

Investigation and analysis of online gaming behavior among adolescents in Chongqing

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Abstract: Online gaming is a double-edged sword for adolescent development, warranting widespread attention. Through investigation and analysis of the current status and influencing factors of online gaming usage behavior and social behavior among adolescents in Chongqing, the following conclusions were drawn: adolescent online gaming shows a trend toward younger ages; most adolescent online gaming behavior is rational; factors such as elder management styles, attitudes toward adolescent online gaming, total family income, and online gaming expenditures influence adolescent online gaming behavior. Therefore, society as a whole should have awareness of protecting adolescents, particularly requiring the government to strengthen internet legislation while increasing supervision of online games; online game development needs to emphasize educational connotations; parents should adopt an open attitude toward adolescent online gaming behavior while paying more attention to adolescent growth.

Keywords: adolescents, online gaming behavior, current status, influencing factors, suggestions

1. Introduction

With the continuous upgrading of online games, their types are constantly increasing, and scenes and content are becoming richer, leading to endless new problems in adolescent online gaming. Currently, online games have shown alienation phenomena regarding adolescents; online gaming addiction has become the main type of internet addiction; the "game generation" has become a serious social problem in China, causing anxiety and concern from all sectors of society including government, families, schools, and media. In view of this, based on previous research, this paper investigates and analyzes the current situation of adolescent online gaming behavior in Chongqing under new circumstances through questionnaire survey methods, aiming to help parents, schools, and adolescents correctly understand and reasonably use online games.

2. Review of research status

Currently, domestic research on specific online gaming behaviors remains relatively weak. First, overall behavioral research is still comparatively broad, lacking systematic studies on specific aspects of online gaming behavior, with only a small amount of research involving particular behaviors. For example, Liu Jianyin et al. [2] selected underage students from Beijing, Shanghai, Shenzhen, Nanjing and other places to conduct preliminary investigations on the types, reasons, and impacts of their online gaming; the Taiwan Child Welfare Alliance completed a survey on online gaming behavior among children across Taiwan in December 2007. Second, research on specific behaviors is relatively fragmented. Huang Shaohua [3] analyzed adolescent online gaming behavior and reasons for addiction based on questionnaire surveys of adolescents from Zhejiang, Hunan, and Gansu provinces, with particular discussion of violent behavior in online games; He Jianping [4] explored violent behavior in online games; Wang Quan [5] discussed the "vegetable-stealing behavior" in casual games from the perspective of communication psychology; An Liping [6] focused on theft behavior in online games; surveys by some game operators mostly concentrated on consumer behavior research of online games, aiming to provide commercial strategy guidance for online game operators, such as the survey by Tencent [7]. Third, there is some research on specific online gaming

behaviors, such as Yang Minjie [8]'s study on deviant behavior, virtual currency trading behavior, consumer behavior, knowledge-sharing behavior, interaction patterns of online gaming groups, and the impact of interpersonal relationships on online gaming behavior among adolescent players. These studies mostly adopted quantitative research methods such as questionnaire surveys, laying the foundation for this research.

The shortcomings of existing research are mainly reflected in: first, from the perspective of survey angles and guiding theories, most surveys are based on the adult world's perspective, rarely thinking from the adolescents' own perspective. Objectively speaking, games including online games themselves are neither good nor bad; the key lies in society's attitude toward them; second, from the perspective of survey content, most concentrate on the negative impacts of addiction, paying insufficient attention to some beneficial effects of online games, with weak discussion on the analysis of pros and cons of specific behavioral manifestations in adolescent online gaming for adolescent growth, as well as how to protect adolescents from possible harm and how to effectively use online games for education; third, from the perspective of research methods, most are quantitative analyses, with insufficient use of qualitative research methods; fourth, from the perspective of research scope, there is also a lack of research specifically targeting the unique region of Chongqing.

