

The Relationship between Game Addiction and Aggression among Adolescents with Mediating Role of Narcissism and Self-Control

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Abstract

Objective: With the increase of game addiction, the problem of aggression as one of the most serious issues confronting today's society is affecting the mental health of the young generation. While available research has clarified the relationship between game addiction and aggression, this research contributes to future literature through examining the mediating role of narcissism and self-control in this relationship.

Method: This study is a quantitative, cross-sectional, correlational research conducted in 2023 on Malaysian adolescents aged 12 to 18 years. Volunteer adolescents completed self-report questionnaires including the Buss and Perry Aggression Questionnaire, Gaming Addiction Scale, Childhood Narcissism Scale, and Brief Self-Control Scale. All questionnaires were prepared through a Sojump link posted on social media platforms. Descriptive statistics, Pearson correlation analysis, and path analysis were used for statistical analysis.

Results: N = 595 adolescents were participated in this survey. According to correlation analysis, there were significant positive correlations between game addiction and aggression ($r = 0.777$, $P < 0.001$), game addiction and narcissism ($r = 0.785$, $P < 0.001$) as well as a significant negative correlation between game addiction and self-control ($r = -0.668$, $P < 0.001$). Besides, narcissism and self-control could significantly partially mediate the relationship between game addiction and aggression. The mediation model discovered a significant path from game addiction to narcissism ($\beta = 0.785$, CI = [0.7692, 1.0293], $P < 0.001$) and from narcissism to aggression ($\beta = 0.442$, CI [0.7731, 1.7244], $P < 0.001$). The total effect of game addiction on aggression was found to be statistically significant ($\beta = 0.777$, $P < 0.001$).

Conclusion: The findings of this research reveal a captivating profile, indicating that specific psychological attributes such as aggression, self-control, and narcissistic tendencies might make certain individuals more susceptible to developing an addiction to online games.

Key words: *Adolescence; Aggression; Narcissism; Self-Control; Video Game Addiction*

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Aggression is a highly conserved behavior throughout evolution and aimed at another person with the intention of harm. Aggression in childhood and adolescence is a serious and pervasive problem, with its most severe forms occurring in this period. Research shows that increasing aggressive behavior is a particular concern with gaming addiction (1). With the development of technology, games have become a common amusement, particularly during the COVID-19 pandemic in which many adolescents were willing to dedicate most of their time to gaming. The prevalence of Internet gaming disorder among adolescents is 4.6% (2). Among them, adolescents who lack self-control may struggle to resist the temptation to play Internet games, leading to a higher risk of becoming addicted. Game addiction could affect adolescents' academic performance, social interactions, and physical health (3). Moreover, Begum *et al.* (4) found that game addiction was related to anger and disruptive behavior among adolescents.

One of the most interesting aspects in online games is their goal and achievement systems. Specifically, over the course of the player's gameplay, the character gains experience points, advances from one level to the next, collects valuable gifts and weapons, and thus considers himself competent enough to handle things. Scholars believe that narcissists make a lot of friends in order to get positive responses from others. In this regard, people can be positively viewed and accepted by others through the use of media and technology, and individuals with more narcissism are also inclined to find appreciation and support in online games (5). People with high levels of narcissism are prone to show proactive aggression instead of reactive aggression (6). On the other hand, individuals with low self-control tend to have cognitive impulses and are inclined to select socially undesirable behaviors when attempting to express negative emotion. It has been shown that aggressive behaviors are common among adolescents incapable of expressing and controlling their emotions because of Internet game addiction (7, 8). Based on self-control theory, a lack of self-control can be considered the primary driver of problematic behavior (9). Adolescents with low self-control may have difficulty controlling their impulses and emotions, making them behave aggressively. Meanwhile, narcissistic adolescents may also perceive certain situations as threats to their self-esteem and engage in aggressive behavior to defend their perceived sense of superiority (10). People can attain highly favorable emotional encounters by engaging in violent activities in online games without facing consequences, potentially leading to a diminished perception of the negative impacts of aggression and an elevated inclination towards real-world aggressive behaviors (11). Moreover, once observers have confidence in themselves and believe that observed behaviors can help them achieve their goals, they will imitate those behaviors. For this matter, narcissistic individuals may

display high levels of confidence and self-belief, yet are more prone to use aggression to maintain their self-image and control over others (5, 12).

Adolescents often exhibit traits that are more aggressive, emotionally unstable, and unable to control their lust (13-16). Aggression was found to be connected with signs of negative morals (17). It may cause physical injuries as well as psychosocial and academic issues (18). Once aggression becomes extreme or pervasive, it might be a symptom of a mental health condition or other health-related problems (19). Currently, heroes in many games are violent and rewarded for their actions, thus serving as role models for many youths. With the rise of such an issue, the study focused on the relationship between game addiction and aggression with the mediating role of narcissism and self-control. However, most of the past research has focused on Internet addiction or social media addiction rather than gaming addiction (20, 21). Moreover, the majority of aggression research has been conducted in Western settings, with only few studies carried out in Eastern countries, particularly within the Malaysia context. Furthermore, relatively little research has examined the narcissistic trait and self-control as mediators in the relationship between game addiction and aggression. Therefore, it is of great significance to conduct this study, as parents can acquire insights into the importance of channeling adolescents' excessive gaming, enhancing self-control, and addressing narcissism properly. Furthermore, the current study provides scientific information and evidence on the effects of main variables for future research on the topic, enriching the existing literature.

