



Awareness of Responsibility and Internet Gaming Addiction: The Mediating Role of Cognitive Emotion Regulation Strategies

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Abstract. Objective: This study explores the relationship between self-awareness of responsibility, internet gaming addiction, and cognitive emotion regulation strategies among private university students. Methods: We used cluster random sampling to select 762 students across all academic years from two private universities in Guangzhou for questionnaire survey. Data Collection: We collected data using demographic questionnaires, internet gaming addiction scales, responsibility awareness surveys, and cognitive emotion regulation strategy questionnaires. Results: Positive emotion regulation strategies showed a strong negative correlation with internet gaming addiction ($r_s=-0.445$, $p<0.001$) and a positive correlation with responsibility awareness ($r_s=0.5534$, $p<0.001$). Conversely, negative emotion regulation strategies were significantly positively correlated with internet gaming addiction ($r_s=0.649$, $p<0.001$) and negatively with responsibility awareness ($r_s=-0.431$, $p<0.001$). The mediating model revealed that negative cognitive emotion regulation strategies partially mediated the relationship between responsibility awareness and internet gaming addiction, with an indirect effect size of -0.238 . Conclusion: Cultivating robust self-awareness of responsibility and effective emotional regulation strategies can mitigate the impact of internet gaming addiction among private university students.

Keywords: Internet addiction; Awareness of responsibility; Cognitive emotion regulation strategies; Mediating effects

1 Introduction

In recent years, private education in China has advanced rapidly, providing a vast pool of skill-oriented talent and fostering social progress. However, the prevalence of internet gaming addiction (IGA) among private university students, attributed to their poor self-discipline and relatively free lifestyle, has increased. Without targeted educational guidance, this addiction could severely impact students' academic performance and potentially lead to depression, behavioral disorders, social dysfunctions, suicidal tendencies, and juvenile delinquency. As political and ideological educators in universities, it is crucial to focus on internet addiction and guide young students to use the internet

correctly and rationally. This is pivotal in reducing the risk of internet gaming addiction and promoting the educational effectiveness in private universities.

In May 2019, the World Health Organization officially classified Internet Gaming Disorder (IGD) as a mental health condition. IGD is characterized by excessive and uncontrolled online gaming that may lead to severe psychological and physiological complications, such as depression, anxiety, compulsive behavior, and in severe cases, suicide. According to the August 2021 "Statistical Report on Internet Development in China," 50.4% of Chinese internet users engaged in online gaming. Notably, the report indicates that among these gamers, adolescents exhibit a high prevalence of IGD, at 17%. This highlights the significance of Internet Gaming Disorder as a major public health concern in China (Cimino & Cerniglia, 2018).

The I-PACE (Interaction of Person-Affect-Cognition-Execution) model posits that the 'P' component—encompassing personality traits, motivations, and early childhood experiences—acts as a vulnerability factor for behavioral addictions. This component of the model underscores how various personality traits correlate with specific types of behavioral addictions. For instance, individuals exhibiting high novelty-seeking tendencies are frequently predisposed to gambling addictions, while those with materialistic values tend to develop shopping addictions^[1]. Notably, the personality trait of responsibility consciousness, when diminished, manifests as low self-discipline and an inability to be motivated to complete necessary tasks. Extensive research has identified a lack of responsibility consciousness as a significant predictor of Internet Gaming Disorder (IGD). Nonetheless, the precise nature of the relationship between responsibility consciousness and online gaming addiction continues to be elusive, indicating a complex interplay that warrants further investigation.

Cognitive emotion regulation strategies involve intentionally altering thoughts to manage emotions in response to negative or stressful situations. These strategies, particularly negative cognitive emotion strategies (NCES), significantly influence how individuals react and adapt to social stimuli, often triggering adverse emotional responses. Individuals with emotional dysregulation tend to engage in compulsive behaviors and utilize maladaptive coping strategies to handle negative emotions^[2]. The I-PACE model highlights the mediating role of affective and cognitive factors in behavioral addiction, suggesting complex interactions among personal traits and emotional responses. This study investigates the impact of low responsibility consciousness on online game addiction in college students and analyzes the mediating effects of NCES. The findings provide empirical evidence supporting effective strategies for preventing and intervening in online game addiction, offering insights into the nuanced mechanisms that underlie behavioral addictions and paving the way for targeted interventions.

