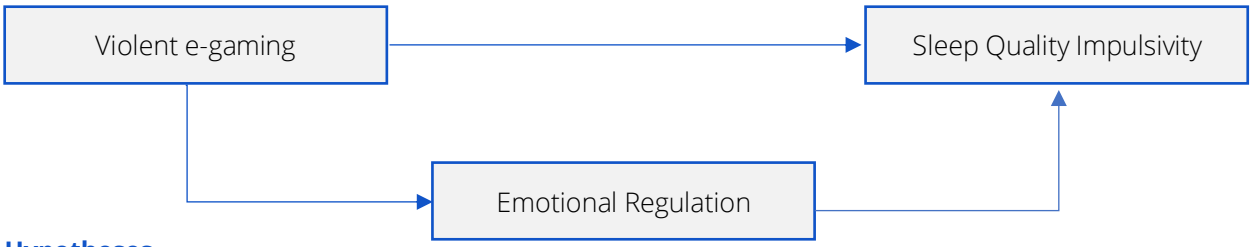
Objectives

Following are the objectives of the study.

1. To examine the relationship between violent E-gaming, Sleep Quality, Impulsivity and Emotional Regulation among university students.
2. To examine the effect of violent E-gaming on sleep quality and impulsivity among university students.
3. To investigate the role of emotional regulation as mediator between violent E-gaming, sleep quality and impulsivity among university students.

Figure 1

Conceptual Framework



Hypotheses

H1: There is a positive correlation between violent E-gaming, impulsivity and emotional regulation difficulty which will negatively correlate with sleep quality.

H2: Violent e-gaming significantly predicts higher impulsivity and poorer sleep quality among university students, with emotional regulation difficulties mediating this effect.

H3: Emotional regulation will mediate the relationship between violent E-gaming and sleep quality in university students.

H4: Emotional regulation will mediate the relationship between impulsivity and sleep quality in university students.

Methods

Research Design

Correlational research design was employed for this study.

Sample Selection

Data was collected through convenience snowball sampling technique from the region of Islamabad. The snowball sampling technique was used to obtain to obtain data, this technique was used due to its suitability for identifying and accessing the violent E-gamers that may be difficult to reach through conventional methods. Through this technique we obtained almost 170 responses out of which we chose 100 young adults both male (N=50) and females (N=50) with age range 19-23 years. It comprised the individuals from various universities.

Inclusion criteria

Violent e-gamers who play games for almost 3 hours or more per day were included in this study. The age range which we considered was 19-23 years. Gamers who play only violent E-gaming were included in this study such as pub-g and free-fire.

Exclusion criteria

The non-gamers were excluded from this study. Gamers who play less than three hours in one session were not the part of this study. Simple gamers were not the part of this study.

Measures

Demographic Questionnaire

This questionnaire assessed participants demographic characteristics including age, gender, occupation, education, family system, preferred game type, gaming platform and duration per session.

Game Addiction Scale

Gaming Addiction Scale (GAS) was developed by Lemmens et al. (2009). This scale consists of 7 items rated on scale from 1(never) to 5(Very often). Adolescent IGD was tested using the Chinese version of the GAS, which had a Chronbach's alpha value ranging from 0.93 to 0.94 (Wang et al., 2014).

Sleep Quality Scale

The Sleep Quality Scale (SQS), developed by Yi et al. (2006), consists of 28 items, rated on scale from 1(rarely) to 5(almost always). Total scores range from 0 to 84, with higher scores indicating more severe sleep problems (Shahid et al., 2011).

Barratt impulsiveness scale (BIS-R-21)

The Barratt Impulsiveness Scale, Revised by Kapitány-Fövény et al. (2020) consisting of 21 items with 4 point liker scale from 1(rarely never/never) to 4(almost always/always). Its reliability reports strong internal consistency with Cronbach's alpha ≥ 0.80 and has strong construct validity (Kapitány-Fövény et al., 2020).

Difficulties In Emotional Regulation Scele (DERS-16)

The Difficulties in Emotion Regulation Scale-16 (DERS-16), developed by Bjureberg et al. (2015),The scale includes 16 items and is grounded in a strong theoretical framework, with 5 points likert scale from 1(almost never) to 5 (almost always) (Bjureberg et al., 2015).

