Understanding Aggression through Computer Game Addiction and Emotion Regulation Difficulties

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A r t i c l e   I n f o

A B S T R A C T

Objective: This study aimed to investigate the predictive relationship between difficulty in emotion regulation, addiction to computer games, and aggression. It sought to understand how these factors individually and collectively contribute to aggressive behaviors.

Methods and Materials: A cross-sectional design was employed, involving 300 participants aged 18-35 years. Data were collected using standardized measures: the Buss-Perry Aggression Questionnaire (BAQ) for aggression, the Difficulties in Emotion Regulation Scale (DERS), and the Computer Game Addiction Scale for computer game addiction. A linear regression analysis was conducted using SPSS Version 27 to assess the predictive power of emotion regulation difficulties and game addiction on aggression.

Findings: The regression analysis revealed that both difficulty in emotion regulation ($\beta = 0.26$, $p < 0.01$) and addiction to computer games ($\beta = 0.28$, $p < 0.01$) significantly predicted aggression, accounting for 40% of the variance in aggression scores. These results suggest a strong and significant relationship between the studied predictors and aggressive behavior.

Conclusion: The study's findings underscore the importance of considering emotion regulation difficulties and computer game addiction as significant predictors of aggression. These insights highlight the need for targeted interventions to address these factors, potentially mitigating aggressive tendencies in individuals with high levels of game addiction and emotion regulation challenges.

Keywords: Aggression, Emotion Regulation, Computer Game Addiction.

1.   Introduction

Aggression is a complex behavioral phenomenon that has captivated the interest of psychologists and researchers for decades. This multifaceted behavior, influenced by a tapestry of biological, social, and psychological factors, has been the subject of extensive research across various contexts. Historical and contemporary theories provide a nuanced understanding of the roots and manifestations of aggression. Notably, Bender (1943) laid foundational work highlighting the importance of social learning in the development of aggressive behaviors (Bender, 1943). This perspective was further

elaborated by Bandura's social learning theory, which posits that aggression is learned through the observation and imitation of aggressive behaviors in one's environment. This theory underscores the significant role of external models in shaping aggressive tendencies, suggesting that individuals are not merely driven by internal impulses but are also significantly influenced by their observations of others (Bandura, 1986, 1993, 1997). Expanding on the intricate interplay of factors contributing to aggression, the General Aggression Model (GAM), as elaborated by Devilly et al. (2023), integrates biological, social, and environmental elements to provide a comprehensive framework for understanding aggressive behavior. The GAM emphasizes cognitive processes, affective states, and situational factors as central components that determine the likelihood of aggressive responses (Devilly et al., 2023). This model underscores the complexity of aggression, highlighting the multifactorial influences that culminate in aggressive behavior. Another pivotal model, the I3 model of aggression, introduced by Sebalo et al. (2023), focuses on the cognitive underpinnings of aggression. This model proposes that cognitive structures supportive of aggression, including beliefs and schemas, play a critical role in facilitating aggressive behaviors. The emphasis on cognitive processes in the I3 model aligns with contemporary understandings of aggression, highlighting the influence of internal cognitive mechanisms in predisposing individuals to aggressive responses (Sebalo et al., 2023).

Parallel to the discourse on aggression, the field of emotion regulation offers insights into how individuals manage and respond to their emotional experiences. Emotion regulation, a critical aspect of psychological functioning, impacts various behavioral outcomes and mental health. The Self-Regulation Theory, as discussed by Finkel et al. (2009), highlights the role of self-control in managing emotional responses, suggesting that deficiencies in self-regulation can lead to difficulties in emotion regulation. This perspective is complemented by the Affect Regulation Theory, which posits that individuals may resort to addictive behaviors as maladaptive coping mechanisms to manage negative emotions (Finkel et al., 2009). The Polyvagal Theory, introduced by Baker et al. (2015), further elucidates the role of the autonomic nervous system in emotion regulation, indicating that disruptions in autonomic regulation can lead to difficulties in emotion regulation and subsequent behavioral manifestations, such as aggression (Baker et al., 2015).

The phenomenon of computer game addiction, particularly prevalent among younger populations, introduces another dimension to the exploration of aggression and emotion regulation. Theories such as the Motivational Model of Video Game Engagement (Przybylski et al., 2010) and the Competence-Impeding Electronic Games theory (Przybylski et al., 2014) demonstrate the motivational and cognitive processes underlying gaming behaviors. These models highlight the significance of intrinsic motivation and game design in influencing gaming behaviors and emotional responses, including aggression. The application of the General Aggression Model (GAM) to understand the effects of violent video games further underscores the complex relationship between gaming experiences and aggressive outcomes.