2 Method

2.1 Object

From February to May 2024, this study utilized random cluster sampling to recruit students across all academic years at two private universities in Guangzhou for participation in a survey. To ensure the integrity of the data, participants were briefed on the

objectives, requirements, and confidentiality of the study, ensuring that responses were provided truthfully. The survey was structured into four sections: a demographic questionnaire, an internet addiction scale, a responsibility awareness survey, and a cognitive emotion regulation strategy questionnaire. Following the exclusion of incomplete and invalid responses, a total of 762 valid responses were retained. The primary characteristics of the valid respondents are detailed in Table 1.

Table 1. Descriptive Statistical Analysis of Valid Participants.

Category	Option	Frequency	Percentage (%)
Held leadership roles	Yes	404	53
	No	358	47
Household location	Rural	419	55
	Urban	343	45
Only child	Yes	122	16
	No	640	84
Academic Year	Freshman	160	21
	Sophomore	297	39
	Junior	244	32
Gender	Senior	61	8
	Male	663	87
	Female	99	13
Total		762	100

2.2 Tools

Demographic Questionnaire. This tool captures essential demographic information, including gender, academic year, leadership roles, household registration type, and only-child status. It is crucial for contextualizing the behavioral data within specific socio-demographic groups.

Internet Gaming Disorder Scale. Developed by Petry et al. [3], this instrument evaluates the nine DSM-5 criteria for internet gaming addiction. It exhibits robust content validity (0.74) and utilizes a 5-point rating scale, where higher scores signify more severe addiction levels. For this study, the Cronbach's alpha coefficient was recorded at 0.71, indicating good internal consistency.

Responsibility Awareness Survey. Crafted by Luo Xiangqun, this survey assesses responsibility awareness and has been validated with good reliability among Chinese college students^[4]. It comprises 40 items, rated on a 5-point scale, where higher scores reflect enhanced responsibility awareness. The retest reliability Cronbach's alpha coefficient was high at 0.806^[10].

4	0.461***	0.428***	0.298***	1							
5	0.24**	0.091	-0.001	0.64***	1						
6	-0.061	-0.381***	-0.281***	0.04	0.424***	1					
7	0.147	0.615***	0.192*	0.344***	0.16	-0.144	1				
8	-0.079	-0.219**	-0.313***	0.276***	0.301***	0.323***	0.148	1			
9	-0.240**	-0.278***	-0.375***	-0.117	0.256**	0.736***	0.061	0.228**	1		
10	-0.432***	-0.470***	-0.482***	0.124	0.225**	0.514***	-0.22**	0.563***	0.513***	1	
11	0.542***	0.563***	0.547***	0.335***	0.004	-0.465***	0.238**	-0.427***	-0.609***	-0.726***	1

Note: The symbols ***, **, and * indicate significance levels of 1%, 5%, and 10%, respectively. The variables are as follows: 1.Self-blame 2.Catastrophizing 3.Blaming others 4.Rumination 5.Positive refocusing 6.Refocus on planning 7.Rational analysis 8.Acceptance 9.Positive reappraisal 10.Responsibility awareness 11.Internet addiction.

To explore the mediating role of cognitive emotion regulation strategies between responsibility awareness and internet gaming addiction, this study utilized a bias-corrected nonparametric percentile Bootstrap method. We applied the PROCESS macro Model 4 (a simple mediation model) in SPSS and conducted 5000 bootstrap samples to assess the mediation effects^[6]. Descriptive statistics and correlation analyses were first conducted for all variables. The findings revealed significant correlations between internet gaming addiction and both types of emotion regulation strategies. Likewise, responsibility awareness was significantly correlated with both emotion regulation strategies and internet gaming addiction. Detailed results are provided in Table 3.

Table 3. Descriptive Statistics and Correlation Analysis within the Mediation Model (N=762).

	Positive Emotion Regulation Strategies	Negative Emotion Regulation Strategies	Internet Gaming Addiction	Responsibility Awareness
Positive Emotion Regulation Strategies	1			
Negative Emotion Regulation Strategies	-0.049	1		
Internet Gaming Addiction	-0.445***	0.64***	1	
Responsibility Awareness	0.534***	-0.431***	-0.726***	1

Note: The significance levels are indicated as follows: ***p < 0.01, **p < 0.05, *p < 0.10.

