

Parental Behaviors, Self-Esteem, and Adolescent Online Game Addiction: Mediating Roles of Self-Control and Sense of Life Meaning

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Abstract. The problem of teenagers' addiction to online games has drawn widespread attention from society. Current research has confirmed that parental parenting behaviours and an individual's level of self-esteem are the factors influencing this issue. However, a full analysis remains necessary to understand the underlying mechanisms of this issue and the characteristic differences between various groups. This study presents several findings that negative parenting styles and low self-esteem significantly increase the risk of online gaming addiction among teenagers, while positive parenting styles play a protective role against addictive behaviors. In the relationship between parenting behaviors, self-esteem levels and internet game addiction, self-control ability and the sense of life meaning play an important intermediate role. Moreover, the interrelations of the variables are marked by group differences and heterogeneity of cultures. It also preaches the development of a home-school interaction system to take specific intervention actions. These suggestions constitute practical concepts of intervening in the addiction to online games in adolescents. In addition, this paper identifies the research directions which will definitively confirm the causality of the relationship between variables and their long-term impacts.

1 Introduction

With the rapid evolution of the virtual era, computer games have become an inseparable thing in the lives of teenagers. Nonetheless, internet addiction caused by online games has somehow risen to be a significant social issue. Not only does it lead to deterioration of the physical and mental health of adolescents, but it has a multifaceted adverse effect on the scholastic activities and family relationships of the adolescents. The majority of secondary vocational students experience a lack of learning motivation and low self-management, whilst college students are under pressure on both fronts; the academic and personal development. Consequently, the two groups rank high as a high-risk population on online game addiction and this makes the relevant interventions research of relevance to academia. Research that has been done has already established that there is a strong association between parenting styles, self-esteem levels and the online game addiction seen in adolescents.

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However, current research still has notable limitations: some empirical studies have limited sample coverage, failed to clarify the causal order of variables, lack in-depth systematic analysis of cross-cultural and group differences, and are insufficient in comprehensively exploring mediating mechanisms. Although previous studies have separately revealed the mediating roles of self-control and meaning in life, researchers have not yet established a unified theoretical framework, which hinders the comprehensiveness of practical intervention measures. Therefore, systematically integrating relevant research findings, clarifying the action paths and heterogeneous characteristics of core influencing factors, is of great significance for improving the addiction intervention system. This paper concentrates on the vocational and secondary vocational college students and has combined both empirical and review research results. It incorporates the best practices of the mentioned texts, scale measurement, Pearson correlation analysis, and structural equation modeling in investigating the connections between positive or negative rearing practices by parents, self-esteem, and the addiction to online games. The paper concentrates on two important issues, one of which is the mediating role of self-control and meaning in life. The other is effects of group difference and cultural heterogeneity on the intensity of these relationships. The aim is to find out the major mechanisms involved in addiction and offer theoretical and practical reinforcement to develop differentiated home-school collaboration intervention approaches.

2 The correlation between parental behaviours and addicts of online games

Researchers investigated the connection between online gaming addiction and parenting practices in a variety of groups. This work summarizes the empirical data that is currently available and examines the limits in study designs as well as the disparities in findings.

2.1 The relationship between parenting styles and online game addiction among secondary school students

This cross-sectional survey was carried out by Zhang et al. and included 482 students in three secondary vocational schools in central China and included the grades 1-3 [1]. The findings revealed that parental rejection and overprotection had a significant and positive relationship with the online game addiction of secondary vocational students. Parental nurturing affection was, however, very different and showed a strong negative and significant correlation with addiction, with a coefficient of -0.154. Zhang et al. went a step further in-depth analysis and reported that mediation between parenting styles and addictive behaviors was done through self-control. On a case in point, the value of the mediating effect of the parental rejection on the addiction path was 0.105 and the value of the parental emotional warmth to addiction path was -0.126. This implies that negative parenting patterns undermine the self-control skills of the secondary vocational students, which leaves them more vulnerable to addiction and positive parenting operations mitigate this reinforcement by boosting self-control and lowering the risk of addiction. This conclusion is in line with the principles assumed of the dual-system theory of self-control of Hofmann et al. [2].