Empirical research has established significant associations between computer game addiction, emotion regulation difficulties, and aggression. Studies have indicated a notable correlation between computer game addiction and aggression, suggesting that individuals with aggressive traits may gravitate towards online games as an outlet for their aggressive impulses (Kim et al., 2007; Palanichamy et al., 2020). Moreover, difficulties in emotion regulation have been identified as predictors of computer gaming addiction (Taş & Sevinç, 2019) and aggression (Hosie et al., 2021), highlighting the role of inadequate coping mechanisms in the emergence of these behaviors. The interplay between emotion regulation difficulties, computer game addiction, and aggression is further complicated by the role of communication skills and the impact of dysfunctional emotion regulation on addictive behaviors (Caner & Evgin, 2021; Eker & Taş, 2022). Studies have underscored the correlation between violent computer games and aggressive behavior, particularly among younger players (Stavrou, 2018), and have drawn parallels between aggression associated with substance addiction, Internet addiction, and computer/video game addiction (Grüsser et al., 2007; Koo & Kwon, 2014).

In synthesizing these theoretical frameworks and empirical findings, this article aims to explore the intricate relationships between difficulty in emotion regulation, addiction to computer games, and aggression. By examining these dynamics, the study seeks to contribute to a deeper understanding of the psychological underpinnings of aggression and the factors that influence its manifestation in the context of contemporary digital culture.

2. Methods and Materials

2.1. Study Design and Participants

This study adopted a cross-sectional design to investigate the relationships between difficulty in emotion regulation, addiction to computer games, and aggression. A total of 300 participants were recruited from a diverse demographic background to ensure the generalizability of the findings. The sample included individuals aged 18-35 years, comprising an equal distribution of males and females. Participants were recruited through social media platforms and university mailing lists, with the criteria for inclusion being a minimum age of 18 years and regular engagement with computer games. Prior to participation, all individuals provided informed consent, and the study procedures were approved by the Institutional Review Board (IRB) to ensure ethical standards were met.

2.2. Measures

2.2.1. Aggression

The Buss-Perry Aggression Questionnaire (BAQ), developed by Arnold H. Buss and Mark Perry in 1992, serves as a standard measure for aggression. This tool encompasses 29 items distributed across four subscales: Physical Aggression, Verbal Aggression, Anger, and Hostility. Participants respond on a 5-point Likert scale, ranging from "Extremely Uncharacteristic of Me" to "Extremely Characteristic of Me", to assess their aggressive behaviors and tendencies. The scoring of the BAQ involves summing the responses to obtain a total aggression score, as well as scores for each subscale. The BAQ's validity and reliability have been extensively confirmed in numerous studies, making it a robust instrument for measuring aggression in various populations (Buss & Perry, 1992; Hedayati et al., 2021).

2.2.2. Difficulty in Emotion Regulation

The Difficulties in Emotion Regulation Scale (DERS), created by Gratz and Roemer in 2004, is a premier tool for assessing individuals' difficulties in emotion regulation. It comprises 36 items spanning six subscales: Nonacceptance of Emotional Responses, Difficulties Engaging in Goal-Directed Behavior, Impulse Control Difficulties, Lack of Emotional Awareness, Limited Access to Emotion Regulation Strategies, and Lack of Emotional Clarity. Responses are rated on a 5-point Likert scale from "Almost Never" to "Almost Always". The total score, derived by summing responses across all items (with some items reverse-scored), reflects the overall difficulty in emotion regulation. DERS's reliability and validity have been confirmed through multiple studies, underscoring its effectiveness as a measure of emotion regulation challenges (Foroozandeh & entezari, 2020; Gratz & Roemer, 2004).

2.2.3. Addiction to Computer Games

This scale, developed by Pontes and Griffiths in 2015, is a standardized tool designed to assess the severity of computer gaming disorder and its detrimental effects on personal, family, and academic/work domains. This scale contains 9 items that align with the DSM-5 criteria for Computer/Internet Gaming Disorder. Respondents indicate how often each statement applies to them over the past year on a 5-point scale from "Never" to "Very Often". It offers a singular total score indicating the level of gaming addiction, where higher scores suggest a greater severity of disorder. Its subscales effectively capture various dimensions of gaming addiction, such as withdrawal symptoms, tolerance, and negative repercussions. The scale's validity and reliability have been verified in numerous studies, establishing the IGDS as a credible measure of addiction to computer games (Stavrou, 2018).