Thus, this study was carried out by proposing the following research questions: (1) Are there any relationships between aggression, game addiction, self-control, and narcissism among adolescents? (2) Does narcissism mediate the association between aggression and game addiction among adolescents? (3) Does self-control mediate the association between game addiction and aggression among adolescents? Accordingly, the objective of this research was to explore the relationships between aggression, game addiction, narcissism, and self-control among adolescents, as well as determine the mediating role of narcissism and self-control in the above relationship.

Materials and Methods

This is a quantitative, cross-sectional, correlational study. The survey approach was utilized to collect data from September 2023 to October 2023 via an online survey of 12 to 18-year-old Malaysian adolescents. This research was confirmed by the Institutional Ethics Committee of the UCSI University (Kuala Lumpur, Malaysia).

Participants and Study Design

A Sojump link that contained the questionnaires was posted on social media platforms, namely, Instagram,

Facebook, and Twitter. The self-report questionnaire was filled out by 595 of the study's participants in total. Adolescents who met the following inclusion criteria were recruited as participants: (a) Malaysian citizenship, (b) aged between 12-18 years, (c) currently residing in Selangor, (d) having basic English language proficiency, (e) willing to participate in the study.

Data Collection Tools

Gaming Addiction Scale (GAS): The GAS is a self-report questionnaire with seven items to examine the presence and severity of game addiction or problematic gaming behaviors in individuals. Items of GAS involve participants' experiences in the last six months. Every item in the scale is rated on a 5-point Likert scale. The total score for game addiction is determined by adding all items together. The larger the score on the GAS, the higher the levels of the participant's game addiction. According to (22), Cronbach's alpha for the scale was 0.95 which is perfect. Here, the reliability of the GAS was found to be 0.864, which was also considered perfect.

Brief Self-Control Scale (BSCS): Tangney and colleagues introduced the BSCS, a frequently employed and simple assessment tool designed to gauge an individual's capacity to manage impulses, regulate emotions and thoughts, as well as to intervene in unwelcome behavioral patterns and abstain from acting upon them (23). The BSCS consists of 13 items, every item of which is rated on a 5-Likert scale. To calculate the total score, reverse-encoding is applied to items 2, 3, 4, 5, 6, 7, 8, 10, 11, and then the total score for self-control is calculated by adding the scores for every item. A higher score on the BSCS indicates higher levels of self-control among participants. The scale showed good internal reliability with the value of Cronbach's alpha being 0.87 (24). In the current study, the value of Cronbach's alpha of the BSCS was calculated to be 0.735, indicating that the scale has an acceptable internal consistency.

Childhood Narcissism Scale (CNS): Thomaes *et al.* (25) proposed the CNS, which is used to measure narcissistic traits and behaviors in children and adolescents. The CNS contains 10 items, and every item is rated on a 4-point Likert scale. The sum of all the items is used to determine the narcissism score. A higher score on the CNS reflects higher levels of the participants' narcissism. According to (25), the scale demonstrated strong reliability, with a Cronbach's alpha of 0.87. Here, the reliability of the CNS is good, with a Cronbach's alpha value of 0.837.

Buss and Perry Aggression Questionnaire (BPAQ): The BPAQ is a self-report questionnaire proposed by Buss and Perry (26). It is a 29-item scale that has been validated in many countries. Its items are divided into four subscales, namely physical aggression (items 1 to 9), verbal aggression (items 10 to 14), anger (items 15 to 21), and hostility (items 22 to 29). Every item is rated on a 5-point Likert scale. Reverse coding is applied to items

7 and 18. Subsequently, the total score for aggression is determined by adding up all of these scale scores. A higher score on the BPAQ indicates higher aggression levels of the subjects. According to (27), the internal consistency of this scale ranged from 0.72 to 0.89, which was considered good. In the current study, the value of Cronbach's alpha for the BPAQ was calculated to be 0.922, indicating that the scale had an excellent internal consistency.

Procedure

All questionnaires are prepared through a Sojump link posted on social media platforms, namely Instagram, Facebook, and Twitter. To make sure that participants are truly informed, the information letter includes the research topic, the research objective, the potential benefits of participating in the project, and the potential risks of participating in the project, along with the informed consent. Approximately 25 minutes are allotted for the questionnaires listed above. Participants were informed that they will remain anonymous while completing the questionnaires, and that their responses would also be kept private. A total of 595 participants were recruited using convenience sampling for this research. Participants agreed to participate voluntarily, and they were informed that they could withdraw from the study at any time without penalty or loss of benefits. After the participants responded to all questionnaires, they received the electronic version of the measurement results.

