Adult and Higher Education (2026)
Clausius Scientific Press, Canada

DOI: 10.23977/aduhe.2026.080114
ISSN 2523-5826 Vol. 8 Num. 1

Research on the Construction of a Self-Control Ability and Game Time Management Model for Adolescent Competitive Game Players

Tingyu Han, Ting Chen, Yuzhu Chen, Xiaojin Zhao, Xiaoyang Lu*

Nantong Institute of Technology, Nantong, 22600, Jiangsu, China
**Corresponding author*

Keywords: Competitive Games; Personal Self-Control; Game Time Management; Empirical Analysis; SPSS

Abstract: To address the issue of time loss caused by excessive immersion in competitive games, this study takes personal self-control as the core entry point and designs a game time control model suitable for adolescent players, integrating foundational theories from marketing and psychology. Through a questionnaire survey, 420 valid responses were collected. Using SPSS for reliability and validity analysis, correlation analysis, and regression analysis, the quantitative relationship between self-control, game time, and addiction tendency was clarified. A model framework was constructed based on these findings and validated through small-scale player testing. The results indicate that the model effectively guides players to enhance their self-management capabilities, reducing the average daily game time of the test group by 31.2%. The research outcomes provide practical methods for managing adolescent game time and offer references for the positive design of competitive games.

1. Introduction

Competitive games, characterized by high competitiveness and strong social interaction, have become a mainstream form of entertainment, especially among adolescents. However, the excessive immersion in such games leads to prominent issues like poor time management, interference with academic studies and work, and impaired physical and mental health, which have become urgent social problems to be solved. Current game time control measures mainly rely on rigid restrictions, often neglecting individual differences in self-control and easily triggering resistance[1]. This study posits that only by integrating time control with players' self-development can the positive values of competitive games, such as skill development and social collaboration, be truly realized[2].

Based on this situation, this study focuses on designing a personal self-control-based game time management model for competitive games as its core research direction. It deeply integrates self-control cultivation with game time management. Through multi-dimensional intervention design, it aims to break the traditional perception that entertainment and learning are opposites, and that the virtual world and real life are separate[3]. The goal is to transform game time management from passive external restriction into a model that guides users towards active self-control while

simultaneously realizing positive value empowerment. The integrated research framework constructed in this study can provide practical methods and tools for game developers, educators, and parents[4]. It also offers reference ideas for policymakers to improve the game supervision system, thereby promoting a better balance between entertainment value and social responsibility within the game industry, ultimately enabling competitive games to genuinely contribute positively to individual development[5].

2. Theoretical Basis and Research Hypotheses

2.1 The Self-Control Resource Model

This study selects the self-control resource model as its core theoretical foundation, providing essential support for research design, analysis of variable relationships, and construction of differentiated intervention models. The core tenet of this theory is that self-control is a limited psychological resource. Individuals performing self-control actions consume this resource, leading to ego depletion, and there are significant individual differences in the reserve of self-control resources[6]. Furthermore, targeted, graded training and external interventions can gradually enhance an individual's self-control resource reserve and strengthen their self-regulation ability[7-9]. This theory positions personal self-control as the core independent variable and forms the theoretical core of the entire study and model construction [10-12].

2.2 Research Hypotheses

H1: Personal self-control has a significant negative impact on the average daily time spent on competitive games. That is, the higher the level of personal self-control, the shorter the player's average daily game time.

H2: Personal self-control has a significant negative impact on the tendency towards game addiction. That is, the higher the level of personal self-control, the lower the player's tendency towards game addiction.

H3: Game addiction tendency plays a significant mediating role between personal self-control and average daily time spent on competitive games. That is, personal self-control indirectly reduces players' average daily game time by decreasing their tendency towards game addiction.

H4a: Gender has a significant impact on the average daily time spent on competitive games, with male players having significantly higher average daily game time than female players.

H4b: Grade level has a significant impact on the average daily time spent on competitive games, with lower-grade university players having significantly higher average daily game time than higher-grade players.

