



# The attraction of online games: An important factor for Internet Addiction



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## ABSTRACT

This study examined the attraction of online games and their contribution to Internet Addiction (IA) among college students in China in a series of cross-sectional studies. Study 1 tested the theoretical framework of the online games attraction and developed an assessment instrument: the Online Game Attraction Inventory (OAI). Study 2 surveyed 635 students using a battery of questionnaires that included the Chen Internet Addiction Scale (CIAS) to assess IA levels and determine which predictor contributed the most to IA. The results indicated the OAI to be a psychometrically sound tool with acceptable levels of reliability and validity. The OAI score was positively related to the CIAS score ( $r = .397, p < .01$ ), and the structural equation modeling results revealed that online game attraction mediates the relationships among personality, family function, life events, social support and IA. Thus, the attraction of online games may affect the IA of college students; therefore, more attention should be paid to this issue.

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## 1. Introduction

The rapid growth of the Internet has come with questions about its impact on society and users, both positive and negative. Typically, Internet Addiction (IA) is one of these negative effects (Ko, Yen, Yen, Chen, & Chen, 2012). Some empirical studies have been done in recent years and most of them focused on several key factors related to IA (Kuss, Griffiths, & Binder, 2013), including life stressors (Lam, Peng, Mai, & Jing, 2009; Rehbein, Psych, Kleimann, Mediasci, & Mölle, 2010), family-related factors (Yen, Ko, Yen, Wu, & Yang, 2007a) and especially personality characteristics and psychosocial characteristics (Andreou & Svoli, 2013; Caplan, 2002; Caplan, Williams, & Yee, 2009; Young, 1998).

Hardie and Tee (2007) found that high levels of loneliness, social anxiety, and neuroticism as well as low levels of extraversion influenced IA. Social-psychological or personality variables, such as sensation seeking, loneliness, depression, poor motivation, fear of rejection, and the need for approval, are associated with this

addictive behavior (David, Bradford, & Lukas, 2012; Lemmens, Valkenburg, & Peter, 2011; Lin & Tsai, 2002; Whang, Lee, & Chang, 2003; Yen, Ko, Yen, Wu, & Yang, 2007b). Furthermore, the lack of social support that is associated with depressive symptoms may increase susceptibility to IA (Ybarra, 2004). Besides, some attention was also given to the relationship between family factors and IA. Previous researchers have documented that an adolescent's family environment is highly predictive for adolescent Internet Addiction (Nam, 2002; Young, 1999). According to Davis (2001), adolescents whose parents provide insufficient attention and support are more likely to be psychologically unstable, which leads to overusing the Internet in order to escape their home situations.

Expect for examining the factors related to IA, a series of studies suggested that online games have become one of the most addictive activities on the Internet and a primary cause of IA, and then the key factors related to Online Game Addiction were examined (Kuss & Griffiths, 2012).

Several studies have explored the behavior characteristics of heavy online game users and the factors associated with Online Game Addiction (Collins, Freeman, & Chamarro-Premuzic, 2012; Jeong & Kim, 2011; Liu & Kuo, 2007; Oggins & Sammis, 2010; Park, Song, & Teng, 2011; Stetina, Kothgassner, Lehenbauer, & Kryspin-Exner, 2011). The psychological motives and reasons for playing online games have also been explored. It is reported that "entertainment and leisure," "emotional coping," "excitement and challenge seeking," and "escape from reality" maybe the major reasons for playing online games (Griffiths, Davies, & Chappell,

Abbreviations: IA, Internet Addiction; MMORPG, Massively multi-player online role-playing game; OAI, Online Games Attraction Inventory; CIAS, The Chen Internet Addiction Scale; FACES II, The Family Adaptability and Cohesion Scale; EPQ, The Eysenck Personality Questionnaire; ASLEC, The Adolescent Self-Rating Life Events Checklist; SSRS, The Social Support Rating Scale; SEM, Structural Equation Modeling.

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2004; Ko, Yen, Yen, Lin, & Yang 2007; Liu & Kuo, 2007; Smyth, 2007; Wan & Chiou, 2006a,b; Xu, Turel, & Yuan, 2012). Other studies focused on the issue of why players continued to play online games (Ang, Zaphiris, & Mahmood, 2007; Choi & Kim, 2004; Lazzaro, 2004; Refiana, Mizerski, & Murphy, 2005; Sweetser & Wyeth, 2005; Voiskounsky, Mitina, & Avetisova, 2004; Webster, Trevino, & Ryan, 1993). They found that some characteristics of online games may keep users continuous playing. Ng and Wiemer-Hastings (2005) reported that in MMORPGs, leveling-up and obtaining items as well as the recognition and admiration of other players are the major attractions for many players. Wu, Li, and Rao (2008) found that online game story, graphics, length, and control are highly related to enjoyment, and enjoyment has a significant impact on intention to play. These findings are in line with those of other studies: Narrative, aesthetics, character, interface, and interaction are five critical design strategies factors that lead to engagement (Choi & Kim, 2004; Dickey, 2005; Mulligan & Patrovsky, 2003).