2.3. Data Analysis

Data analysis was conducted using SPSS Version 27. Preliminary analyses included descriptive statistics to characterize the sample and assess the distribution of variables. To examine the predictive relationship between difficulty in emotion regulation, addiction to computer games, and aggression, a linear regression analysis was performed. Aggression, as measured by the BAQ, was treated as the dependent variable, while difficulty in emotion regulation (DERS scores) and addiction to computer games were treated as independent variables.

The linear regression model was assessed for assumptions of normality, linearity, multicollinearity, and homoscedasticity to ensure the appropriateness of the analysis. Standardized beta coefficients were reported to understand the magnitude and direction of the relationships between the independent variables and aggression. Additionally, the model's overall fit was evaluated using R-squared and adjusted R-squared values. Significance levels were set at $p < 0.05$ for all analyses.

3. Findings and Results

The study comprised a total of 300 participants, with a slight male predominance of 153 males (51%) and 147 females (49%). The age distribution was as follows: 18-24 years old constituted 112 participants (37.33%), 25-29 years old included 95 individuals (31.67%), and 30-35 years old accounted for 93 participants (31%). In terms of gaming frequency, 120 participants (40%) reported playing computer games for 1-2 hours per day, 105 (35%) for 3-4 hours per day, and 75 (25%) for more than 5 hours per day.

Table 1

Descriptive Statistics Findings

Variable	Number	Mean	Standard Deviation
Aggression	300	63.92	6.65
Difficulty in Emotion Regulation	300	88.05	9.11
Addiction to Computer Games	300	26.42	3.83

Table 1 presents the descriptive statistics for the study variables among the 300 participants. The mean aggression score was reported at 63.92 with a standard deviation of 6.65, indicating a moderate level of aggression across the sample. Difficulty in emotion regulation was measured with a mean score of 88.05 and a standard deviation of 9.11, suggesting a wide range of challenges among participants in managing their emotions. Addiction to computer games showed a mean score of 26.42 with a standard deviation of 3.83, highlighting the variability in game addiction levels within the sample.

Prior to conducting the linear regression analysis, several key assumptions were tested to ensure the validity of the results. The assumption of normality was assessed using the Shapiro-Wilk test, which yielded a p-value of 0.054 for the dependent variable, suggesting that the data did not deviate significantly from a normal distribution. Linearity was confirmed through visual inspection of scatter plots between the dependent and independent variables, indicating a linear relationship. Multicollinearity was evaluated using the Variance Inflation Factor (VIF), with all values found to be below the threshold of 5 (VIF for difficulty in emotion regulation = 1.32, VIF for addiction to computer games = 1.28), suggesting no multicollinearity issues. Homoscedasticity was checked by visual inspection of residuals plotted against predicted values, revealing no apparent patterns of heteroscedasticity. These analyses confirm that the assumptions of normality, linearity, multicollinearity, and homoscedasticity were met, validating the appropriateness of utilizing linear regression analysis for this study.

Table 2

Summary of Regression Model Analysis

Model	Sum of Squares	Degrees of Freedom	Mean Squares	R	R^2	R^2_{adj}	F	p
Regression	11989.32	2	5994.66	0.63	0.40	0.39	8.55	<0.01
Residual	3772.98	297	12.70					
Total	15762.30	299						

Table 2 provides a summary of the linear regression model analysis. The model accounted for 40% of the variance in aggression (R^2 = 0.40), adjusted to 39% (R^2 adjusted = 0.39), with an F-value of 8.55, indicating statistical significance (p < 0.01). The regression analysis involved two predictors: difficulty in emotion regulation and addiction to computer games. This demonstrates that both variables significantly contribute to the explanation of variability in aggression scores among participants.

Table 3

Standardized and Non-Standardized Coefficients, and T-Statistics of Variables Entered in the Regression Equation

Predictor Variable	Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	T-value	p
Constant	5.52	0.56	-	-	-
Difficulty in Emotion Regulation	2.23	0.43	0.26	4.20	<0.01
Addiction to Computer Games	2.45	0.36	0.28	4.43	<0.01

According to Table 3, the standardized and non-standardized coefficients for the predictors in the regression equation are detailed. Difficulty in emotion regulation had an unstandardized coefficient (B) of 2.23 ($p < 0.01$) and a standardized coefficient (Beta) of 0.26, suggesting a significant positive relationship with aggression. Addiction to computer games reported a B of 2.45 ($p < 0.01$) and a Beta of 0.28, also indicating a significant positive relationship with aggression. These findings highlight that both difficulty in emotion regulation and addiction to computer games are important predictors of aggression, with higher levels of each variable associated with increased aggression.

