



Cross-validation of reliability, convergent and discriminant validity for the problematic online game use scale

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ABSTRACT

The main purpose of the present study is to develop a measure of problematic online game use by identifying underlying factors and testing external validities of the scale. The authors tested the scale with the three age groups: 5th, 8th, and 11th graders. Through a series of exploratory and confirmatory factor analyses, the present study confirmed that the POGU scale produced reliable and consistent factorial structures across the independent samples. The results supported convergent validity of the scale: POGU showed significant correlations with academic self-efficacy, anxiety, loneliness, and satisfaction with daily life. The results also supported the discriminant validity. The POGU scale did not redundantly measure any of individual difference constructs and was statistically distinguishable from the closely correlated constructs.

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1. Introduction

Researchers have developed various measures to assess problematic online game use. These measures are based on constructs such as Internet addiction, pathological video game use, problematic Internet use, and computer game addiction. Problematic online game use, which has been treated as subordinate to Internet addiction, focuses mainly on the amount of game playing, tolerance for negative consequences, and withdrawal symptoms (Ng & Wiemer-Hastings, 2005; Pratarelli & Browne, 2002; Suhail & Bargees, 2006; Young, 1999). These scales, which were originally developed to measure video game or Internet addiction, have been used frequently to measure problematic online game use, substituting, for example, the term “Internet” or “video game” for “online game” in the item wording. However, these scales do not adequately capture features of online games such as massively multiplayer online role playing game, which has distinct characteristics such as simulation and the presentation of social interactions.

It is necessary, therefore, to develop new scales specifically designed to measure problematic online game use, rather than “Internet addiction” broadly defined, for at least two reasons: First, the Internet is now a source for everything society desires. Through the Internet, users may indulge in gambling, shopping, chatting, and viewing sexually explicit material, to name just a few. In other words, the Internet is just a way through which people may access

to whatever they want. If users of the Internet are addicted to “something,” that might be some content or services that the Internet provides, rather the Internet itself: Internet users are no more addicted to the Internet than alcoholics are addicted to bottles. Second, online games differ from traditional stand alone games, such as video games, in important respects. Online games allow social interaction through the Internet; an “online game is a game added to the network system” (Choi & Kim, 2004, p. 14), allowing users to meet other users in virtual space. In fact, meeting and interacting with other online gamers may be the strongest attraction of the games. Gamers meet and interact with other users on the Net. Online gamers initiate and maintain interpersonal relationships through the games. The avatars represent the users’ identities to other people. Online game users may “grow” and “realize themselves” in a virtual society. With regards to Internet addiction, it has been reported that seeking social interaction is associated with problematic Internet use (Chou & Tsai, 2007; Lo, Wang, & Fang, 2005; Sanders, Field, Diego, & Kaplan, 2000). Likewise, users of online games, just as users of traditional computer and video games may experience “continuous scoring, promotion, immediate feedback, and achievement of self-satisfaction” (Wan & Chiou, 2006, p. 318).

Problematic online game use, thus, has characteristics that cannot be adequately captured by the scales that had been invented to measure addictive behaviors in gambling, shopping, alcohol consumption, or playing video games. The purposes of the present study are to (a) develop a more appropriate measure problematic online game use scale, (b) identify types of problematic online game use, and (c) assess the validity of problematic online game use scale.

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2. Characteristic of online game

Online game can be categorized in two ways: PC game (i.e., played on one personal computer only, although possibly involving multiple users) and Net game. Net game can be further divided into web game, network game, and interactive online game (i.e., massive multiplayer online playing game; MMORPG). Web game use a web-site as an interface, and users must register in order to play, while network game allow multiple users to use their own PCs to interact through local area networks or the Internet, and many of these closely resemble PC game. To play network game, users must buy and install game software, but do not pay any other fees beyond those for the Internet connection. Online game requires users to log into a server. After selecting a role, users interact with other virtual roles, accumulate valuable experience, and collect virtual assets (Lo et al., 2005). In the present paper, we focus on the interactive online game, or MMORPG, which has two components: traditional stand alone video games and social interactions via Net. MMORPG has now become the common form of online games, which has now more than 99% of market share of all online games (Korea Game Development & Promotion Institute, 2008; Korea Game Industry Agency, 2008). By simply “online game,” the authors of the present paper specifically refer to the interactive online game, or MMORPG.

Online games have characteristics of gambling. Users may make money in the real world by selling items that they acquire in the virtual world to the other users of the games (Lo, 2008). In South Korea, some people actually make their living by playing online games all day long (Ahn, 2009, September 17; Lim, 2009, November 10): They “raise” avatars and acquire items and sell the avatars and items online market for the real money. Prices of some rare or “unique” items often go over several thousand US dollars. In this sense, online games have characteristics of gambling, which may facilitate addictive behaviors.