As online games become increasingly popular, the problem of game addiction has received much attention. The game industries have, understandably, employed various design strategies in order to increase consumer's engagement and loyalty, but it is easily ignored that over attraction maybe result in addiction. Computer designs have been found to have many important influences on a user's psychology, so that the relationship between a user's liking of the design factors and addiction is worthy of our attention and investigation, but in fact, only few of studies examined it. Chen and Chang (2008) suggested that a user's preferences for aesthetics, character, and interaction are strongly related to the compulsive, withdrawal, and tolerance symptoms of game addiction. Users' aesthetic experience is also significantly related to IA (Song, Larose, Eastin, & Lin, 2004).

Based on aforementioned studies, we can conclude that factors associated with IA were complicated and the online games should be given special attention. Although several studies examined player backgrounds, characteristics, and motives, few have addressed the relationship between game addiction/IA and game design (Chen & Chang, 2008). With the limited researches in this field, the relationship between online games attraction and IA should be further explored. In a recent review, Morahan-Martin (2008) noted that although activities such as online interactive gaming may contribute to pathological Internet use, the magnitude of this influence is unclear. Online gaming has a special influence on IA; however, the mechanism of this influence and the aspects of online games that appeal to users have not been clarified. Moreover, it is unknown how online games, together with the major factors such as stress, family environment, social support, and personality characteristics, impact IA in college students or which of the above factors contributes most to IA. The present study sought to answer these questions by examining online games. Therefore, in this paper, we reports preliminary findings from: (1) the study designed to investigate what makes online games so attractive and (2) the study aimed to assess the unique influence of the online game attraction on IA in college students.

## 2. Study 1: the attraction of online games and its assessment

What attracts players to online games? Considering their meticulous craftsmanship, exquisite imagery and exciting rhythms, that online games fascinate adolescents is not surprising. These games are also highly interactive and competitive. This study explored the theoretical framework of online game attraction, developed an assessment instrument, and evaluated its psychometric properties.

### 2.1. Method and procedure

#### 2.1.1. The development of Online Games Attraction Inventory (OAI) and the pretest

We examined the attractive characteristics of online games by conducting an open questionnaire, an in-depth interview and a content analysis. First, one hundred eighty Chinese students with online gaming experience used the open questionnaire to communicate the attractive characteristics of online games. The questionnaire instructions were as follows: "Please use your own words to write down as many attractive characteristics of online games as possible." Second, the in-depth interview was conducted. We randomly chose 10 players in total from a cybercafé and a dormitory. Third, we conducted a face-to-face in-depth interview. The interview questions included, "Which game is your favorite?" and "What are the attractive characteristics of this game?" Finally, a content analysis of online games was executed. Based on the Investigation Report of the Chinese Online Game Market (China Internet Network Information Center., 2008), the eight most popular and influential online games in China were selected for analysis: World of Warcraft, The Legend of Mir, Audition Dance Battle Online, Fantasy Westward Journey, The Journey, Crazy Racing Kart Rider, Jade Dynasty and Fight the Landlord.

The first draft of the OAI was developed based on the results of the open-ended questionnaire, in-depth interview and content analysis. This measure consisted of 256 self-rated items scored using a 4-point Likert scale (1 = extremely disagree, 2 = disagree, 3 = agree, 4 = extremely agree). Higher OAI scores indicate the more attracted the subject participants who are drawn to online games. A pretest was conducted using 154 students at 2 universities in Mainland China. We used a common psychometric criterion, the critical ratio, to remove or revise items. One hundred ten items were kept in the final draft of the OAI. Each of these items addresses at least one of the nine attraction characteristics: freedom, vividness, rewards, technical, group identity, recreation, artistry, systematic and regularity.

#### 2.1.2. Formal test

**2.1.2.1. Participants.** We surveyed 1160 college students from 9 universities throughout Jiangsu Province, Shanghai City, Shandong Province, Fujian Province and Gansu Province in China from November to December 2009. One thousand sixty-five questionnaires were returned; of these surveys, 892 were complete and available for the study. The initial sample was randomly divided into two samples ( $N_1 = 446$ ;  $N_2 = 446$ ). An exploratory factor analysis and a confirmatory factor analysis were conducted on the two samples, respectively. All study participants had used the Internet within the previous 6 months and were aged between 17 and 24 years (mean = approximately 20 years). Four hundred seven (45.6%) of the respondents were male.

**2.1.2.2. Measures.** The Online Game Addiction Scale for College Students (Zhou & Yang, 2006) was used. This survey was revised from the Diagnostic Questionnaire for Internet Addiction (Young, 1998) and consisted of 8 items that use a qualitative five-point scale for participant response that ranges from 1 = extremely disagree to 5 = extremely agree. Cronbach's  $\alpha$  was .899.

**2.1.2.3. Statistical analyses.** The reliability and validity tests were conducted using SPSS 15.0 and AMOS 7.0.

### 2.2. Results

#### 2.2.1. Reliability

Cronbach's  $\alpha$  for the OAI was .992, and the split-half reliability was .962 (see Table 1). Cronbach's  $\alpha$  for the 9 subscales ranged from .931 to .953, and the split-half reliabilities ranged from .860 to .902.

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