Statistical Model

Descriptive statistics was run to compute variables in the study. Descriptive information for demographic variables such as age, gender, and ethnicity was presented through frequency and percentage scores. Skewness and kurtosis values of the GAS, BSCS, CNS, and BPAQ scores were checked in order to examine whether the scores received by the participants on the scales were normally distributed. Moreover, the Pearson correlation coefficient test was used to examine the relationship between game addiction, aggression, narcissism, and self-control. Furthermore, the SPSS macro PROCESS (model 4) with a bootstrapped 5,000 sample size and a 95% confidence interval (CIs) was implemented to examine the mediating role of narcissism and self-control in the relationship between game addiction and aggression.

Results

Demographic Information

The process of data analysis was carried out on a sample size of 595 participants who completed all of the questionnaires. Table 1 displays the demographic data of the participants. Regarding gender distribution, 47.1% (n = 280) are male, and 52.9% (n = 315) are female. In terms of age, 49.6% (n = 295) of the participants are between 12 and 15 years old, while 50.4% (n = 300) of the them aged between 16 and 18 years old. Ethnicity

was diverse, with the majority being Chinese, comprising 62.2% (n = 370), followed by Indian at 21.8% (n = 130), Malay at 11.8% (n = 70), and others at 4.2% (n = 25).

Table 1. Descriptive Statistics of Gender, Age, and Ethnicity (n = 595)

	<i>n</i>	%
Gender		
Male	280	47.1
Female	315	52.9
Age		
12-15	295	49.6
16-18	300	50.4
Ethnicity		
Malay	70	11.8
Chinese	370	62.2
Indian	130	21.8
Other	25	4.2

Note. n = number of participants, % = percentage of participants.

Test of Normality

Data is deemed normal when skewness and kurtosis fall within the range of -2 to +2 and -7 to +7, respectively. Referring to Table 2, the skewness and kurtosis coefficients for aggression, game addiction, narcissism, and self-control fall within the range of ± 2 and ± 7;

therefore, it can be concluded that the data set follows a normal distribution.

Table 2. Skewness and Kurtosis Values of Aggression, Game Addiction, Narcissism, and Self-Control

	Skewness	Kurtosis
Aggression	-0.075	-1.476
Game Addiction	0.068	-1.200
Narcissism	0.052	-1.416
Self-Control	0.055	-1.299

Correlation Analysis

The primary goal of the study was to examine the relationships between game addiction, aggression, narcissism, and self-control. As shown in Table 3, there was a statistically significant positive correlation between game addiction and aggression (r = 0.777, P < 0.001), indicating that as levels of game addiction increase, so did the propensity for aggressive behaviors. Similarly, a positive correlation (r = 0.785, P < 0.001) was found between game addiction and narcissism, showing that those with higher levels of game addiction may also have higher levels of narcissistic traits. In contrast, there was a negative correlation between game addiction and self-control (r = -0.668, P < 0.001), suggesting that higher levels of game addiction are linked to lower levels of self-control. On the other hand, narcissism was observed to be significantly positively correlated with aggression (r = 0.779, P < 0.001), suggesting that narcissistic individuals are prone to show more aggressive behavior. Likewise, a significant negative relationship was observed between self-control and aggression (r = -0.692, P < 0.001), demonstrating that individuals with lower self-control are more likely to behave aggressively toward others.

Table 3. Correlation between Game Addiction, Aggression, Narcissism, and Self-Control

	1	2	3	4
Game Addiction (1)	-			
Aggression (2)	0.777***	-		
Narcissism (3)	0.785***	0.779***	-	
Self-Control (4)	-0.668***	-0.692***	-0.760***	-

Mediation Analysis

The secondary goal of the study was to investigate the mediating role of narcissism and self-control on the relationship between game addiction and aggression. Referring to Figure 1, Table 4, and Table 5, the mediation model discovered a significant path from game addiction to narcissism (β = 0.785, CI = [0.7692, 1.0293], P < 0.001) and from narcissism to aggression (β

= 0.442, CI [0.7731, 1.7244], P < 0.001). The results shed light on the role of narcissism as a mediator in the relationship between game addiction and aggression. The total effect of game addiction on aggression was found to be statistically significant (β = 0.777, P < 0.001), indicating that game addiction was a significant predictor of aggression when both direct and indirect pathways are considered. The direct effect of game

addiction on aggression was found to be statistically significant ($\beta = 0.430$, CI = [0.8485, 1.9386], $P < 0.001$), indicating that aggression can be positively predicted by game addiction. While delving into the mediation pathways, the analysis revealed a significant indirect effect through narcissism ($\beta = 0.347$, CI = [0.6793,

1.5835], $P < 0.001$). Since the bootstrap 95% CI of the mediation effect does not include 0 (0.6793, 1.5835; indirect effect = 1.1230), it can be concluded that narcissism partially mediates the relationship between game addiction and aggression.