In summary, there currently lacks classified research on specific behaviors of adolescents in online games [9]. This survey aims to analyze adolescent behaviors while playing online games (including online virtual behaviors and online real behaviors), fully understand what major online gaming behaviors exist, and what differences adolescents with different demographic characteristics show in these behaviors, thereby providing reference for establishing player gaming behavior norms.

3. Research methods and process

3.1. Survey methods

This survey primarily adopted the questionnaire survey method. The questionnaire development process: first, we collected extensive relevant materials on "online gaming behavior," organized, classified, and reviewed them, and preliminarily formulated theoretical dimensions requiring investigation; second, based on the survey dimensions, we formulated several research questions, conducted targeted interviews with some survey subjects through purposive sampling, thereby determining the basic framework and main questions of the questionnaire; third, regarding the preliminarily drafted questionnaire, the research team invited 5 experts engaged in long-term education and psychology research to solicit opinions on the questionnaire and made targeted absorption; finally, the pilot test questionnaire's Cronbach's Alpha coefficient was 0.968, indicating good reliability. The questionnaire was divided into four dimensions: personal basic information, sample family social characteristics, online gaming usage behavior, and online gaming social behavior. To better obtain information, the usage behavior section mainly adopted the "question-answer" format. To facilitate statistical attitude tendencies, the social behavior section mainly adopted the Likert five-point scale. Social behaviors included positive behaviors, deviant behaviors, and neutral behaviors.

3.2. Sampling methods

The project mainly adopted multi-stage stratified cluster sampling, balancing scientific rigor and feasibility. Geographic considerations were based on Chongqing's "one circle and two wings" structure: the "one circle" refers to the urban economic area with the main city as the core and approximately one-hour commuting distance as the radius; the "Northeast Chongqing Wing" centered on Wanzhou; and the "Southeast Chongqing Wing" centered on Qianjiang. Specific sampling results were: for the "one circle," Shaping Ba District and Nan' an District were selected; for the "two wings," Wanzhou District (center of Northeast Chongqing) and Qianjiang District (center of Southeast Chongqing) were mainly selected. In each district/county, 1-2 schools and classes were randomly selected. When selecting schools, differences among different levels and types of schools were considered as much as possible, then classes were randomly selected for cluster sampling. During questionnaire administration, dedicated personnel were arranged to be present to supervise and guide questionnaire completion.

3.3. Statistical methods

For data processing and analysis, all questionnaire data were entered into SPSS 17.0 for statistical analysis. Main statistical methods included frequency statistics, cross-tabulation, and correlation analysis. A total of 680 formal questionnaires were distributed, with a response rate of 94.12% and an effective response rate of 88.53%.

4. Survey results of adolescent online gaming behavior in Chongqing

4.1. Basic sample information

The sample selection for this questionnaire survey basically covered adolescent groups of all age ranges, with relatively balanced age and gender distributions, indicating certain representativeness of the sampling. Regarding gender, males accounted for 51%, females for 45.5%, with some respondents not indicating gender. Regarding age, those aged 12 and below accounted for 1.5%, 13-15 years for 25%, 16-18 years for 31.2%, 19-22 years for 38.6%, and 23 years and above for 1.5%, with another 8 people not reporting age. Regarding current school attendance, junior high school students accounted for 22.4%, regular high school students for 31.7%, vocational high school students for 1.8%, higher vocational college students for 23.1%, and undergraduates for 17.1%. Except for the relatively low proportion of vocational high school students, other sample proportions were relatively balanced. Regarding family residence, those living in county towns and cities above county level accounted for 58.6%, those living in towns for 21.8%, and those living in rural areas for 16.1%.

4.2. Family social characteristics of the sample

Overall, the parents' social education level, occupational status, and income level in the sample were relatively equivalent. Most parents did not have high education levels: approximately 40% had junior high school education, followed by high school and primary school education, while parents with university education and graduate degrees were relatively few; parents working as ordinary workers or staff accounted for approximately 40.7%. 32.9% of families had monthly total incomes around 2,000-4,000 yuan, and 26.8% had monthly total incomes around 4,000-6,000 yuan. The majority of adolescents lived with their father, mother, or both parents.

