Online Gaming Dependency: A Preliminary Study in China

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Abstract

Based on theories and previous studies on problematic Internet use, we propose a model to better understand the contributors to and consequences of online gaming dependency. A preliminary study was conducted through a survey of online gamers in China. The results of path analysis found that maladaptive cognitions, shyness, and depression are positively related to online gaming dependency. Online gaming dependency was also positively related to different types of negative life outcomes. The findings of this study have implications for the prevention and treatment of addictive online gaming.

Introduction

With the rapid penetration of broadband Internet access, online gaming is becoming increasingly popular in China. The percentage of online game players among Internet users has increased from 18.1% (11 million) in 2003 to 59.3% (120 million) in 2008. According to a recent national survey of online game players in China, 19.5% of the players play online games for 5 to 8 hours per day, and 22.4% play more than 8 hours per day. A majority of online game players (82.9%) reported that online gaming had negative impact on their personal life, work, or academic performance, suggesting that research on this phenomenon is needed.

The main purpose of this study is to examine online gaming dependency and identify its contributors and consequences. Maladaptive cognitions—a construct imported from Davis’s cognitive-behavioral model of pathological Internet use (PIU)—as well as shyness and depression—variables shown to contribute to Internet dependency—were hypothesized to be the contributors of online gaming dependency. The relationships between online gaming dependency and three types of negative life consequences (i.e., physical problems, personal life problems, and academic/professional problems) were also investigated.

Online gaming dependency

Over the last decade, a great deal of research focusing on excessive or problematic Internet use has been conducted. However, investigation of this issue in the context of specific Internet applications is very limited. Recent research demonstrates that online gaming is one of the most likely reasons for compulsive Internet use among various online activities, suggesting that more focus on this particular Internet use is especially important.

In the current study, we define online gaming dependency as a psychological state characterized by psychological discomfort experienced by online gamers when they are unable to play online games as they wish. A few standardized instruments have been developed to assess addictive Internet use. The operationalization of the online gaming dependency construct was established by adapting items in prior research on Internet dependency to the specific context of online gaming, and the items were focused on the psychological dimension. Items regarding negative behavioral outcomes were excluded.

Contributors of online gaming dependency

Maladaptive cognitions. Davis introduced a cognitive-behavioral model of PIU that emphasizes the individual's cognitions or beliefs as the key factor preceding and leading to the symptoms of Internet dependency. According to this model, maladaptive cognitions, defined as cognitive distortions about the self and the world, play a critical role as a proximal and sufficient cause of PIU symptoms. One type of distorted thoughts about the self is rumination (constantly thinking and worrying about one's excessive Internet usage, which reinforces memories about the Internet). Other types of maladaptive cognitions include extreme self-concepts favoring the online self (e.g., I am worthless offline, but in the online world I am someone) and distorted thoughts that favor the online world over the offline world (e.g., The online world is the only place I am respected or The Internet is my only friend). Davis suggested that the maladaptive cognitions characterized by this all-or-nothing thinking directly lead to and intensify the individual's PIU.

In our proposed model, maladaptive cognitions refer to online gamers' cognitive distortions about the self and the world. For example, by creating and controlling avatars that
can accomplish various tasks in the games, online gamers may perceive that they are much more valuable and successful in the virtual online game world than in the offline real world, which may lead to unpleasant feelings if online gaming is suddenly unavailable to them. Online game players may also develop a cognitive bias that they are better treated by others in the virtual online game world than in the real world. When they are unable to play online games as they want to, psychological discomfort or dissatisfaction is likely to follow. Therefore,

H1: Maladaptive cognitions will be positively related to online gaming dependency.

Shyness. Shyness is defined as one’s discomfort (e.g., tension, concern, feeling awkward) and inhibition of normally expected social behavior when being with strangers or casual acquaintances. Shy people tend to be psychologically insecure and anxious about being evaluated or rejected by others in face-to-face social interactions. In computer-mediated communication environments, shy people are very likely to feel less inhibited due to anonymity and the lack of physical presence and social cues. Stritzke et al.’s study found that shy and nonshy people (in offline contexts) were significantly different in terms of rejection sensitivity, initiating relationships, and self-disclosure. However, in the online context, those differences no longer existed.

Online social interactions can be especially appealing and important for shy Internet users who otherwise may have their social needs unmet. When online interactions become the primary way for shy people to socialize with others, a psychological dependency on the Internet or specific online activities may occur. Some research already supports this proposition. One study on Internet dependency among young adults in Hong Kong, China found that shyness was positively associated with participants’ tendency toward Internet dependency (r = 0.20). In addition, shyer people were reported to be more likely to get involved in online relationships. It is also suggested by some researchers that shy people tend to use the Internet for its recreational function. In fact, recreation and communication are the core components of online games. For some types of online games such as massively multiplayer online games, recreation and communication are even perfectly mixed, and shy people are likely prone to become dependent on them. Therefore,

H2: Shyness will be positively related to online gaming dependency.