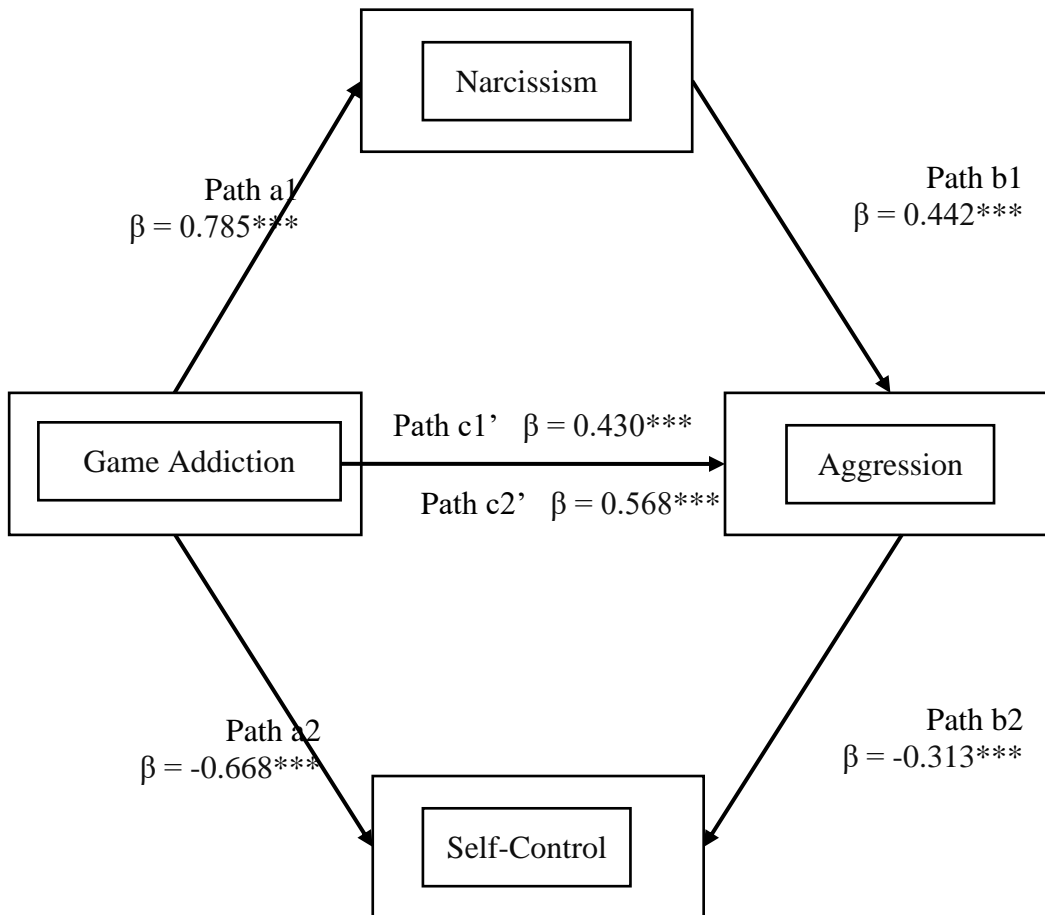


Figure 1. Path Analysis: Mediation Model Showing Roles of Narcissism and Self-Control on Relationship between Game Addiction and Aggression

Note. The Mediation model shows associations between Game Addiction and Aggression while controlling Self-Control. Coefficients presented are standardized linear regression coefficients. *** $P < 0.001$

Table 4. Mediation Analysis: Mediating Role of Narcissism between Game Addiction and Aggression (n = 595)

	B	SE	t	95% CI		β
				LLCI	ULCI	
Path a						
Game Addiction to Narcissism	0.8993	0.0657	13.6956	0.7692	1.0293	0.785***
Path c						
Game Addiction to Aggression	2.5165	0.1886	13.3437	2.1430	2.8900	0.777***
Path c' and Path b						

Game Addiction	1.3935	0.2752	5.0638	0.8485	1.9386	0.430***
Narcissism to Aggression	1.2487	0.2401	5.1998	0.7731	1.7244	0.442***

Note. B = Unstandardized Regression Coefficient; SE = Standard Error, LLCI = Lower Level Confidence Interval, ULCI = Upper Level Confidence Interval; β = Standardized Regression Coefficient. *** P < 0.001

Table 5. Total, Direct, and Indirect Effects of Mediation Analysis To Explore the Mediating Role of Narcissism On the Relationship Between Game Addiction and Aggression

	Effect	SE	95% CI		Ratio of Total Effect
			Lower	Upper	
Total Effect					
Game Addiction→Aggression	2.5165	0.1886	2.1430	2.8900	
Direct Effect					
Game Addiction→Aggression	1.3935	0.2752	0.8485	1.9386	
Indirect Effect					
Game Addiction→Narcissism→ Aggression	1.1230	0.2319	0.6793	1.5835	44.6%

Referring to Figure 1, Table 6, and Table 7, the mediation model demonstrates a significant path from game addiction to self-control ($\beta = -0.668$, CI = [-1.0109, -0.6682], $P < 0.001$) and from self-control to aggression ($\beta = -0.313$, CI [-1.1779, -0.4330], $P < 0.001$). The results demonstrate that self-control acts as a mediator between aggression and game addiction. The total effect of game addiction on aggression was found to be statistically significant ($\beta = 0.777$, $P < 0.001$), indicating that aggression can be significantly predicted by game addiction when both direct and indirect pathways are considered. The direct effect of game

addiction on aggression was found to be statistically significant ($\beta = 0.568$, CI = [1.3720, 2.3085], $P < 0.001$), showing that aggression can be positively predicted by game addiction. Upon further examination of the mediation pathways, the analysis demonstrates a significant indirect effect through self-control ($\beta = 0.209$, CI = [0.3434, 1.0237], $P < 0.001$). The bootstrap 95% CI for the mediation effect excludes zero (0.3434, 1.0237; indirect effect = 0.6763), indicating that the relationship between game addiction and aggression is partially mediated by self-control.