Regarding elders' awareness of their own online gaming, only 4.2% of elders were completely unaware that their children played online games, with specific details shown in Figure 1. From the perspective of elders' management styles toward adolescents, 56.6% of parents were relatively democratic, relaxed yet measured, and well-managed; 20.3% were relatively controlling, frequently supervising and strictly disciplining; 7.6% adopted a laissez-faire attitude, being too busy to attend to or indifferent; and 12.5% had inconsistent management without clear rules. Additionally, from adolescents' satisfaction with parental management, 61% of adolescents were relatively satisfied with their parents' management style. From elders' attitudes toward online games, 55.5% believed moderation was acceptable, 20.9% were completely opposed, only 5.8% were clearly supportive, and 14.8% adopted an indifferent attitude. Regarding people they most liked to spend time with, most preferred being with family relatives, while only 17.9% preferred being with classmates, friends, or online friends. Over 70% of family relationships were relatively harmonious, with small proportions of tense, distant, or inconsistent family relationships.

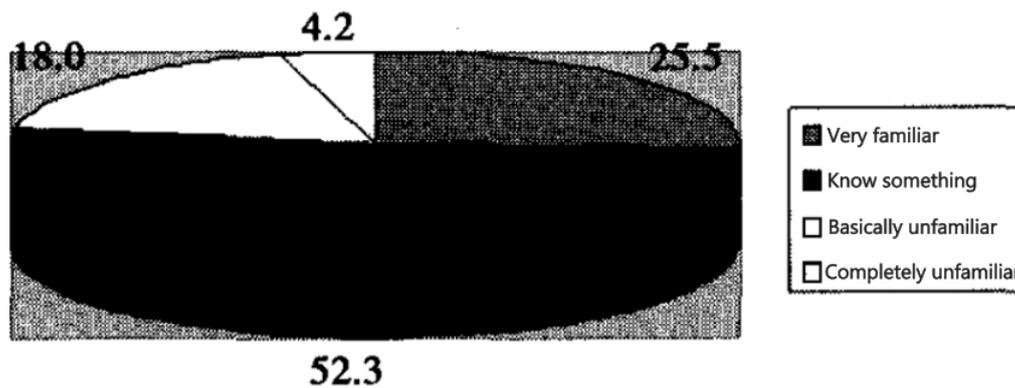


Figure 1 Elders' Awareness of Juniors' Online Gaming

4.3. Statistical analysis of online gaming usage behavior

First, the age at which adolescents first played online games clearly showed a trend toward younger ages. The survey showed that the youngest age of exposure to online games was 4 years old, and over 50% of children aged 12 and below or in primary school and below had been exposed to online games (among which approximately 5% of preschool children under 6 years old had been exposed to online games), and the games adolescents most liked to play were mostly QQ series games. Second, the channels and locations of game exposure indicated that online games had already integrated into most adolescents' living environments. 63.6% of online gamers initially started through introduction by friends or relatives; 46.7% played online games mainly at home, followed by internet cafés and dormitories. Third, gaming frequency, duration, and expenditures indicated that most adolescents' usage and consumption were relatively rational. Only 97 adolescents had played online games more than 5 times in the past three months; 36.9% of adolescents basically controlled each online gaming session to 1-3 hours, 28.9% controlled it to 1 hour, with only a small portion of adolescents playing more than 3 hours or even reaching 5 hours per session; regarding expenditures, 57.8% of adolescents had basically no spending on online games in the past month, but a few adolescents spent over 1,000 yuan, with the main source being pocket money, followed by living expenses. Fourth, self-assessment of addiction indicated that 86.7% of adolescents did not have relatively high or above addiction levels. Adolescents self-reporting "very high" addiction levels accounted for only 4.9% in the survey, a proportion not significantly different from the internationally reported addiction detection rate of approximately 6%.