Depression. Davis proposed that psychosocial problems, such as depression, might render an individual especially vulnerable to dependency on the Internet. Caplan further explained that people with psychosocial problems tend to perceive online social interaction to be less threatening than similar face-to-face communication and thus develop a preference for the former. Depressed people may be especially attentive to media content that can lessen their dysphoria. Because online games are typically rich in entertaining and fantasy content and provide players with unlimited chances of interacting with others and having new experiences different from those in reality, online games seem to be especially appealing to depressed individuals. Once they use online gaming as a major means to relieve depression, dependent online game usage is likely to take place. In addition, research shows that depression may also interact with self-regulation, which may lead to problematic or dependent use of online games. Therefore,

H3: Depression will be positively related to online gaming dependency.

Negative consequences

Many scholars have examined the negative life consequences associated with dependent Internet use. With a specific application of the Internet—online games—Ng and Wiemer-Hastings found that online game players encountered more usage problems than offline video game players, including playing for more than 8 continuous hours, losing sleep, being told that they spend too much time playing, spending less time with offline friends, and valuing offline social relationships less. In the current study, we focused on the three most frequent types of problems resulting from online gaming based on previous research: physical problems (i.e., fatigue, physical pain, reducing sleep time, skipping meals), personal life problems (i.e., conflicts with friends or family, lower social engagement, decreased time management skills), and academic/professional problems (i.e., missing work or school, deteriorated grades). Based on the previous empirical observations regarding negative outcomes of Internet use, we propose the following hypotheses:

H4: Online gaming dependency will be positively related to physical problems.

H5: Online gaming dependency will be positively related to personal life problems.

H6: Online gaming dependency will be positively related to academic/professional problems.

Methods

Procedure and participants

Snowball sampling was employed to recruit participants in the current study. The URL to an online anonymous survey on SurveyMonkey.com was first sent via e-mail to 26 Chinese online game players known by the researchers. Those individuals were asked to participate and distribute the URL link to all the online game players they know online and offline. Informed consent was obtained before they began the survey.

A total of 166 online gamers in China participated. Responses from 35 of them were excluded due to incomplete answers or lower data quality. Of the included 131 participants, 63% were male and 33% were female, and the gender of 5 people (4%) was undisclosed. The average age of participants was 26 years old. Occupations of the participants included students (38%), IT or media professionals (19%), sales and service (14%), office clerks (6%), executives (2%), agriculture-related jobs (2%), and others (19%). Additionally, 78% of participants had a college degree or were enrolled in college. On average, participants had a 6-year or so history of playing online games (SD = 2.79). The average number of
hours they spent gaming on a typical workday was 3.06
(SD = 2.60) and on a typical weekend day was 5.00 (SD = 3.91).

The most popular online games played by the participants were massively multiplayer online role-playing games (e.g., World of Warcraft, Fantasy of the Journal West) and casual games (e.g., Popkart car racing game).

Measures

Six items were used in the current study to assess online gaming dependency. Items were adapted from scales used in previous Internet studies. Only those relevant psychological items were included to measure online gaming dependency. Items related to negative behavioral outcomes were not included to avoid confounding with negative life consequences. Example items include “I feel preoccupied with online gaming” and “I feel lost if I can’t play my online game.” Participants indicated their agreement on those items using a 7-point Likert scale (x = 0.93, M = 2.94, SD = 1.15). Maladaptive cognitions were measured with five items on a 7-point Likert scale. Four items were adapted from the examples used by Davis to illustrate maladaptive cognitions associated with PIU, such as “I am worthless offline, but in the online game world I am someone.” One item regarding rumination was created by the authors based on the definition of this construct: “I keep thinking that it’s a problem for me to play online games too much.” (x = 0.74, M = 2.97, SD = 1.11). Shyness was measured using the 9-item shyness scale by Cheek and Buss (x = 0.89, M = 3.28, SD = 1.22). The general level of depression was measured with the 7-item short form of the Center for Epidemiological Studies Depression Scale (x = 0.90, M = 1.65, SD = 0.64). Three types of problems associated with online gaming were measured with items adapted from previous Internet dependency studies. The physical problems scale included six items to measure physical health-related problems, such as fatigue, aches, and skipping meals (x = 0.81, M = 3.96, SD = 1.22). The measure of personal life problems involved six items covering aspects of time management, interpersonal relationships, spending money, and so on (x = 0.80, M = 3.19, SD = 1.20). The construct of academic/professional problems was measured with three items related to deteriorated academic or professional performance (x = 0.81, M = 3.17, SD = 1.54).