Procedure

Approval from the IIUI Research Committee was obtained prior to the conduction of this research. The sample data was collected from various universities in Islamabad. After obtaining authorization for voluntary participation, rapport was established with the participants. A detailed informed consent form and a demographic sheet were shared. All research participants were assured that the data collected would be kept confidential. Participants were informed that they had the full right to withdraw from the research at any time. The availability of the researcher was ensured during the administration of the Gaming Addiction Scale, Sleep Quality Scale, Barratt Impulsiveness Scale, and Difficulty in Emotional Regulation Scale, so that any difficulties could be addressed. Participants were thanked for their cooperation and participation.

Ethical Consideration

Researchers following the APA ethical code of conduct ensured that no physical or psychological harm was inflicted on participants privacy was strictly maintained, with explicit permission obtained before participants completed the questionnaire.

Results

Table 1

Correlation of Gaming Addiction, Impulsivity, Emotional Regulation and Sleep Quality among University Students (N=100)

Number	Variables	1	2	3	4
1	Game Addiction	1	.16	-.34**	-.19
2	Impulsivity	-	1	.13	.11
3	Emotional Regulation	-	-	1	.27**
4	Sleep Quality	-	-	-	1

Note. **p<0.01, * p<0.05

Table 1 presents the correlation analysis of gaming addiction, impulsivity, emotional regulation, and sleep quality among university students (N = 100). Gaming addiction shows a significant negative correlation with emotional regulation (r = -0.34, p < 0.01) and a weak negative correlation with sleep quality (r = -0.19). Emotional regulation is positively correlated with sleep quality (r = 0.27, p < 0.01), while impulsivity shows weak, non-significant positive correlations with gaming addiction, emotional regulation, and sleep quality. These findings highlight the complex interplay between these variables.

Table 2

One-way Anova analysis on Preferred Game Type on study variables Game Addiction, Emotional Regulation, Sleep Quality and Impulsivity (N=100)

	PubG (n=28)	Action (n=27)	Other (n=15)		
Variable	M(SD)	M(SD)	M(SD)	F	p
Emotional Regulation	44.43(14.54)	40.85(13.75)	42.66(11.05)	.62	.53
Impulsivity	49.53(9.03)	51.07(8.93)	48.80(7.96)	.40	.67
Sleep Quality	65.72(8.70)	67.62(8.25)	69.20(9.67)	1.12	.32
Game Addiction	20.05(5.53)	19.03(6.77)	20.86(5.54)	.51	.60

Note. M=Mean; SD= Standard Deviation

The table shows that individuals who paly Pubg are higher in number as compared to others and the preferred game type significantly influence Emotional Regulation, Impulsivity Sleep Quality and Game Addiction. However, non-significant differences are observed for emotional regulation, impulsivity, sleep quality and game addiction.

Table 3

Mediating Effect of Emotional Regulation in Relationship between Sleep Quality and Game Addiction (N=100)

Predictors		Sleep Quality			
Model	R^2	ß	p	t	95% BaCL
1. Constant		27.04	.00	5.83	(17.83,36.24)
Game Addiction	.11	.81	.00	3.63	(.36,1.25)
2. Constant		43.40	.00	12.03	(36.24,50.56)
Emotional Regulation		.05	.40	.84	(-.0773,.19)
Game Addiction	.03	.19	.21	1.25	(-.11,.51)