4.4. Statistical analysis of online gaming social behavior

The questionnaire survey of social behavior in online games adopted the Likert five-point scale, mainly examining trading behavior, social deviant behavior, and interaction cooperation and learning behavior. Social deviant behavior mainly refers to five aspects of behavioral manifestations: deception, aggression (insulting, violence), theft, gambling, and pornography.

First, investigation of trading behavior. Currently, the "game generation" is relatively rational in gaming expenditures, mostly playing free games. Only 3.3% of adolescents would continue to find money to play games when they had no money; 54.2% of adolescents had not paid service providers fees related to game wins or losses during gameplay; 52.0% of adolescents had not engaged in virtual item trading; and 20.4% of adolescents had paid other players for power-leveling services in online games.

Second, investigation of social deviant behavior. Overall, only a minority of adolescents had non-standard behaviors; most behaviors conformed to social norms and virtual social norms. (1) Regarding deceptive behavior during online gaming, over half of players would not deceptively communicate with others to obtain their game items; only 6.8% of gamers were completely irresponsible; most game personal identity information was false. (2) Regarding pornographic behavior, 55.3% of players did not like experiencing pornographic games; over 50% had not played pornographic games and would not specifically seek out people with usernames suggesting sexiness, temptation, or seduction to chat with; in public places, 62.1% of players would not play games containing pornographic elements. (3) Regarding aggressive

behavior, most players showed relatively rational behavior; 57.8% of players had never hired professional "insult-for-hire" services; behaviors such as sending images of machetes and pistols to others, shouting insults at others, or making threatening or insulting remarks to opponents in chat boxes did not match most players. (4) Regarding theft and gambling behavior, 62.5% of adolescents had never stolen others' accounts or equipment; 59.6% of adolescents had not deliberately cracked others' accounts to play games. Over 50% of players had not paid similar fees or played online games with gambling characteristics.

Third, interaction cooperation and learning behavior. Nearly half of adolescents would make new friends while playing online games; 68.6% of adolescents indicated that they had not become distant from real-life friends because of online games; and 46.2% of adolescents would not completely reveal their inner thoughts to online friends.

4.5. Correlation analysis of online gaming social behavior

Data analysis showed that adolescent online gaming behavior was influenced to a certain extent by elders' management styles, attitudes toward gaming, family relationships, family income situations, and monthly gaming expenses.

First, different elder management styles showed significant differences. Under democratic, relaxed yet measured, and well-managed elder management styles, adolescent online gaming behavior was more rational. Under laissez-faire and indifferent elder management styles, irrational trading, pornographic, aggressive, or theft behaviors were highly likely to occur.

Second, different elder attitudes toward adolescent gaming affected the manifestation of adolescent online gaming social behavior. When elders held attitudes that moderation was acceptable, adolescents showed the lowest proportions of irrational trading behavior (1.20%), deceptive behavior (1.90%), pornographic behavior (1.60%), aggressive behavior (1.50%), and theft behavior (1.20%). When elders held laissez-faire or indulgent attitudes, adolescents showed the highest proportions of these negative behaviors; when elders held opposed or indifferent attitudes, adolescents showed medium proportions of negative behaviors. Specific details are shown in Table 1.

Third, different total family incomes affected adolescents' trading behavior in online games. The lower the total family income, the less likely adolescents were to find money to play online games. Adolescents from families with total monthly incomes below 2,000 yuan showed higher proportions of rational trading behavior (87.20%), while adolescents from other income intervals showed relatively less rational trading behavior.

Fourth, different amounts spent on online games in the past month affected the conformity of adolescent theft behavior. Among samples with no online gaming expenses in the past month, 87.2% of adolescents would not steal others' accounts or equipment to level up or obtain items; adolescents in other online gaming expense intervals showed relatively higher proportions of no online gaming theft behavior.