Results

LISREL 8.80 was used to perform path analysis to test the proposed model (see Fig. 1). All of the constructs were modeled as observed variables. The hypothesized model resulted in an adequate and moderately good fit according to the model fit indices: \( \chi^2(9) = 13.65, p = 0.14; \) root-mean-squared error of approximation (RMSEA) = 0.06; standardized root mean of the residual = 0.04; comparative fit index = 0.99; goodness of fit index = 0.97. All the paths were supported by the data and shown to be significant. The R-square statistics indicated that 56% of the variance in online gaming dependency, 18% of the variance in physical problems, 31% of the variance in personal life problems, and 28% of the variance in academic/professional problems were explained in the model.

Discussion

The current study employed previous research on problematic Internet use to gain understanding of the contributors to and negative life consequences of psychological dependency on online game playing. Data collected from a preliminary study in China supported the acceptance of the proposed model and confirmed all the hypothesized relationships. Maladaptive cognitions, shyness, and depression were found to be positively associated with online gaming dependency. The data also showed that online gaming dependency was positively related to three common types of the negative life outcomes: physical problems, personal life problems, and academic/professional problems.

This study is one of the first attempts to examine the online gaming dependency phenomenon in China using a theoretical approach. The strong correlations between online gaming dependency and real-life problems suggest that online gaming with psychological dependency is likely to become a negative activity that results in various detrimental effects in offline contexts. Even with a relatively low online gaming dependency, players may still experience some negative life consequences.

The current study also provides empirical evidence that the cognitive variable maladaptive cognitions may be an important antecedent of online gaming dependency, which is consistent with Davis’s cognitive-behavioral model of PIU. The finding suggests that for the prevention and treatment of online gaming dependency, it is critical for health professionals to attend to the presence of maladaptive thoughts among online gamers. Different from other types of dependency, the amount of exposure may not be the deciding factor for media-related dependency. In fact, hierarchical multiple regression analysis revealed that the R-square value increased significantly from 0.07 to 0.40 by adding the variable.
of maladaptive cognitions on top of the control variables of gender and time spent on online game playing to predict online gaming dependency ($p < 0.001$). This finding further suggests that simply reducing the amount of time spent on online gaming may not be an effective solution to prevent or recover from dependent online gaming if the cognitive and psychological problems of the player still exist. The practical implication of this finding is that parents, teachers, and counselors should be aware of and pay enough attention to the psychological well-being as well as cognitions of the players they try to help.

Several limitations of this study need to be acknowledged. First, this preliminary study used a relatively small sample. Although 131 reached the minimum requirement for path analysis, usually a larger sample size is preferred. Second, the generalizability of the results toward other online gamers in China remains unclear due to the lack of a large and nationally representative sample. In future research, more effective approaches to reach and recruit online game players should be utilized. Third, with a cross-sectional design, it is impossible to determine causality in the current study. Researchers need to conduct longitudinal studies to determine the causal relationships and explore the potential reciprocal associations among the constructs. Identifying the contributors of maladaptive cognitions would also add valuable information to this area of study.

An interesting extension of the current study is to identify the predictors of maladaptive cognitions. We tested an alternative model wherein shyness and depression were modeled as the predictors of maladaptive cognitions, which in turn were predicted to be associated with online gaming dependency. However, the model resulted in a poor fit to our data, $\chi^2(2) = 43.64, p = 0.00; \text{RMSEA} = 0.40$. Further research is needed to identify the critical psychosocial variables that may directly predict maladaptive cognitions in the context of online gaming. The cognitive variable of preference for online social interactions might explain maladaptive cognitions. 

This preference is characterized by beliefs that one will perform better and feel better about oneself in online social interactions and relationships than in similar activities offline. Caplan also discussed possible explanations for the preference by reviewing previous literature on the advantages and attractiveness of computer-mediated interpersonal communication versus face-to-face communication, such as greater anonymity, the presence of hyperpersonal communication, and decreased adherence to social norms. His survey of undergraduate students demonstrated that participants’ degree of preference for online social interaction is a significant predictor of their problematic Internet use. This construct also implies a comparison and choice conducted by users between online and offline social interactions and relationships. In the future, researchers need to draw on literature on both computer-mediated and face-to-face communication to investigate the role of this particular preference in the mechanisms of dependent online gaming and Internet use.

This study extends previous research on addictive media use by focusing on one particular Internet application: online games, which have significant potential for dependency. This study investigated the cognitive and psychological antecedents and real-life consequences of online gaming dependency in China. Our model affirmed the critical role played by the cognitive and psychological variables that contribute to online gaming dependency. The data revealed that it is not just the time spent on playing online games: the cognitions and psychological status of the players play critical roles on negative life consequences of online game playing. The finding can guide health professionals, consultants, and individuals who are concerned about online gaming dependency for prevention and treatment.

**Disclosure Statement**

No competing financial interests exist.

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