Given the stronger relationships between negative emotion regulation strategies with both internet gaming addiction and responsibility awareness, these strategies were chosen as the mediator variable. The mediation model results (see Table 4) demonstrate that negative emotion regulation strategies significantly negatively predict internet gaming addiction ($\beta = -0.7587, t = -9.0702, p < 0.001$). When both negative emotion regulation strategies and responsibility awareness are included in the regression analysis, negative emotion regulation strategies continue to significantly negatively predict internet gaming addiction ($\beta = -0.5205, t = -6.3107, p < 0.01$). In contrast, responsibility

awareness significantly positively predicts internet gaming addiction ($\beta = 0.627, t = 8.496, p < 0.001$).

Table 4. Mediation Effects Test of Negative Cognitive Emotion Regulation Strategies (N=762).

Variable	Model 1		Model 2		Model 3	
	β	t	β	t	β	t
Negative Emotion Regulation Strategies	-0.379	-7.572***	-0.7585	-9.0702***	-0.521	-6.3107***
Responsibility Awareness					0.627	8.496
2	0.1153		0.276		0.1575	
F	57.3385		83.885		82.269	

Note: Model 1—Responsibility awareness predicts negative emotion regulation strategies. Model 2—Responsibility awareness predicts internet gaming addiction. Model 3—Combined prediction of internet gaming addiction by responsibility awareness and negative emotion regulation strategies. The symbols (***, **, *) represent significance levels at 1%, 5%, and 10%, respectively.

After standardizing variables such as negative emotion regulation strategies, responsibility awareness, online gaming addiction, and demographic factors, we utilized Model 4 from Hayes' PROCESS plugin for our analysis. In this model, responsibility consciousness was the independent variable, online gaming addiction was the dependent variable, and negative emotion regulation strategies served as the mediator. Control variables included gender, academic year, hometown, leadership roles, and only-child status. The analysis showed that responsibility consciousness had a significant direct negative effect on online gaming addiction ($\beta = -0.5205, p < 0.001$), with a 95% confidence interval that did not include 0 (LLCI = -0.6827, ULCI = -0.6497). Furthermore, the mediating role of negative emotion regulation strategies was statistically significant ($p < 0.001$), with a 95% confidence interval excluding 0 (LLCI = -0.3344, ULCI = -0.1897), accounting for 33.37% of the total effect. These results suggest that negative emotion regulation strategies partially mediate the relationship between responsibility consciousness and online gaming addiction. For detailed results, please refer to Table 5, and for a visual representation of the mediation model, see Figure 1.

Table 5. Total, Direct, and Mediating Effects Decomposition (N=762).

Item	Effect	p	95%CI	Proportion of Total Effect (%)
Total Effect	-0.7585	0.0000	[-0.9229 -0.5942]	
Direct Effect	-0.5205	0.0000	[-0.6827 -0.6497]	
Mediating Effect of Negative Emotion Regulation Strategies	-0.238	0.0000	[-0.3344 -0.1897]	33.37%

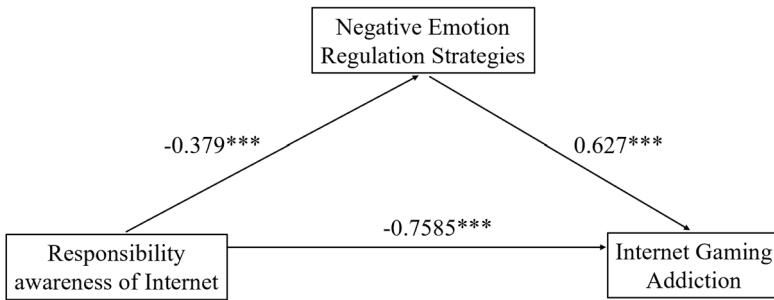


Fig. 1. The mediation effect model.

4 Conclusion

This study was based on the I-PACE model and developed a mediation model. The findings reveal that responsibility awareness negatively predicts internet gaming addiction; as responsibility awareness increases, the likelihood of gaming addiction decreases. Moreover, the mediating role of negative emotion regulation strategies in the relationship between college students' responsibility awareness and internet gaming addiction was found to be significant. This indicates that responsibility awareness can affect internet gaming addiction indirectly through the mediation of negative emotion regulation strategies.