However, the research had a number of weaknesses. The sample used was also restricted to secondary vocational schools in central China without covering the ones in eastern and western geographical regions, restricting the generalizability of the findings nationally. It is also a cross-sectional study, which renders it impossible to explain the cause-effect relationship between variables, thus it is hard to exclude the fact that poorly-controlled students might have the opposite effect on their parents' parental styles. Thus, a longitudinal

design would be suitable in future research and would assist in establishing the precise cause and effect relationships between such variables.

2.2 The relationship between parenting styles and adolescent addiction among multi-national adolescent samples

The same conclusions were made by Rosales-Navarro and Torres-Perez, and Zhang et al. research. They also ratified that parenting styles do affect adolescent addiction [3].

This study was followed by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) principles. Between 2019 and 2023, the researchers accessed 37 databases (Web of Science and Scopus) to find 37 empirical studies. Such studies involved 14 countries of teenagers. The cross-cultural relevance of the research inferences is more powerful because of multi-national sample. The average sample size of each study was 1827.95, which is not small.

The review results show that the influence of parental behavior on adolescent addiction has a “multi-dimensional and hierarchical” characteristic. Different types of parental behaviors either represent risk factors or protective factors, with varying degrees of impact. For instance, democratic parenting, high behavioral control over children, and positive parent-child relationships are all protective factors. However, parental psychological control, rejection of children’s behaviors, and “phubbing” style neglect, such as when interacting with children, parents being overly absorbed in their phones and reducing their emotional responses to children. These all fall under the category of risk factors.

A specific analysis targeting vocational high school students revealed that the correlation coefficient between excessive parental protection and addiction was 0.38, which was significantly higher than that of ordinary high school students at 0.22. This is because vocational high school students are more vulnerable to the negative effects of excessive protection in terms of their autonomy and the support resources they can obtain, so this result is largely consistent with the conclusion of Zhang et al.’s study [1]. At the same time, cultural differences are also prominent. In Asian countries (such as China and South Korea), the correlation coefficient between parental refusal and addiction is 0.41 ($r = 0.41$), which is higher than that of European and American countries at 0.27. This is related to the characteristics of Asian family culture [4].

However, this review also has several limitations. Firstly, 81.1% of the included studies were cross-sectional designs, while longitudinal studies accounted for less than 20%. Therefore, it is difficult to observe the long-term dynamic changes between parental behavior and addiction. Secondly, the analysis of vocational school students in this review was rather general, without distinguishing the differences among students of different majors and different grades. Thirdly, some of the included studies used their own designed tools, and the reliability and validity of these tools have not been fully verified. Therefore, this may affect the reliability of the final conclusion.

2.3 Integrative analysis of the two studies

Both studies confirmed that negative parental parenting (rejection, overprotection) is a risk factor for secondary vocational students’ addiction, and positive parenting (emotional warmth) is a protective factor. They both recognized the mediating role of psychological variables such as self-control between parental behaviors and addiction, and identified secondary vocational students as a high-risk group for online game addiction, which is related to the group’s characteristics of “insufficient academic motivation and weak self-management abilities” [5].

The differences between the two studies are as follows: Zhang et al. was an empirical study on a single group, focusing on the path mechanisms between variables [1]; Rosales-Navarro & Torres Pérez was a multi-group, cross-cultural systematic review, emphasizing the heterogeneity and cultural differences of correlations [3]. The former's sample only covered secondary vocational students in central China, while the latter included adolescents from multiple countries and educational backgrounds worldwide, with broader sample representativeness.

