



The world's most intense online gaming culture: Addiction and high-engagement prevalence rates among South Korean adolescents and young adults

Soonhwa Seok^{a,*}, Boaventura DaCosta^b

^a Korea University, 145, Anam-ro, Seongbuk-gu, Seoul 136-701, Republic of Korea

^b Solers Research Group, Inc. with A. Harold and Associates, LLC, 11200 Saint Johns Industrial Pkwy, Suite 1, Jacksonville, FL 32246, United States

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ABSTRACT

Failure to establish agreed-upon criteria by which to measure and identify online video game addiction has resulted in a lack of reliable evidence of the actual percentage of individuals who are pathologically dependent. Building upon prior research, the present study sought to better determine the magnitude of pathological online video game play using a distinction between core and peripheral criteria for behavioral addiction. Preferences and perceptions towards online video games and addiction were also examined to better understand players' habits. A questionnaire was administered to 1332 South Korean students across 11 high schools and 1 middle school in an area surrounding the capital of Seoul. Using a monothetic and a polythetic classification system, findings showed rates ranging between 1.7% and 25.5%, with a 2.7% addiction rate when distinguishing core from peripheral criteria. These results may suggest that online video game addiction rates in intense gaming cultures such as South Korea are not as high as otherwise believed. The findings will be of assistance to educators, policymakers, clinicians, and researchers in understanding the challenges in deriving meaningful video game addiction prevalence rates, and thus being able to better separate reality from conjecture with regard to the notion of pathological game play.

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1. Introduction

Massively multiplayer online role playing games (MMORPGs) are one of the fastest growing genres in the gaming industry. *World of Warcraft*, for example, exceeds 12 million players worldwide (Blizzard Entertainment, 2008). According to Van Rooij (2011), both Korean and Western researchers have explicitly reported MMORPGs, as the foremost culprit in cases of online video game addiction (Chappell, Eatough, Davies, & Griffiths, 2006; Council on Science and Public Health, 2007; Lee et al., 2007). However, there is significant disagreement on what constitutes pathological game play. For example, Van Rooij, Schoenmakers, Vermulst, Van Den Eijnden, and Van De Mheen (2011) point out that while some suggest that this kind of addictive behavior is a serious problem in Internet-dependent cultures (Council on Science and Public Health; Young, n.d.), others disagree, suggesting that the alleged problem is nothing more than hysteria promoted by mass media (Wood 2008a, 2008b). Given this divergence of opinions, it should not come as much of a surprise that there is insufficient evidence

to reach any conclusions on prevalence (Council on Science and Public Health), let alone agreement on an operational definition of "game addiction" (King, Delfabbro, & Griffiths, 2010).

1.1. Explicit psychological criteria for defining pathological game play

According to King et al. (2010), most early research neglected to propose explicit psychological criteria, instead emphasizing on factors such as time and/or money as ways to classify problematic video game use. Not surprisingly, this oversight has partly resulted in classifying large numbers of individuals as addicted to video games, with some studies reporting addiction rates above 10% in adolescents (Griffiths & Hunt, 1998). The few studies that did propose explicit psychological criteria adopted the *Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised* (DSM-III-R) criteria for pathological gambling, replacing the term "gambling" with the term "video game playing" (Fisher, 1994; Griffiths, 1997; Griffiths & Hunt), based on the argument that the two terms were sufficiently similar.

In recent years, attempts have been made to develop criteria for measuring video game addiction (e.g., Charlton, 2002; Charlton & Danforth, 2007; Giles & Price, 2008; Hussain & Griffiths, 2009; King et al., 2010; Lemmens, Valkenburg, & Peter, 2009; Porter, Starcevic,

* Corresponding author. Tel.: +82 2 3290 1152; fax: +82 2 3290 1655.

E-mail addresses: sunaseok@yahoo.com, bada7@korea.ac.kr (S. Seok), bdacosta@solersresearchgroup.com (B. DaCosta).

Berle, & Fenech, 2010; Wan & Chiou, 2007), mainly using Brown's (1997) behavioral model of addiction. According to Charlton and Danforth, this model has much in common with the schemes used in investigating computer-related addictions that have been adapted from DSM criteria for pathological gambling (e.g., Griffiths & Hunt, 1998). When applied to video games, the model specifies six criteria—salience, euphoria, tolerance, withdrawal, relapse, and conflict—that must be present before a behavioral addiction diagnosis can be made.

Briefly summarized, salience occurs when video game play takes priority in the person's life, either dominating the person's thoughts (cognitive) or physical actions (behavioral); euphoria occurs when video game play alters the person's mood, which includes a heightened physiological arousal sometimes described as feelings of elation, a “buzz,” or a “high”; tolerance occurs when the person must increase time spent on video game play in order to achieve the same feelings of elation; withdrawal occurs when the person's mood changes for the worse, causing unpleasant emotional or physical effects, such as feeling of frustration and irritability, as a result of reducing or not being able to engage in video game play; relapse occurs when the person reverts to earlier patterns of video game play after attempts to reduce it or eliminate it have failed; finally, conflict occurs when there are negative consequences as a result of video game play, which may manifest as opposition to others (interpersonal) or to oneself (intrapersonal; Charlton, 2002; Griffiths, 1996).