Table 1 Variance Test of Online Gaming Social Behavior and Elder Management Styles

	Relatively democratic	Relatively coercive	Laissez-faire	Disorganized	F
	Balanced and moderate	Frequently controlling	Too busy to manage	Inconsistent	
	Well-managed	Strict discipline	Indifferent	Unpredictable	
	M±SD	M±SD	M±SD	M±SD	
A. Transactional Behavior	1.30±0.83	1.78±1.20	2.18±1.42	1.58±1.07	14.328*
B. Deceptive Behavior	1.57±1.04	2.32±1.36	2.58±1.31	1.99±1.27	18.668*
C. Pornographic Behavior	1.52±1.00	2.11±1.24	2.52±1.42	1.88±1.24	15.638*
D. Extreme	1.42±0.85	2.07±1.24	2.31±1.31	1.72±1.16	18.154*

Behavior					
E. Theft Behavior	1.49±1.00	2.09±1.27	2.67±1.67	1.81±1.27	18.164*

5. Basic research findings

5.1. Basic information and usage behavior

First, regarding the age and channels through which students are exposed to online games: A significant number of students are in middle and high school age groups, followed by undergraduate and vocational college students. Most start playing during middle school, primarily through introductions by relatives or friends. This suggests that children in middle school are highly susceptible to environmental influences when forming preferences. If parents and teachers provide more attention and guidance at this stage, students' interests and hobbies may develop in a more desirable direction.

Second, regarding characteristics related to students' family backgrounds: Based on the analysis of living environment, family economic conditions, and gaming contexts, it is evident that most players come from households with middle to upper-middle income levels. From the students' perspective, a large proportion of parents adopt a relatively democratic and balanced management style, and most parents are aware that their children play games. However, based on family atmosphere, parent-child relationships, and the types of people students prefer to interact with, it appears that communication and interaction between parents and children are not entirely satisfactory to the students. This is primarily due to parents' relatively low educational levels, which hinder effective communication, coupled with work commitments that leave them with limited time and energy to spend with their children. In terms of students' average recent exam scores across subjects, most students maintain mid to above-average academic performance despite playing games. Therefore, whether gaming has a negative impact on children's academic performance remains to be determined.

Third, regarding usage behavior: Most students do not play games frequently or for extended periods. Parents can moderately ease their vigilance, adopt a friendly approach to guide and supervise their children, and help them plan their schedules reasonably. The majority of students believe their spending on online games is within an acceptable range. If parents manage their children's pocket money appropriately, unnecessary in-game expenses can be avoided. Based on students' self-evaluations and investigations into their gaming frequency, duration, and spending, most students are not addicted to online games. Over 60% of teenagers' gaming time falls within the "healthy duration" stipulated by the former General Administration of Press and Publication. Thus, parents and teachers need not be overly anxious or reject students' engagement with online games.

In summary, the advantages and disadvantages of online gaming for students require careful analysis and attention from parents. A democratic parenting approach and a moderate attitude toward gaming are conducive to fostering healthy and rational online gaming behaviors among teenagers.

5.2. Social behavior

First, the moral performance of the "gaming generation" in transactions and interactions. We conducted survey analyses mainly on deceptive behavior, theft behavior, gambling behavior, abusive behavior, and violent behavior. From the results, it can be seen that the students' performance is not entirely unsatisfactory. In the online world, most students still adhere to the rules of the game, demonstrating good moral conduct by refraining from deception, theft, gambling, physical violence, and verbal abuse in their interactions with other players. Of course, although these behaviors are not widespread, their impact on teenagers is profound and should be given due attention.

Second, the influence of erotic elements on students. The survey results on erotic behavior can bring some relief to teachers and parents, but vigilance is still necessary, as one-third of the students expressed a preference for experiencing the feelings brought by the voice-overs in erotic games, and a small number of students were uncertain about their preference, which may reflect an evasive attitude toward the survey. More than half of the students avoid playing games containing erotic content in public, indicating that they

do exercise restraint and avoidance toward such information, though they may occasionally engage with it in private.

Third, interpersonal relationships. Half of the students have expanded their social circles through the internet, but not at the expense of distancing themselves from real-life friends due to online gaming. One-third of the students believe that gaming has helped them develop courage and a sense of teamwork. However, most students remain reserved and lack confidence when communicating with others in the online world.