Table 6. Mediation Analysis: Mediating Role of Self-Control between Game Addiction and Aggression (n = 595)

	B	SE	t	95% CI		β
				LLCI	ULCI	
Path a						
Game Addiction to Self-Control	-0.8395	0.0865	-9.7026	-1.0226	-0.6785	-0.668***
Path c						
Game Addiction to Aggression	2.5165	0.1886	13.3437	2.1430	2.8900	0.777***
Path c' and Path b						
Game Addiction	1.8402	0.2364	7.7838	1.3720	2.3085	0.568***
Self-Control to Aggression	-0.8055	0.1880	-4.2835	-1.1779	-0.4330	-0.313***

Note. B=Unstandardized Regression Coefficient; SE = Standard Error, LLCI = Lower Level Confidence Interval, ULCI = Upper Level Confidence Interval; β = Standardized Regression Coefficient. *** P < 0.001

Table 7. Total, Direct and Indirect Effect of Mediation Analysis To Explore the Mediating Role of Self-Control On the Relationship Between Game Addiction and Aggression

	Effect	SE	95% CI		Ratio of Total Effect
			Lower	Upper	
Total Effect					
Game Addiction→Aggression	2.5165	0.1886	2.1430	2.8900	
Direct Effect					
Game Addiction→Aggression	1.8402	0.2364	1.3720	2.3085	
Indirect Effect					
Game Addiction→Self-Control→ Aggression	0.6762	0.1744	0.3434	1.0237	26.8%

Discussion

Correlational Relationships

In terms of game addiction and aggression, the result shows that there is a significant positive relationship between game addiction and aggression, which is consistent with past findings (28). The main factor influencing game addiction was found to be aggression, since individuals who show aggressive behavior manifest their aggression through a variety of channels, while online games have the potential to serve as a platform for the expression of aggression, as they often incorporate elements that can elicit aggressive behavior (29). Dowsett and Jackso have found that the presence of Internet gaming disorder is regarded as a contributing factor in the emergence of aggressive behaviors in the adolescent population (30). In addition, a recent study obtained data from online game users via questionnaire surveys and discovered that there was a positive correlation between the aggression level and the game addiction score (31).

Regarding narcissism, the result reveals a significant positive relationship between game addiction and narcissism, which is consistent with past findings (32, 33). Therefore, addiction to online gaming may be predicted by considering the individual's narcissistic personality traits. Similarly, a study using mixed research design revealed that levels of gaming disorder were significantly positively correlated with narcissism among Turkish boys (34). Meanwhile, as the level of narcissism in children increases, so does the level of gaming disorder. Moreover, the extensive documentation of the association between narcissism and aggression has been demonstrated in previous studies (35).

In terms of self-control, the result shows a significant negative relationship between game addiction and self-control, which is consistent with the past studies (7, 36, 37). Scholars have established a correlation between adolescent game addiction and their weak discipline and self-control (38, 39). Moreover, Zhou and Xing (40)

found that there was a significant predictive effect of self-control on online gaming addiction among college students in China. All this shows that people who suffer from addiction may find it difficult to control their behavior, as they may want to play online games for extended periods of time. On the other hand, our results reveal that there is a significant negative relationship between self-control and aggression. This finding is consistent with prior studies (41, 42), showing that individuals with higher self-control are more likely to be less aggressive. People with strong levels of self-control are better able to restrain and suppress negative behavioral reactions, whereas a person's executive control function may be compromised by a lack of self-control, which could result in irrational decision-making (43).

Mediatory Findings

The secondary objective of the study was to investigate the mediating roles of narcissism and self-control on the relationship between game addiction and aggression. Our results show that game addiction is positively related to narcissism, and narcissism is positively associated with aggression, which is consistent with previous studies (32, 33). The mediation effect indicates that narcissism plays a significant partial mediating role between game addiction and aggressive behavior, providing insights into the psychological mechanism between game addiction and aggressive behavior. Agustarika and Adam (44) confirmed that there exists a notable correlation between online gaming addiction and violent behavior. Observational learning of aggressive behaviors and patterns of aggression in games provide social reinforcement, whereas personality is one of the predictors of anger and aggression (45). Hence, individuals with high levels of narcissistic traits may seek external approval and exert dominance, potentially manifesting as aggressive tendencies. Narcissism also exhibits a predictive relationship with verbal aggression, physical aggression, and anger. Therefore, adolescents with higher levels of narcissism may be more likely to

externalize aggressive behavior as a result of game addiction (46). Furthermore, the mediation model elucidates distinct pathways, demonstrating that game addiction has a positive impact on narcissism, which subsequently contributes to increased levels of aggression. The aforementioned findings highlight the significance of taking into account individual variations and psychological aspects when investigating the influence of game addiction on aggressive behaviors. Therefore, alleviating narcissistic traits could serve as an intervention to reduce the aggression associated with gaming addiction in adolescents to minimize potential adverse consequences.