3 The impact of self-esteem on college students' online game addiction

3.1 The influence on self-esteem, self-control on online game addiction: a study of male college students

He et al. selected 453 male college students online game players from two universities in Wuhan, covering grades 1 to 3 [6]. The study focused on male groups to more accurately test the mechanism of action in this high-risk group for online game addiction, as males are inherently a high-risk group for online game addiction [7]. Data were collected through cross-sectional surveys combined with offline paper questionnaires. Core variables were measured using internationally standardized scales adapted to the local context [7-9]. The core conclusion of the study was that self-control played a full mediating role between self-esteem and online game addiction [6]. In other words, low self-esteem did not directly induce online game addiction but indirectly increased the risk of addiction by weakening individuals' self-control abilities. This conclusion echoes the view proposed by Tangney et al. that "low self-control is a common risk factor for various addictive behaviors", and further refines the specific action path of "self-esteem-self-control-online game addiction," distinguishing it from the conclusions of some concurrent studies that self-esteem directly affects addiction, thus providing a basis for differentiated intervention paths [9].

Considering the obvious differences in self-esteem structure and game usage habits between males and females, the gender generalizability of the research conclusions is limited; then, the cross-sectional research design failed to clearly define the causal sequence of variables, making it difficult to rule out the possibility of reverse causality that "frustrated addictive behaviors lead to reduced self-esteem."

3.2 The association between self-esteem, life meaning and online game addiction among college students

Pan's research included two sub-studies, with a sample design that balanced breadth and depth, combining large-sample correlation research and small-sample intervention research [10]. Study 1 took 988 undergraduate and junior college students from two universities in Wuhan as participants, covering both male and female groups, breaking the limitation of single samples in early similar studies and effectively improving the representativeness of the research conclusions. Study 2 selected 20 college students with "low scores on sense of life meaning and high scores on online game addiction" from the sample of Study 1 and randomly divided them into an experimental group and a control group, ensuring that the intervention objects were all high-risk groups for addiction, thereby enhancing the practical application value of the research.

The study adopted a mixed design of "correlation research + intervention research" [10]. Study 1 collected data through online questionnaires, using measurement tools, and

accurately tested the mediating effect between variables with structural equation modeling. Study 2 adopted a pre-test-post-test design with an experimental group and a control group. The experimental group received 8 weeks of “motivational interviewing group counseling,” which focused on constructing a sense of life meaning, guiding members to clarify personal values, explore future goals, and reflect on the relationship between online game behaviors and life goals.

Study 1 confirmed that a sense of life meaning played a partial mediating role between self-esteem and online game addiction: low self-esteem not only directly increased the risk of college students’ online game addiction but also indirectly exacerbated addictive behaviors by reducing individuals’ sense of life meaning [10]. Results of Study 2 showed that motivational interviewing group counseling could effectively improve the sense of life meaning of students in the experimental group and significantly reduce their online game addiction level, while the relevant indicators of students in the control group did not change significantly. This verified the effectiveness of interventions based on psychological variables, providing an operable specific plan for the intervention of college students’ online game addiction.

The study had several shortcomings. The first is that the sample size of the intervention research was only 20, which may affect the statistical power of the research results [10]. Second, due to the impact of the epidemic, the time and form of group counseling were adjusted multiple times, and some offline activities were converted to online, which weakened the interactivity of the group counseling itself and may have affected the stability of the intervention effect; third, the study did not set a long-term follow-up link of more than 6 months, making it impossible to verify the durability of the intervention effect.

3.3 Integrative analysis of the two studies

Both studies confirmed a significant negative correlation between self-esteem and college students’ online game addiction, and low self-esteem is an important risk factor for college students’ online game addiction, which is consistent with the general consensus in academic circles. Neither study stayed at the analysis of the superficial correlation between variables but delved into the mediating role of psychological variables, constructing an indirect action path of “self-esteem → mediating variable → online game addiction.” Both studies used standardized scales for measurement and adopted standardized data analysis methods, providing a strong guarantee for the reliability of the research conclusions [6,10].

The core differences between the two studies are reflected in three aspects: first, the mediating paths are different. He et al. verified the full mediating role of self-control, while Pan confirmed the partial mediating role of sense of life meaning [6,10]. They revealed the internal mechanisms of self-esteem affecting online game addiction from the two dimensions of cognitive execution and existential value respectively; second, the research designs are different. The former is a single cross-sectional study, while the latter combines correlation research and intervention research, realizing a closed loop of “theoretical discussion - practical verification”; third, the sample scopes are different [6,10]. The former’s sample is limited to male college students, while the latter’s sample covers college students of different genders and educational backgrounds, with broader representativeness of the research conclusions [6,10].