For Step 1 F=13.18***, For Step 2 F=1.7024***

Note. R^2= Explained Variance, BaCL= Biased Corrected Confidence Interval

Figure 2

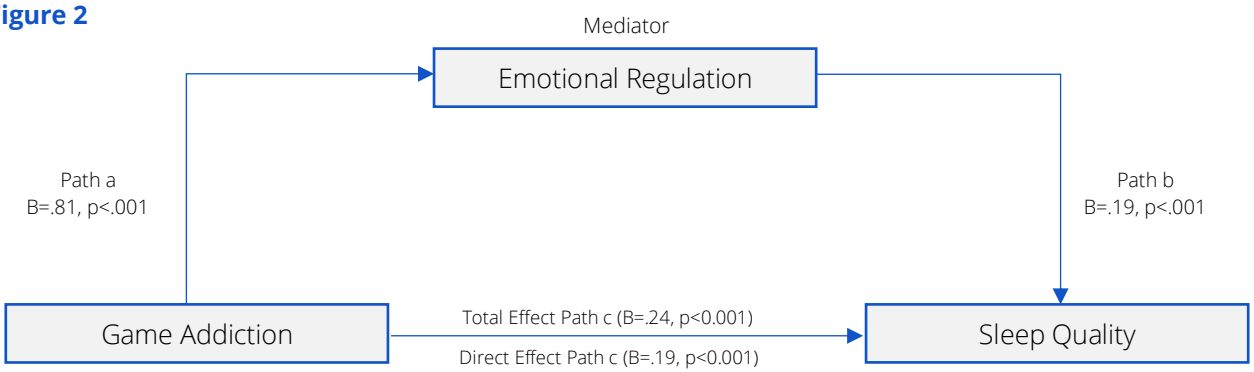


Table 3 revealed that game addiction significantly predicts sleep quality (β = .81, p = .00) and emotional regulation, explaining 1.1% of the variance. Model 2 showed a positive relationship

between game addiction and sleep quality (β = .19, p = .21) and between emotional regulation and sleep quality (β = .05, p = .40), with both explaining 3% of the variance. A comparative analysis indicated partial mediation, as the direct effect (path c' = .19***) was smaller than the total effect (path c = .24***). Emotional regulation significantly mediated the relationship between game addiction and sleep quality.

Table 4

Mediating Effect of Emotional Regulation in Relationship between Impulsivity and Game Addiction (N=100)

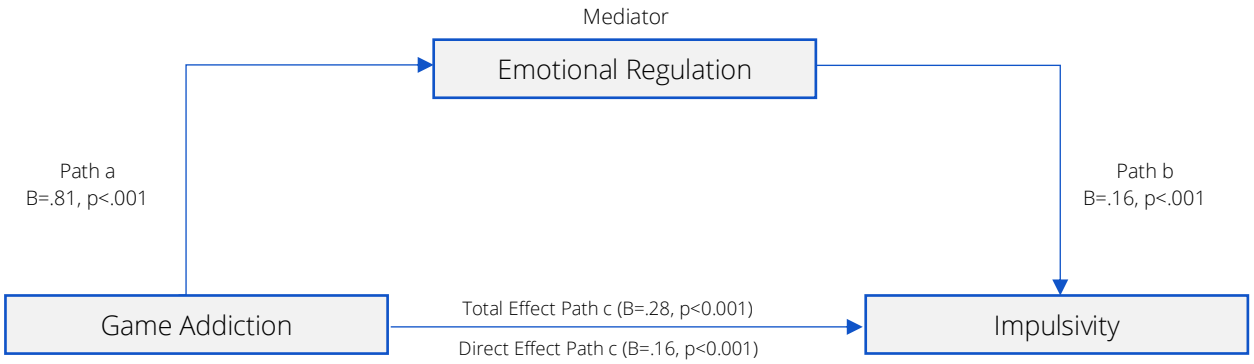
Predictors		Sleep Quality			
Model	R^2	ß	p	t	95% BaCL
1. Constant		27.04	.00	5.83	(17.83,36.24)
Game Addiction	.08	.81	.00	3.63	(.36,1.25)
2. Constant		57.09	.00	16.36	(50.17,64.01)
Emotional Regulation		.14	.02	2.25	(.01,.27)
Game Addiction	.03	.16	.28	1.07	(-.14,.47)

For Step 1: F=13.18***, For Step 2: F= 4.47

Note. R^2= Explained Variance, BaCL= Biased Corrected Confidence Interval

Table 4 showed that game addiction significantly predicts impulsivity (β = .81, p = .00), explaining 8% of its variance, and also positively predicts emotional regulation. Model 2 indicated that game addiction has a positive but non-significant relationship with impulsivity (β = .16, p = .28), while emotional regulation significantly predicts impulsivity (β = .14, p = .02). Together, game addiction and emotional regulation explain 3% of the variance in impulsivity. A comparative analysis confirmed partial mediation, as emotional regulation mediates the relationship between game addiction and impulsivity.

Figure 3



Discussion

The present study was conducted to investigate the effect of violent e-gaming on sleep quality and impulsivity among university students with role of emotional regulation as mediator. To compare the study variables along demographic variables i.e. age, gender, occupation, education, family system, preferred game type, gaming platform and duration per session. The young adults from different universities participated in the study. Game Addiction Scale (Wang et al., 2014), Sleep Quality Scale (Shahid et al., 2011) Baratt Impulsiveness Scale (Kapitány-Fövény et al., 2020) and Difficulties in Emotional Regulation Scale (Bjureberg et al., 2015) were used to analyze the data of the participants to achieve the objectives).