Furthermore, our results reveal that game addiction is negatively related to self-control, and self-control is negatively associated with aggression. This is consistent with prior studies (36, 42, 47). The result of mediation analysis suggests that self-control plays a significant partially mediating role in the relationship between game addiction and aggression, indicating that game addiction negatively influences self-control, which, in turn, contributes to heightened aggression. Young people who are addicted to video games have poor self-control and discipline, and that they have less emotional regulation than typical Internet users. Correspondingly, people with low self-control have difficulty inhibiting impulses toward aversive stimuli and are more likely to be aggressive than people with high self-control (48). In particular, adolescents who lack self-control may be more prone to the impulsive and aggressive tendencies; thus, addicts of online video games are unable to resist the temptation presented by these games and other similar cues in real life, leading to higher levels of aggression. Therefore, through interventions that target the enhancement of self-control, the potential negative impact of gaming addiction on adolescents' aggressive tendencies can be reduced, thereby helping to more comprehensively address the impact of gaming addictive behaviors on behavioral problems in this population.

Implications and Suggestions

Through the findings of this study, parents should be aware of the potential consequences of excessive gaming addiction and its link to increased aggression. Therefore, parents can effectively manage and limit their children's online gaming time. Moreover, they can reduce the negative effects of prolonged gaming in their children by improving their children's self-control skills and other leisure activities. Teachers can play a key role in raising awareness of the potential consequences of gaming addiction and its link to aggression. To be specific, teachers may consider incorporating discussions concerning responsible gaming into the curriculum to create a supportive classroom environment that emphasizes impulse control and emotion regulation. In this way, teachers can help students build basic self-control skills and reduce aggressive behavior in and outside of school. Government authorities should consider formulating evidence-based regulations and

guidelines regarding game usage among adolescents. Policymakers can propose parent monitoring strategies and public awareness campaigns to empower parents to make informed decisions about their children's play activities. In addition, it is encouraged that relevant departments set clear boundaries for gaming and age-appropriate time limits to help prevent adolescents from becoming overly addicted to gaming. Future researchers should build on this study and delve deeper into the relationship between gaming addiction, aggression, narcissism, and self-control. In addition, potential moderators and mediators should be explored such as Internet addiction, violence, and mental disorders. Additionally, cross-cultural studies should be conducted as well in order to compare various cultural backgrounds so as to yield a more comprehensive understanding of these relevant concepts.

Limitation

It is essential to acknowledge and critically evaluate the limitations of the current study. Firstly, the use of a quantitative research method may disregard adolescents' individual experiences, and may overgeneralize each individual's response. Therefore, fluctuations in level of game addiction, aggression, narcissism, and self-control among adolescents may cause the results to be less reliable. Secondly, the present study employed a cross-sectional design, which, by its nature, offers a snapshot of data at a single point in time. This design choice inherently restricts the ability to establish causal relationships or ascertain the direction of influence among the variables under investigation. Thirdly, the sample for this study was exclusively composed of adolescents who reside in Selangor, Malaysia. Although the research centered on a particular geographic area may yield significant localized insights, the restricted geographical reach raises questions regarding the applicability of the findings to a wider demography. Correspondingly, there are a few recommendations that could be suggested to address the aforementioned limitations in future studies. Firstly, the use of a mixed-methods strategy should be considered, incorporating in-depth interviews that integrate quantitative data with qualitative insights. This technique would facilitate a comprehensive comprehension of adolescents' ideas and experience with game addiction, violence, narcissism, and self-control. This methodology has the capacity to encompass the intricate individual experiences that may be overlooked in purely quantitative studies. Secondly, it would be advantageous for future studies to incorporate longitudinal research methodologies. This approach would enable the exploration of causal relationships and the monitoring of changes in these variables over time, thereby enhancing understanding of the developmental pathways associated with game addiction, violence, narcissism, and self-control in the adolescent population. Thirdly, researchers should aim for a more diverse and representative sample, including a wider range of the

population outside Selangor. Expanding sample size and diversity can enhance the external validity of research results, allowing researchers to draw more meaningful and applicable conclusions that can be generalized to different populations.

Conclusion

In summary, the findings of this cross-sectional study revealed that there is a significant positive relationship between game addiction, narcissism, and aggression, while the relationship between game addiction, self-control, and aggression are significantly negative. Additionally, narcissism and self-control can significantly partially mediate the relationship between game addiction and aggression. The findings of this research reveal a captivating profile indicating that specific psychological attributes like aggression, self-control, and narcissistic tendencies might make certain individuals more susceptible to developing an addiction to online games. This study provides knowledge implications for parents, teachers, government, and future researchers about the importance of narcissism and self-control in the above relationship. The findings may provide awareness to the public and professionals about the risk factors that are linked to behavior issues of adolescents, thereby designing proper programs to tackle them.

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Conflict of Interest

None.