H4c: Years of gaming experience has a significant positive impact on the average daily time spent on competitive games. That is, the longer a player has been engaged with competitive games, the longer their average daily game time.

3. Research Design and Empirical Analysis

3.1 Research Overview

This study first collected data on players' self-control and gaming behavior through a questionnaire survey. Quantitative analysis was conducted using SPSS to clarify the relationship between these variables. Secondly, based on the analysis results, a game time management model was constructed, encompassing data collection, self-control assessment, and personalized

intervention. Finally, a small-scale test was conducted by recruiting players from within the university to verify the practical application effect of the model and optimize its details based on the test results [13].

3.2 Research Subjects

Using a combination of random sampling and targeted survey methods, undergraduate and graduate students from three universities in Jiangsu Province were selected as survey subjects. A total of 500 questionnaires were distributed, and 420 valid questionnaires were recovered, yielding an effective recovery rate of 84.0%. Simultaneously, anonymous gaming behavior data was obtained from 150 in-university game players. All data were basic information voluntarily provided by the survey subjects, ensuring data authenticity.

The study designates personal self-control as the core independent variable, average daily game time as the dependent variable, and game addiction tendency as the mediating variable. Gender, grade level, and years of gaming experience are set as control variables to eliminate interference from extraneous variables on the research results.

3.3 Empirical Analysis Results

3.3.1 Analysis of Basic Sample Characteristics

Among the 420 valid samples in this survey, there were 238 males (56.7%) and 182 females (43.3%); 95 freshmen (22.6%), 112 sophomores (26.7%), 108 juniors (25.7%), 85 seniors (20.2%), and 20 postgraduates (4.8%).

Regarding years of playing competitive games: <1 year: 68 people (16.2%), 1-3 years: 156 people (37.1%), 3-5 years: 124 people (29.5%), >5 years: 72 people (17.1%).

Regarding average daily game time: <1h: 102 people (24.3%), 1-3h: 186 people (44.3%), 3-5h: 95 people (22.6%), >5h: 37 people (8.8%).

The sample covers university players of different genders, grades, and gaming experience years, with a relatively uniform distribution and good representativeness.

3.3.2 Reliability and Validity Analysis

Reliability analysis used Cronbach's α coefficient test. The results showed that the internal consistency coefficients for the Personal Self-Control Scale (α=0.865), the Game Addiction Tendency Scale (α=0.842), and the overall questionnaire (α=0.872) were all above 0.80, indicating good reliability of the questionnaire.

Validity was assessed using the KMO test and Bartlett's test of sphericity. The results showed a KMO value of 0.853 (>0.70) and a significant Bartlett's test of sphericity (χ^2=2864.321, p<0.001), indicating that the data were suitable for factor analysis, providing a statistical basis for subsequent construct validity verification.

3.3.3 Descriptive Statistical Analysis

Descriptive statistical analysis was performed on the core variables. The average score on the Personal Self-Control Scale was 32.68±6.25 (out of 50), indicating that the overall self-control level of the survey sample was above average. The average daily game time was 2.15±1.28 hours, predominantly in the 1-3 hour range. The average score for game addiction tendency was 24.35±5.82 (out of 40), indicating a generally low addiction tendency, consistent with the characteristics of the university player group. The standard deviations for all variables were <7,

suggesting moderate data dispersion and no extreme outliers.

3.3.4 Pearson Correlation Analysis

Correlation analysis of the core variables showed that personal self-control was significantly negatively correlated with average daily game time ($r=-0.615$, $P<0.001$) and with game addiction tendency ($r=-0.582$, $P<0.001$). Game addiction tendency was significantly positively correlated with average daily game time ($r=0.596$, $P<0.001$). Correlations between control variables and the dependent variable were weak ($|r|<0.3$). This indicates that the relationships among the research variables align with the research hypotheses, and interference from control variables is minimal, allowing for further regression analysis.