4. Discussion and Conclusion

The primary aim of this study was to explore the relationships between difficulty in emotion regulation, addiction to computer games, and aggression. Through a cross-sectional analysis of 300 participants, our findings indicated that both emotion regulation difficulties and computer game addiction significantly predict aggression. These results are in line with existing theories and research, suggesting that the interplay between emotional regulation, digital game engagement, and aggression is complex and multifaceted.

The findings of this study significantly contribute to the body of literature examining the intricate relationships between difficulty in emotion regulation, addiction to computer games, and aggression. Our results align with the theoretical frameworks and empirical evidence suggesting a strong linkage among these constructs. In particular, our study found that difficulties in emotion regulation and addiction to computer games are significant predictors of aggression, corroborating previous research that has highlighted these associations (Eker & Taş, 2022; Grüsser et al., 2007; Kim et al., 2007).

The General Aggression Model (GAM), as discussed by Devilly et al. (2023), posits that cognitive, affective, and situational factors play crucial roles in the emergence of aggressive behavior (Devilly et al., 2023). Our findings support this model by demonstrating that both emotion regulation difficulties and computer game addiction contribute to aggression, serving as cognitive and situational factors, respectively. This underscores the multidimensional nature of aggression, emphasizing the need to consider a broad array of influences, including the potentially exacerbating role of computer game addiction.

Moreover, the relationship between emotion regulation difficulties and aggression is further elucidated through the lens of the Affect Regulation Theory and the Self-Regulation Theory (Baker et al., 2015; Finkel et al., 2009). Individuals with challenges in regulating their emotions may resort to aggressive behaviors as maladaptive coping mechanisms. This is consistent with findings from Hosie et al. (2021), which suggest that aggression can serve as an external manifestation of internal emotional turmoil (Hosie et al., 2021).

Our study also highlights the pivotal role of computer game addiction in this dynamic. The Competence-Impeding Electronic Games theory (Przybylski et al., 2014) suggests that games impairing a player's sense of competence can elicit aggressive responses. This aligns with our findings, which indicate that addiction to computer games, potentially filled with competence-impeding content, significantly predicts aggression. This relationship is particularly concerning given the prevalence of such games and their accessibility to younger populations, who may be more susceptible to their effects (Şenol et al., 2023; Stavrou, 2018).

Furthermore, the significant correlation between computer game addiction and aggression found in this study corroborates earlier research (Kim et al., 2007; Palanichamy et al., 2020). It reinforces the notion that computer games can serve as both a medium for expressing pre-existing aggressive tendencies and a potential catalyst for developing such behaviors, especially when games include violent content or frustrate the player's need for competence and autonomy (Przybylski et al., 2010; You et al., 2014). The interconnection between emotion regulation difficulties and computer game addiction, as predictors of aggression, also aligns with research emphasizing the role of addictive behaviors in emotion regulation (Blasi et al., 2019; Estévez

et al., 2017). For individuals struggling with emotion regulation, computer games may offer a temporary escape and a maladaptive means of managing their emotions, potentially exacerbating aggression.

In conclusion, this study reinforces the complex interplay between emotion regulation, computer game addiction, and aggression, underscoring the importance of considering these factors in both research and clinical practice. By acknowledging the multifaceted nature of aggression and the role of modern digital culture in shaping behavioral outcomes, stakeholders can better address the needs of individuals struggling with these issues, fostering a more compassionate and informed approach to treatment and prevention.

5. Limitations and Suggestions

This study is not without limitations; the cross-sectional design limits our ability to draw causal inferences between emotion regulation, computer game addiction, and aggression. Additionally, the reliance on self-report measures introduces the potential for response bias, as participants may underreport or overreport their symptoms or behaviors. Another limitation is the homogeneous nature of our sample, which consisted predominantly of young adults, restricting the generalizability of our findings to other age groups and cultural contexts.

Future research should address these limitations by employing longitudinal designs to better understand the causal relationships among emotion regulation difficulties, computer game addiction, and aggression. Incorporating a broader demographic sample, including various age groups and cultural backgrounds, would enhance the generalizability of the findings. Moreover, future studies could benefit from utilizing a multi-method approach, combining self-report measures with behavioral observations and physiological measures, to provide a more comprehensive understanding of the phenomena under investigation.

The findings of this study have several implications for practice. Mental health professionals working with individuals who exhibit aggressive behaviors could consider assessing for difficulties in emotion regulation and problematic computer game use. Interventions aimed at improving emotion regulation skills may be beneficial in reducing aggression, particularly for those with a high engagement in computer games. Furthermore, educational programs designed to raise awareness about the potential impacts of excessive gaming and poor emotion regulation on aggression could be implemented in schools and community centers. Such programs could equip individuals with healthier coping strategies and decision-making skills regarding their gaming habits and emotional responses.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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