References

1. Li S, Wu Z, Zhang Y, Xu M, Wang X, Ma X. Internet gaming disorder and aggression: A meta-analysis of teenagers and young adults. *Front Public Health*. 2023;11:1111889.
2. Fam JY. Prevalence of internet gaming disorder in adolescents: A meta-analysis across three decades. *Scand J Psychol*. 2018;59(5):524-31.
3. Aziz N, Nordin MJ, Abdulkadir SJ, Salih MMM. Digital addiction: systematic review of computer game addiction impact on adolescent physical health. *Electronics*. 2021;10(9):996.
4. Begum F, Uddin MK, Parmita P, Sultana M. Game Addiction Predicting Anger and Disruptive Behavior among Adolescents in Dhaka City. *Dhaka University Journal of Psychology*. 2019;41:71-9.

5. Di Blasi M, Giardina A, Coco GL, Giordano C, Billieux J, Schimmenti A. A compensatory model to understand dysfunctional personality traits in problematic gaming: The role of vulnerable narcissism. *Pers Individ Dif*. 2020;160:109921.
6. Amad S, Gray NS, Snowden RJ. Self-Esteem, Narcissism, and Aggression: Different Types of Self-Esteem Predict Different Types of Aggression. *J Interpers Violence*. 2021;36(23-24):Np13296-np313.
7. Quancai L, Meng C, Kunjie C. Social control and self-control: factors linking exposure to domestic violence and adolescents' Internet gaming addiction. *Front Psychiatry*. 2023;14:1245563.
8. Zashchirinskaia O, Isagulova E. Childhood Trauma as a Risk Factor for High Risk Behaviors in Adolescents with Borderline Personality Disorder. *Iran J Psychiatry*. 2023;18(1):65-71.
9. Zahrai K, Veer E, Ballantine PW, Peter de Vries H. Conceptualizing self-control on problematic social media use. *AMJ*. 2022;30(1):74-89.
10. Fatfouta R, Rogoza R, Brud PP, Rentzsch K. Too tempting to resist? Self-control moderates the relationship between narcissism and antisocial tendencies. *J Res Pers*. 2022;96:104156.
11. Addo PC, Fang J, Kulbo NB, Gumah B, Dagadu JC, Li L. Violent Video Games and Aggression Among Young Adults: The Moderating Effects of Adverse Environmental Factors. *Cyberpsychol Behav Soc Netw*. 2021;24(1):17-23.
12. Tang WY, Reer F, Quandt T. The interplay of gaming disorder, gaming motivations, and the dark triad. *J Behav Addict*. 2020;9(2):491-6.
13. Vega A, Cabello R, Megías-Robles A, Gómez-Leal R, Fernández-Berrocal P. Emotional Intelligence and Aggressive Behaviors in Adolescents: A Systematic Review and Meta-Analysis. *Trauma Violence Abuse*. 2022;23(4):1173-83.
14. Mohammadi MR, Ahmadi N, Khaleghi A, Mostafavi SA, Kamali K, Rahgozar M, et al. Prevalence and Correlates of Psychiatric Disorders in a National Survey of Iranian Children and Adolescents. *Iran J Psychiatry*. 2019;14(1):1-15.
15. Sohrabivafa M, Tosang MA, Molaei Zadeh SZ, Goodarzi E, Asadi ZS, Alikhani A, et al. Prevalence of Risky Behaviors and Related Factors among Students of Dezful. *Iran J Psychiatry*. 2017;12(3):188-93.
16. Kayan Ocakoğlu B, Kafalı HY, Ocakoğlu FT, Kardaş B, Kardaş Ö, Işık A, et al. Relations of Childhood Trauma and Emotional Dysregulation with Suicide Ideation and Suicidal Behaviour Severity in a Clinical Sample of Depressive Female Adolescents. *Iran J Psychiatry*. 2023;18(4):443-54.
17. Gini G, Thornberg R, Bussey K, Angelini F, Pozzoli T. Longitudinal Links of Individual and Collective Morality with Adolescents' Peer