Although the adoption of Brown's model has been seen by some as a positive step towards an operational definition of video game addiction, the criteria are not without limitations (King et al., 2010). Central to the problem is whether a monothetic or polythetic approach should be adopted. According to Charlton and Danforth (2007), with a monothetic approach, all criteria for a given measurement must be met for an addiction diagnosis to be given. Brown's model uses a monothetic approach. On the other hand, with a polythetic approach, only a certain number of criteria must be met for a diagnosis to be reached. Studies that propose DSM criteria for pathological gambling take advantage of this approach. As expected, there are advantages and disadvantages to both approaches. Whereas a polythetic approach may be seen as too liberal, it may be argued that a monothetic approach is too strict (First, Frances, & Pincus, 2004).

1.2. Distinguishing addiction from high engagement

Based on Brown's model, Charlton (2002) has proposed a slightly different approach which theorizes that only “core” criteria central to addiction must be met for a positive diagnosis. While investigating the criteria of behavioral addiction, as defined by Brown (1991, 1993, cited in Charlton) and adopted by Griffiths (1995), Griffiths (1996) both generally and with regard to technology, Charlton noticed a division between mild and strong criteria. Based on these findings, he suggested that mild (or peripheral) criteria—cognitive salience, euphoria, and tolerance—indicated a non-pathological construct of high engagement as opposed to addiction, whereas strong (or core) criteria—behavioral salience, withdrawal, relapse, and conflict (interpersonal and intrapersonal)—indicated true addiction (Charlton & Danforth, 2007). Charlton argued that individuals may progress through a phase of high engagement before they reach the stage of addiction and consequently, only core criteria should be used when classifying cases of computer-related addiction or at minimum, given greater weight (Charlton & Danforth).

Charlton and Danforth (2007) later came to the same conclusion with regard to the applicability of Brown's model explicitly to video game play, specifically MMOGs. According to the authors, the Charlton (2002) study only examined problematic Internet

behavior, including computer addiction and engagement in general, instead of specific Internet-related activities, such as gaming. Furthermore, Charlton sampled higher education students, leading to a concern that there would be few computer addicted participants in this sample because the frequency of computing-related addictions in this general population is likely to be low (Charlton; Griffiths, 1998). Charlton and Danforth sought to address these limitations in their study by sampling from a population of individuals who may be potentially addicted to online games, specifically the MMORPG entitled *Asheron's Call*.

Charlton and Danforth (2007) found that a large subset of their sample who reported a positive experience with online video games also endorsed some of the addiction criteria. Specifically, salience, euphoria, and tolerance appeared to indicate both a high engagement and addiction to online video games, thus bringing into question their usefulness for distinguishing problematic from healthy playing behavior. More important, the criteria could inadvertently lead to a misclassification of addiction (Charlton, 2002; King et al., 2010), particularly when researchers adopt the DSM's polythetic diagnostic system (Charlton).

Charlton and Danforth (2007) concluded that it is inappropriate to use the previously adopted criteria for addiction when researching or diagnosing computer-related addictions because it can result in a lack of reliable evidence on the actual percentage of individuals who are pathologically dependent on video games (Charlton & Danforth; Hettrick, 2008; Van Rooij, 2011) as is evident when looking at multiple studies and the disparity in their reported number of addicted players (Hettrick).

For example, they found that when adopting different criteria and cut-offs, prevalence rates ranged from 1.8% to 38.7% within their sample of 442 game players. That is, adopting a polythetic approach similar to that used by authors such as Griffiths and Hunt (1998), in which 5 out of 10 responses were required to meet the conditions for an addiction classification, resulted in the high (38.7%) addiction rate, whereas, when adopting a monothetic classification system, requiring all of Brown's behavioral addiction criteria to be met, resulted in the low (1.8%) addiction rate.

Choo, Gentile, Sim, Li, Khoo, and Liao (2010) arrived at similar results in the surveying of 2998 Singapore children and adolescents. In their study, pathological video gaming was measured using a 10-item screening instrument derived from the pathological gambling items of the DSM-IV. To be classified as dependent, participants had to report at least half (5) of the symptoms. Responses consisted of “yes,” “no,” and “sometimes.” With regard to cut-offs, Choo et al. calculated the number of addicted players by treating “sometimes” as an endorsement (i.e., “yes”), treating “sometimes” not as an endorsement (i.e., “no”), and equally dividing the “sometimes” responses considering them a response of “yes” (i.e., “yes” = 1, “sometimes” = 0.5, “no” = 0).

The first approach yielded a prevalence rate of 27.4%, the second approach yielded a rate of 5.1%, and the third approach yielded a prevalence that was much closer to the second approach than the first (8.7%), thus, resulting in prevalence rates ranging from 5.1% to 27.4%. Now compare these aforementioned prevalence ranges to that of gambling, where regardless of study period and province, the percentage of severe gambling problems has been reported to be around 1%, with a range from 0.4% to 2.2% (Wiebe & Volberg, 2007).

1.3. The present study

Given that much of today's research on online video game addiction is plagued with a lack of reliable evidence, there is an urgent need for solid prevalence research (Arnesen, 2010). Thus, the aim of the present study was to determine the magnitude of online video game addiction by clearly distinguishing between those who

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