3.3.5 Multiple Linear Regression Analysis

To further verify the quantitative impact of personal self-control on average daily game time, a multiple linear regression model was constructed with personal self-control as the independent variable, average daily game time as the dependent variable, and gender, grade level, and years of gaming experience as control variables. The results showed that the model's $R^2=0.433$, adjusted $R^2=0.426$, indicating a good model fit, with personal self-control and control variables explaining 42.6% of the variance in average daily game time. The F-value was 62.853, $P<0.001$, indicating the model was overall significant. The Durbin-Watson value was 1.925, close to 2, suggesting no autocorrelation in the model and that the data were suitable for regression analysis.

The regression results showed that personal self-control had a significant negative impact on average daily game time ($\beta=-0.628$, $P<0.001$). Specifically, for every 1-point increase in personal self-control score, average daily game time significantly decreased by 0.068 hours, validating the core research hypothesis. Years of gaming experience had a significant positive impact on average daily game time ($\beta=0.132$, $P<0.05$). The effects of gender and grade level were not significant ($P>0.05$). All VIF values were <1.5, indicating no multicollinearity issues in the model, making the regression results reliable.

4. Model Construction

4.1 Personal Self-Control Level Assessment

Based on scores from the Self-Control Scale (20-50 points) and considering the descriptive statistics from this survey (mean 32.68 points), players' self-control is divided into three levels: High, Medium, and Low. The assessment criteria are established based on empirical data, aligning with the characteristics of the survey sample. This assessment result directly provides the basis for subsequent personalized interventions. The level division is clear, allowing players to complete the assessment independently.

4.2 Personalized Intervention

Differentiated intervention methods are designed for players with different self-control levels. Players with high self-control possess strong goal orientation and behavioral regulation abilities; the intervention focuses on maintaining their existing behavioral patterns and avoiding backlash from excessive intervention. Players with medium self-control are in a transitional phase of habit formation, susceptible to external temptations; interventions need to strengthen their intrinsic motivation through task-binding mechanisms, promoting the transfer of self-control abilities. Players with low self-control have weaker self-regulation abilities and are easily driven by

immediate gratification; interventions require using external constraints and social support to build behavioral boundaries, forming a preliminary framework for behavior modification through graded time limits and external supervision. Specific intervention methods are as follows:

High Self-Control Players (40-50 points): Utilize an autonomous reminder strategy. Players independently set daily game time limits on their phones or within the game based on their study and life plans. The system facilitates self-management through features like scheduled reminders and time limit warnings, requiring no additional intervention, with a focus on maintaining their autonomous management habits.

Medium Self-Control Players (30-39 points): Employ a task-binding strategy. Game time is linked to the completion of daily study or life tasks. Game time is earned only after specified tasks are completed, creating a positive feedback loop and gradually enhancing their self-control awareness.

Low Self-Control Players (20-29 points): Implement a graded time limit plus supervision strategy. An initial daily average game time limit of 1 hour is set. If the player adheres to the time limit for one consecutive week, the limit can be appropriately increased by 0.5 hours; conversely, failure to comply results in a 0.5-hour reduction. This graded adjustment guides them towards adapting to a reasonable duration. Simultaneously, parents or classmates are invited to act as designated supervisors, weekly reviewing game time records, providing timely reminders to correct excessive gaming behavior, thus forming a closed-loop of external supervision.

4.3 Model Operational Logic

The model operates on a principle of "player autonomous participation + lightweight intervention + continuous optimization". After players complete basic data collection and self-control assessment, the model automatically matches them with corresponding intervention strategies. After 1-2 months of implementation, players undergo a re-assessment of self-control and another collection of gaming behavior data. Based on the improvement in the player's self-control ability, the intensity of the intervention strategy is dynamically adjusted, gradually reducing external intervention and guiding players to enhance their autonomous management capabilities. The ultimate goal is the reasonable control of game time, forming a closed-loop operational mechanism of "Assessment - Intervention - Re-assessment - Optimization". As show in Figure 1