According to these studies the association between video game and mental health revealed that it increased impulsivity, anxiety and violent and antisocial behaviors. Usually, video games are played at night. People frequently play during the early hours of the night due to work, school, or social obligations, depriving them of sleep and exposing them to a variety of negative cognitive impacts. Research have directly studied how VG exposure impacts behavioral components of sleep, including as quantity, quality, latency of sleep start, nocturnal awakenings, and so on, as well as overall sleep. American Academy Pediatrics' policy gave statement on the relationship between media violence and emotional regulation and called it as a risk factor for young adults. Violent e-gaming effect the ability to recognize and respond to emotions correctly as well as the control over when, how, and when not to feel and express emotions.

It was hypothesized that there is a positive relationship between the amounts of time spend on violent E-gaming and impulsivity levels in university students. According to results of our study. The correlation between impulsivity and gaming addiction is r=.16, indicating a positive but weak relationship (Table3). Cognitive Behavioral models say that reward seeking behaviors and impulsivity are correlated which may increase the likelihood of problematic gaming behavior (Chen et al., 2024). This finding is supported through research conducted by Şalvarlı and Griffiths (2019) which states that shows that Internet Gaming Disorder (IGD) reduces the ability to control impulses, making individuals more likely to act on urges without considering long-term consequences. Moreover, Gamers with Internet Gaming Addiction often have higher levels of anxiety and depression, which further weaken impulse control mechanisms.

Neurological studies suggested that Internet Gaming Addiction affects brain regions associated with impulse control, such as the prefrontal cortex, leading to heightened impulsivity (Şalvarlı & Griffiths, 2019).It was assumed that emotional regulation will mediate the relationship between impulsivity and sleep quality in university students. Impulsivity exhibits a weak positive correlation with emotional regulation ($r = 0.13$) and sleep quality ($r = 0.11$) however, these correlations are also non-significant. Emotional regulation, on the other hand demonstrates a significant positive correlation with sleep quality ($r = 0.27$, $p < 0.01$), indicating that better emotional regulation is associated with improved sleep quality (Table 3).

It was hypothesized that Emotional regulation will mediate the relationship between violent E-gaming and sleep quality in university students. The study of Wu et al. (2022) highlights that maladaptive emotional regulation strategies mediate the effect of childhood psychological maltreatment on internet game addiction. This study also discussed that poor emotional regulation from gaming addiction can lead to irregular sleep patterns due to prolonged gaming hours which can heightened emotional arousal, intern effects overall mental health (Wu et al., 2022). These studies are further supported by the study of Lam (2014) which state that game addiction often leads to excessive screen time, especially late at night, which displaces sleep schedules and delays bedtime. Sleep problems can increase stress and irritability, potentially reinforcing the desire to engage in gaming as a form of escapism, thus perpetuating a vicious cycle. Sleep disturbances caused by gaming are connected to mental health issues such as anxiety and depression, exacerbating the effects of gaming addiction (Lam, 2014).

Conclusion

The current study examined the effect of violent E-gaming on impulsivity and sleep quality taking emotional regulation as a mediator in university students. 100 young adults from different universities were surveyed for this research. Individuals who engage in violent E-gaming will display higher impulsivity and emotional regulation difficulty which will negatively affect their sleep quality.

Key demographic factors, including age, gender, education level, occupation, family system, preferred game type, gaming platform, and average gaming duration per session, revealed significant associations with the variables under study.One of the study's main limitations is the use of convenient sampling technique for participant's selection, which is limited to students of universities hence results cannot be generalized to the larger population of the country or elsewhere in the world.

For future research selection of sample from all over Pakistan should be taken which can increase the research generalizability. In future, research aimed at exploring other variables like mental health outcomes such as depression, anxiety, stress etc, physical health outcomes like chronic illness management, immunity etc. personality traits like resilience and psychological capital etc., lifestyle variables like physical activity, sleep patterns, psychological variables like stress level ,emotional regulation, social economic variables like monthly income ,academic variables like academic performance and study hours and other demographic variables like cultural differentiation, social norms, digital communication etc. can be studied in relevance to our study variables.

Implications

These findings highlight the impact of violent e-gaming on impulsivity, sleep quality, and emotional regulation, offering valuable insights for educators, parents, and game developers. Universities can use these insights to introduce workshops on emotional regulation and time management, while parents and communities can promote balanced gaming habits. Additionally, the study encourages game developers to design less harmful games and inspires future research on other mediators or populations.

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