5.3. Online games themselves

On one hand, students' perception of online games differs from real-life practicalities.

Through analysis of students' spending on in-game transactions, moral behavior, social interactions, and responses to erotic content in games, it can be observed that students distinguish between the game world and the real world. Most students do not lose control of their spending in games and do not abandon the moral norms that should be followed in real life.

On the other hand, parents tend to hold a relatively open attitude toward online games themselves.

The survey shows that most students play games primarily at home, and their spending remains within manageable limits, indicating that parents provide financial convenience and generally adopt a moderate stance toward their children's gaming habits. Overall, most parents maintain a liberal attitude toward their children playing online games. Parents should adopt a balanced perspective toward their children's gaming behavior, approaching their children's game world with openness.

6. Recommendations

6.1. Social environment

Given the trend of younger age groups among the "gaming generation," the supervision and guidance of teenagers' online gaming behavior should be adjusted. It is essential to foster a societal awareness of protecting teenagers and take concrete, effective actions.

First, the government should improve internet legislation, strengthen the supervision of online game operations, and enhance the review process for game releases, ensuring strict controls over game approval and distribution.

Second, online game operators should cultivate awareness of protecting teenagers, improve the registration system for online games, and voluntarily prevent teenagers from accessing large-scale online games.

Third, providers of gaming venues, such as internet café operators, should restrict access for younger teenagers, especially minors.

Fourth, educational institutions responsible for youth education should incorporate media literacy education regarding online games, rather than adopting a laissez-faire approach or resorting to outright prohibition.

6.2. Online games

Given that most parents maintain an open attitude toward online games, it is advisable to leverage online games as platforms and tools for the growth of teenagers. Developers and designers must recognize the significant impact and meaning of game content for school-age adolescents. Game designers and educators should collaborate closely, using "edutainment and online interaction" as a breakthrough point to organically integrate education with gaming. This includes developing educational online games, thereby enhancing the vitality of online games themselves, and combining the elements of fun, autonomy, situational immersion, participation, and collaboration inherent in games with the educational and personality development needs of teenagers, providing them with ample learning resources.

6.3. Family environment

Since most students are not heavily addicted to online games, elders should maintain an open mindset toward online games, adopt a rational view of their children's gaming habits, and show concern for their

children's gaming world. First, parents should understand and guide their children's online gaming behavior. Second, they should reasonably allocate and properly guide their children's gaming expenses and usage. Third, attention should be paid to the peer groups of children, with appropriate coordination and guidance provided when necessary. Fourth, if there is a need to address the behavior of the minority who are addicted, parents should take primary responsibility. In educational communication, the psychological feelings of children during their growth process should be considered, rather than merely providing material satisfaction. Parents can spend more time playing with their children, entering their gaming world, so that children do not feel lonely, thereby preventing excessive immersion in online games.

7. Conclusion

As a cultural phenomenon of the digital age, online games have permeated multiple dimensions of teenagers' daily lives. This study, through an empirical survey of online gaming behavior among teenagers in Chongqing, reveals the trend of younger engagement and the overall rational characteristics of current teenage gaming behavior, while also validating the significant impact of parenting styles, parental attitudes, and economic factors on teenagers' gaming habits. The findings indicate that online games are not inherently a "spiritual opium"; their positive or negative effects largely depend on the guidance and regulation of the social environment.

Faced with this complex issue, simplistic technical restrictions or moral panic are ineffective. Only by establishing a collaborative governance system integrating government oversight, industry self-regulation, school education, and family guidance can a dynamic balance be achieved between protecting teenagers' digital rights and promoting their healthy development.

Future governance of online games should transcend the binary opposition of "prohibition" versus "permissiveness" and instead explore refined approaches of "guidance" and "regulation." This will enable online games to truly serve as effective tools for teenagers to understand society, develop their identities, and cultivate collaborative skills, rather than becoming breeding grounds for distorted values. This is not only a contemporary requirement for digital citizenship education but also an essential path for the sustainable development of the cultural and creative industries.

8. References

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