In fact, it has been reported that problematic online game users get high and show tolerance and withdrawal symptoms (Charlton & Danforth, 2007), a lot like pathological gambling individuals (Crookford, Goodyear, Edwards, Quickfall, & el-Guebaly, 2005; Potenza et al., 2003). Similarly, Thalemann, Wölfling, and Grüsser (2007) found that problematic online game users reported a significant increase of craving for online games, which is similar to pathological gambling individuals for gambling cues.

Social interaction is considered one of the most important aspects related to online games that are distinct from traditional computer and video game (Charlton & Danforth, 2007; Choi & Kim, 2004). Social interaction is defined as the behavior of communicating with two or more objects and affecting each other. For example, users can build their own virtual organizations and create individual factions, guilds, and teams based on shared beliefs, goals, preferences, or other factors (Klang, 2004; Lo et al., 2005). Social interaction has been found to have a substantial impact on the popularity of game, because a set of several sequences of interaction is a narrative or storytelling tool used to construct a user experience in online games (Cummins, 2002; Eskelinen, 2001).

Within online games, users are able to interact and compete with other players. In contrast to single player game, which consists of rather solitary activities, online game allows social interaction, including chatting, battling each other, and achieving objectives together with other human players. As social interaction is a basic need of humans, the social elements of online game could be a factor in explaining their popularity. In discussing the consequences of social interaction in virtual environments, McKenna and Bargh (1999) came to the conclusion that “there is an abundance of interacting going on out there in cyberspace, and it is having surprisingly strong effects of people’s real life” (p. 249). In a nutshell, the authors of the present study would argue that the two qualities of online game, gambling and social interaction, are

the main causes of addictive behaviors, and as such, scales of problematic online game use should cover these qualities.

3. Problematic online game use

The focus of the present study is on possibilities of problematic online game use. For example, students endorsing a greater number of indicators of pathological Internet use have been shown to play online games more than those endorsing fewer or no indicators (Morahan-Martin & Schumacher, 2000). Also, in a study of the socio-demographic characteristics of online game users, Griffiths, Davies, and Chappell (2003) found that 25% of users played for more than 41 h per week, and suggested that these people may be addicted since playing to this extent would be highly likely to have an impact on other aspects of an individual’s life.

3.1. Defining problematic online game use

Various labels have been used to describe people who engage in excessive use of online games which results in negative outcomes, including “online game addiction”, “pathological online game use”, “online game addictive behavior”, and “problematic online game use”. Despite evidence indicating that online game playing is somewhat dysfunctional, there are disagreements in the literature about how to theoretically and operationally define it. The most common perspective is that of Internet addiction, which treats problematic online game use as a behavioral addiction similar in character to other impulse control disorders. Individuals who meet the diagnostic criteria are said to experience social, psychological, and occupational impairment (Charlton & Danforth, 2007; Ng & Wiemer-Hastings, 2005). The Internet addiction perspective, however, has certain limitations. It fails to account for what people actually do online. As mentioned above, people use the Internet for gambling, shopping, chatting, and playing games. Similarly, as Beard and Wolf (2001) suggested the following:

Future research also needs to focus on what it actually is that people are addicted to. Is it the computer? Is it the typing? Is it the information gained? Is it the anonymity? Is it the types of activities in which the individual is engaged? (p. 381).

In this sense, it is difficult to tell whether online game users are addicted to the online game itself or to the Internet. Online games have been added to the network system, which gives many users additional opportunities to meet and interact with one another in virtual space. These interactions may be an important contributor to an optimal Internet experience (Choi & Kim, 2004). The fact that people can gamble and interact with one another through online games leads them to participate in virtual reality. Therefore, measuring online game addiction through existing gambling scales could be problematic.

Hence, Brown (1991, 1997) has argued that the concept of addiction is useful for explaining excessive use of online games and should not be restricted to the ingestion of substances. Although Brown’s work is fundamental to the present study, usage of the term addiction has been considered controversial. For example, the DSM-IV-TR (American Psychiatric Association (APA), 2000) does not include the term either in connection with the ingestion of drugs, where terms such as substance dependence and substance abuse are preferred, or in connection with behaviors such as gambling, where the term pathological gambling is preferred (Charlton, 2002; Charlton & Danforth, 2007). In the present study, the present study adopt the term “problematic online game use (POGU)” to describe people who engage in the excessive use of online games which results in negative outcomes. In general, POGU can be defined as playing online games to the extent that it creates psychological,

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