- Aggression. *J Youth Adolesc.* 2022;51(3):524-39.
18. Hayes NL, Lloyd-Richardson EE, Marsee MA. Correlates of relational and physical aggression among peers and dating partners in a College Sample. *J Child Fam Stud.* 2021;30(7):1697-711.
 19. Le DT, Huynh SV, Vu TV, Dang-Thi NT, Nguyen-Duong BT, Duong KA, et al. Personality Traits and Aggressive Behavior in Vietnamese Adolescents. *Psychol Res Behav Manag.* 2023;16:1987-2003.
 20. Heng CJ, Rabbani M. The Relationship between Gaming Addiction, Aggressive Behaviour and Narcissistic Personality Traits among University Students in Malaysia. *Indian J Public Health Res Dev.* 2020;11(5).
 21. Ayadi N, Pireinaladin S, Shokri M, Dargahi S, Zarein F. Investigating the Mediating Role of Procrastination in the Relationship between Positive and Negative Perfectionism and Mobile Phone Addiction in Gifted Students. *Iran J Psychiatry.* 2021;16(1):30-55.
 22. Liu Y, Wang Q, Jou M, Wang B, An Y, Li Z. Psychometric properties and measurement invariance of the 7-item game addiction scale (GAS) among Chinese college students. *BMC Psychiatry.* 2020;20(1):484.
 23. Manapat PD, Edwards MC, MacKinnon DP, Poldrack RA, Marsch LA. A Psychometric Analysis of the Brief Self-Control Scale. *Assessment.* 2021;28(2):395-412.
 24. Fung SF, Kong CYW, Huang Q. Evaluating the Dimensionality and Psychometric Properties of the Brief Self-Control Scale Amongst Chinese University Students. *Front Psychol.* 2020;10:2903.
 25. Thomaes S, Stegge H, Bushman BJ, Olthof T, Denissen J. Development and validation of the childhood narcissism scale. *J Pers Assess.* 2008;90(4):382-91.
 26. Abd Ghani I, Rozubi NC. Content Validity and Reliability of Buss and Perry Aggressive Questionnaire (BPAQ) Inventory. *International Journal of Education, Psychology and Counseling.* 2020;5(37):297-303.
 27. Maxwell JP. Development and preliminary validation of a Chinese version of the Buss-Perry Aggression Questionnaire in a population of Hong Kong Chinese. *J Pers Assess.* 2007;88(3):284-94.
 28. Caner N, Evgin D. Digital risks and adolescents: The relationships between digital game addiction, emotional eating, and aggression. *Int J Ment Health Nurs.* 2021;30(6):1599-609.
 29. T'Ng S T, Ho KH, Sim DE, Yu CH, Wong PY. The mediating effect of Internet gaming disorder's symptoms on loneliness and aggression among undergraduate students and working adults in Malaysia. *Psych J.* 2020;9(1):96-107.
 30. Dowsett A, Jackson M. The effect of violence and competition within video games on aggression. *Comput Human Behav.* 2019;99:22-7.
 31. Yilmaz R, Sulak S, Griffiths MD, Yilmaz FGK. An exploratory examination of the relationship between internet gaming disorder, smartphone addiction, social appearance anxiety and aggression among undergraduate students. *J Affect Disord Rep.* 2023;11:100483.
 32. Zandi Payam A, Mirzaeidoostan Z. Online game addiction relationship with cognitive distortion, parenting style, and narcissistic personality traits in students. *Iran J Psychiatry Clin Psychol.* 2019;25(1):72-83.
 33. Nawaz MW, Nadeem T, Rao SL, Fatima T, Shoaib S. Impact of PUBG game addiction on social isolation and narcissistic tendencies among gamers. *AJSSMS.* 2020;7(3):166-72.
 34. Çevik O, Koçak O, Younis MZ, Çevik E. The Mediating Role of Gaming Disorder in the Effect of Narcissism on Happiness in Children. *Int J Environ Res Public Health.* 2021;18(13):7137.
 35. Kjærviik SL, Bushman BJ. The link between narcissism and aggression: A meta-analytic review. *Psychol Bull.* 2021;147(5):477-503.
 36. Afriwilda M, Wibowo ME. Craving For Game Online Game Addiction And Its Association With Self-Control On High School Students. *EJPR Vol.* 2020;7(2).
 37. Jeong H, Yim HW, Lee SY, Lee HK, Potenza MN, Jo SJ, et al. Low self-control and aggression exert serial mediation between inattention/hyperactivity problems and severity of internet gaming disorder features longitudinally among adolescents. *J Behav Addict.* 2020;9(2):401-9.
 38. Chang E, Kim B. School and individual factors on game addiction: A multilevel analysis. *Int J Psychol.* 2020;55(5):822-31.
 39. Azami MS, Taremian F. Risk Factors Associated with Cyberbullying, Cybervictimization, and Cyberbullying-Victimization in Iran's High School Students. *Iran J Psychiatry.* 2021;16(3):343-52.
 40. Zhou X, Xing J. The relationship between college students' online game addiction, family function and self-control. *Health.* 2021;13(9):910-9.
 41. Lei H, Chiu MM, Quan J, Zhou W. Effect of self-control on aggression among students in China: A meta-analysis. *Child Youth Serv Rev.* 2020;116:105107.
 42. Keatley D, Allom V, Mullan B. The effects of implicit and explicit self-control on self-reported aggression. *Pers Individ Dif.* 2017;107:154-8.
 43. Gao-Cheng L, Qiu-Han Y, Jia-Rong C, Zhen-Hua L, Yan-Gang Z. The relationship between social exclusion and impulsive buying of college students: the mediating role of celebrity worship and the moderating role of self-control. *Journal of Psychological Science.* 2022;45(3):657.
 44. Agustarika B, Adam A. The effect of online gaming addiction on violent behavior of high school students in Sorong City. *Age (Years).* 2020;75(70.7):29.3.
 45. Devilly GJ, O'Donohue RP, Brown K. Personality and frustration predict aggression

- and anger following violent media. *Psychology, crime & law*. 2023;29(1):83-119.
46. Olejarnik SZ, Romano D. Is playing violent video games a risk factor for aggressive behaviour? Adding narcissism, self-esteem and PEGI ratings to the debate. *Front Psychol*. 2023;14:1155807.
47. Osgood JM, Muraven M. Does counting to ten increase or decrease aggression? The role of state self-control (ego-depletion) and consequences. *J Appl Soc Psychol*. 2016;46(2):105-13.
48. Pechorro P, Marsee M, DeLisi M, Maroco J. Self-control and aggression versatility: moderating effects in the prediction of delinquency and conduct disorder among youth. *J Forensic Psychiatry Psychol*. 2021;32(6):949-66.