4.1 Direct Impact of Responsibility Awareness on Internet Gaming Addiction

This study identified a significant negative correlation between responsibility awareness and internet gaming addiction. Higher responsibility awareness is linked to a reduced likelihood of gaming addiction, whereas lower responsibility levels increase the risk of addiction. This relationship may be explained by the interplay of various physiological, psychological, and social factors influencing addictive behaviors, including personality traits, which are recognized as both susceptible and sustaining factors in addiction^[7]. As a personality trait, responsibility awareness clearly impacts gaming addiction, making the enhancement of this trait in college students an effective strategy to combat internet addiction in today's digital environment.

4.2 Relationship Between Internet Gaming Addiction and Cognitive Emotion Regulation Strategies

This study found that negative emotion regulation strategies are positively correlated with internet gaming addiction, indicating that poor emotion regulation is a risk factor for addictive behaviors. Conversely, positive emotion regulation strategies are negatively correlated with gaming addiction, suggesting that effective emotional regulation can help prevent internet gaming addiction. These findings are consistent with Wu et

al.^[9], who reported that negative emotions are significantly associated with internet addiction and can predict its onset. Similarly, Liang et al.^[8] found that individuals with internet addiction are more likely to use negative emotion regulation strategies, which can lead to depression and anxiety, whereas non-addicts tend to employ positive strategy.

4.3 Mediating Role of Cognitive Emotion Regulation Strategies

Based on the I-PACE model, this study revealed that negative cognitive emotion regulation strategies partially mediate the relationship between responsibility awareness and internet gaming addiction, with an indirect effect size of -0.238. Therefore, emotion regulation strategies serve as a reliable indicator for assessing the tendency towards internet addiction. Responsibility awareness, as a personality trait, also plays a predictive role in internet gaming addiction.

5 Inspiration

5.1 Prevention as Priority and Seeking Professional Help

Counselors should actively monitor students' on-campus behavior, particularly those showing signs of internet addiction or low responsibility awareness, and provide timely intervention. Regular discussions should be conducted to better understand their situations, using psychological crisis interventions such as cognitive-behavioral therapy, rational emotive behavior therapy, and counseling to help them correct erroneous beliefs and establish new life goals. For students with significant psychological issues, immediate referral to the school's mental health center for professional help is essential. Regular follow-ups with mental health professionals to monitor the student's psychological state are advised. Additionally, enriching campus cultural activities and offering alternatives to online engagement can help students build relationships and interpersonal skills, ultimately serving as a preventive measure.

5.2 Bridging Family and School

The family environment is pivotal in adolescent development. Sudden changes at home can trigger abrupt behavioral shifts in children, often reflecting underlying family issues.

When counselors observe students in distress, they should promptly engage with parents to foster understanding and cooperation, offering guidance tailored to the family's unique dynamics, and act as a conduit for communication between home and school. It is also crucial to promote patience, understanding, and support among peers and class officers. Successfully addressing internet addiction requires a cohesive support network comprising family, friends, and school.

5.3 Leveraging External Resources for Academic Success

Students grappling with internet addiction often encounter academic difficulties. Addressing these challenges requires external support and coordinated efforts to enhance effectiveness and achieve desired outcomes. In addition to pairing them with academically strong peers, it is crucial to proactively engage teachers in discussions about individual student situations. This support should extend beyond the classroom, encompassing both online and offline assistance to address educational gaps. Additionally, strengthening career planning education from the freshman year is essential to help students establish clear life goals and prepare for future employment challenges. This ensures they have access to job opportunities and fosters continuous learning and active job-seeking.

5.4 Creating a Supportive Environment and Peer Leadership

Internet addicts often face greater challenges in social interactions and adapting to societal norms due to their deep immersion in virtual worlds. To address this, roommates, class officers, and party members should be made aware of these students' situations to promote proactive engagement. Encouraging their involvement in class activities and providing daily life support allows peers to play a crucial role in their recovery.

The rapid growth of private education in China has produced many skilled talents, contributing to societal progress. However, the independence and numerous online temptations can increase the risk of addiction among private college students, making targeted educational guidance essential to prevent potential negative outcomes such as depression, behavioral disorders, and even criminal behavior. This study's confirmation of the mediating role of emotion regulation strategies between responsibility awareness and internet gaming addiction underscores the importance of addressing gaming addiction in educational settings, enhancing students' emotional regulation skills, and fostering a sense of responsibility to effectively reduce their addiction risk.

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