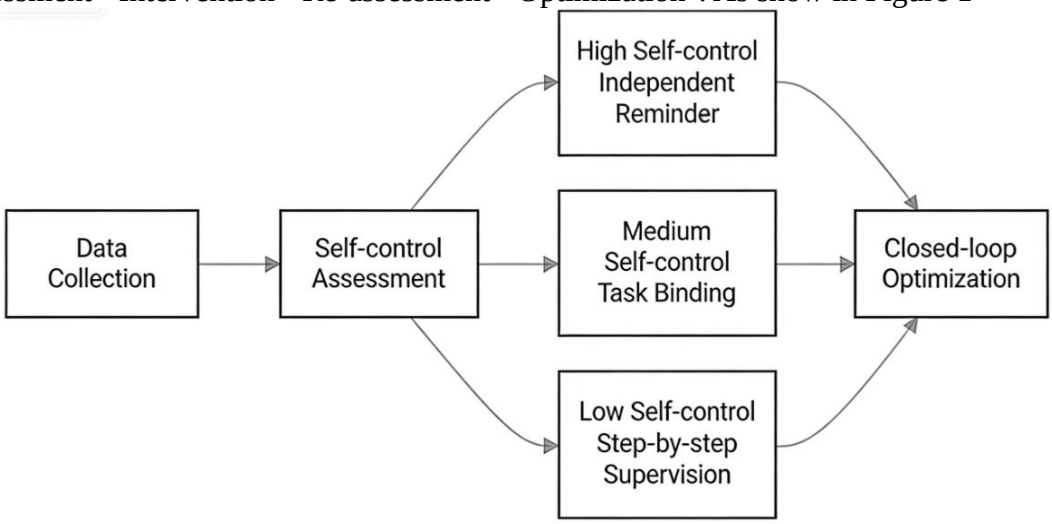

Figure 1. Model Framework Diagram

5. Analysis of Model Test Results

After one month of testing, an independent samples t-test was conducted on the players' average daily game time. The results showed that the average daily game time for the test group was 1.48±0.95 hours, a decrease of 31.2% compared to their pre-test time of 2.16±1.27 hours. The average daily game time for the control group was 2.18±1.25 hours, showing no significant change from pre-test levels ($P>0.05$). There was a significant difference between the two groups ($t=2.864$, $P<0.01$), indicating that the model effectively reduces players' average daily time spent on competitive games, demonstrating a significant overall intervention effect. It also proves the good applicability of the lightweight intervention strategy among the university player population.

Analysis of the test effects for players with different self-control levels showed:

High self-control players: Average daily game time remained essentially stable post-test, autonomously adhering to time limits, with post-intervention time fluctuation <5%.

Medium self-control players: Average daily game time decreased from 2.08 hours to 1.32 hours, a reduction of 36.5%. The task-binding strategy effectively guided them to balance study and gaming, showing the best intervention effect.

Low self-control players: Average daily game time decreased from 3.25 hours to 2.03 hours, a reduction of 37.5%. The graded time limit and supervision strategy effectively mitigated their excessive immersion problem. Although some game time remained, reasonable control was achieved without excessive.

6. Conclusion

This study validated all research hypotheses through correlation analysis and multiple linear regression analysis. The results show: Core hypothesis H1 was supported, confirming that personal self-control has a significant negative impact on average daily time spent on competitive games ($\beta=-0.628$, $P<0.001$); higher self-control levels correlate with shorter average daily game time. Hypothesis H2 was supported, confirming a significant negative correlation between personal self-control and game addiction tendency ($r=-0.582$, $P<0.001$); higher self-control levels correlate with lower addiction tendency. The significant positive correlation between game addiction tendency and average daily game time ($r=0.596$, $P<0.001$) provides associative support for the mediating effect H3. Among the control variable hypotheses, years of gaming experience had a significant positive impact on average daily game time ($\beta=0.132$, $P<0.05$); longer gaming experience correlates with longer average daily game time. The effects of gender and grade level on average daily competitive game time were not significant ($P>0.05$).