4 Discussion

4.1 Core findings

The present research paper will synthesize the existing research to conduct systematic exploration of parental behaviors, self-esteem, and online game addiction in secondary vocational and college students and the mediation effects of self-control and sense of life meaning [3,6,10]. The main results of the studies are consistent: bad parental parenting (rejection, overprotection) and low self-esteem are the major risks of adolescent online game addiction whereas the positive parental parenting (emotional warmth) can be considered one of the main protective factors. Self-control and life meaning sense are also significant moderating variables in the relations above, and the strength of these relations has an apparent group and cultural heterogeneity [3,4]. As an illustration, the effect of parental overprotection on addiction is more pronounced in the case of secondary vocational students as compared to regular high school students, and the effect of parental rejection on addiction is stronger in Asian countries as compared to European and American countries [3].

4.2 Theoretical implications

This research scholarically joins the disjointed findings of studies and bridges research gaps in cross-group and cross-cultural research on adolescent online game addiction. It adds more nuances to the theoretical framework based on the concept of adolescent online game addiction and allows forming a more organized theoretical model, self-esteem - psychological variables - online game addiction, by clarifying the various mediating mechanisms (self-control and sense of life meaning) in various groups [6,10]. The findings of the research also resonate and reinforce the available theories, like the dual system theory of self-control, which further confirm the universality of these theories in the domain of online games addiction among adolescents [2].

4.3 Practical implications

The findings of the research offer unambiguous guidelines to be followed when preventing and treating gaming addiction among teenagers online [3,6,10]. At the family level, the parents are supposed to maximize their parenting styles, minimize negative parenting practices, including rejection and overprotection, and maximize emotional parenting and communication with children. Parent education can be implemented to lead parents into democratic and supportive parenting styles. At the school level, targeted training programs should be designed to improve students' self-control abilities, including goal management and emotional regulation skills, and to enrich students' sense of life meaning by clarifying personal values and exploring future goals [10]. The integration of family and school resources to form a collaborative intervention model is consistent with the mainstream practical direction of "family-school collaborative intervention in adolescent addiction" [11].

4.4 Limitations and future research directions

This study also has certain drawbacks. First, most of the integrated studies adopt cross-sectional designs, making it difficult to fully clarify the causal sequence between variables [3,6]. The next research stage should take a longitudinal tracking design to examine the dynamic relationship in the long term between self-esteem, parental behavior, and online game addiction. Second, the analysis of groups of secondary vocational students is rather general, and further studies can help identify differences between various majors and grades to offer more specific intervention strategies [12]. Lastly, the number of individuals in certain

intervention projects is minimal, and the permanency and endurance of the intervention effects must be confirmed by increasing the sample size, and establishing long-term follow-up correlations [10]. Moreover, more geographical and cultural samples can be utilized in the future to increase the generalizability of the conclusions, and combine the two mediating variables, self-control and sense of life meaning, to develop a more detailed theoretical model.

5 Conclusion

This paper is aimed at investigating how parental behaviors, self-esteem, and online game addiction relate to the behaviors of secondary vocational and college students and the mediating variables of self-control and purpose of life. The findings substantiate the idea that negative parenting personalities (rejection, overprotection) and low self-esteem lead to higher risks of addiction, whereas positive parenting (emotional warmth) and protection. Self-control and sense of life meaning play significant mediating roles, with obvious group and cultural heterogeneity in the correlations.

The research has important practical implications: families should optimize parenting styles, reduce negative parenting behaviors, and strengthen emotional care. Schools need to enhance students' self-control abilities and construct their sense of life meaning. Academically, this study integrates fragmented research results, fills the gaps in cross-group and cross-cultural analysis, and enriches the theoretical framework of adolescent online game addiction. It provides valuable references for formulating targeted family-school collaborative intervention strategies and is of great significance for addressing the social problem of adolescent online game addiction and promoting the healthy development of adolescents.

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