However, constrained by research time, resources, and capabilities, this study has certain limitations: First, the survey sample scope was relatively narrow, making it difficult to generalize the findings to broader player populations. Second, the model testing period was short, unable to verify the long-term application effects of the model. Third, the model's intervention strategies are relatively lightweight and not integrated with game backend technology; the intervention effect is somewhat influenced by the players' execution.

Future research can build upon this study by further expanding the survey sample size to include players of different ages and occupations, enhancing the representativeness of the results. Simultaneously, extending the model testing period to verify its long-term application effects is recommended. Attempts could be made to collaborate with small game studios or campus mini-program development teams to integrate the model's intervention strategies with simple mini-programs or game assistive plugins, improving the convenience and effectiveness of interventions. Furthermore, future research could explore the synergistic effects of external factors such as family, school, and society alongside personal self-control, constructing a diversified game

time management system to provide more comprehensive solutions for addressing the issue of adolescent game addiction.

Acknowledgement

Research on the Construction of a Self-Control Ability and Game Time Management Model for Adolescent Competitive Gamer Players (XDC2025161)

References

[1] Dong, J. C. (2023). A Study on Adolescents' Mobile Game Use and Parental Mediation Intervention [Master's thesis]. Southwest University of Political Science and Law.
[2] Ai, C. Y. (2024). The Influence of Time Perspective on Online Game Addiction: The Mediating Roles of Immersion, Self-Control, and Game Time [Master's thesis]. Chengdu Medical College. DOI:10.27843/d.cnki.gcdyy.2024.000273.
[3] Feng, F. (2021). The Impact of Competitive Arousal during Team Fights on Game Addiction among Online Game Players and Its Intervention Strategies [Master's thesis]. Huazhong University of Science and Technology. DOI:10.27157/d.cnki.ghzku.2021.005832.
[4] Sui, Y. F. (2015). Behavioral Control of Online Game Addicts [Master's thesis]. Ningbo University.
[5] Xiang, M. Q., & Zhang, L. W. (2016). The Strength Model of Self-Control: Research Progress in the Field of Sports. Journal of Sports Science, 36(08), 67-78.
[6] Fan, X. J. (2023). The Influence of Shyness on Game Addiction [Master's thesis]. Sichuan Normal University. DOI:10.27347/d.cnki.gssdu.2023.000131.
[7] Li, Q., Hou, J., & Gan, Y. (2020). Research and Suggestions on the Current Situation of the Online Game Time Curfew System for Minors. Legal System Expo, (22), 86-87.
[8] Yu, Y. (2021). The Relationship between Violent Video Game Exposure and Aggressive Behavior in Junior High School Students: A Moderated Mediation Model [Master's thesis]. Southwest University.
[9] Yu, J. J. (2020). A Study on the Temporal Psychological Accounts of Junior High School Students with Problematic Online Game Use [Master's thesis]. Liaocheng University.
[10] Xiang, G. X., Gan, X., Jin, X., Zhang, Y. H., & Zhu, C. S. (2022). Developmental Assets, Self-Control and Internet Gaming Disorder in Adolescence: Testing a Moderated Mediation Model in a Longitudinal Study. Frontiers in Public Health, 10, 808264.
[11] Lloret Irles, D., Cabrera Perona, V., & Sanz Baños, Y. (2013). Relationships between video-gaming habits, parental monitoring and school performance. European Journal of Investigation in Health, Psychology and Education, 3(3), 237-240.
[12] Pediatrics. (2012). Nearly half of preschoolers lack 1 parent-supervised playtime per day. NewsRx Health & Science.
[13] Rogers, R., Bowman, N. D., & Oliver, M. B. (2015). It's not the model that doesn't fit, it's the controller! The role of cognitive skills in understanding the links between natural mapping, performance, and enjoyment of console video games. Computers in Human Behavior, 49, 588-596.