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Examining common information technology addictions and their relationships with non-technology-related addictions

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ABSTRACT

A number of novel problematic behaviors have emerged in the information technology era, and corresponding addictions have been proposed for some of these behaviors. Scholars have speculated that a common factor may underlie these information technology addictions, but this theoretical notion has yet to be tested empirically. The present study tested this notion and also investigated the relationships of information technology addictions with other behavioral addictions as well as substance addictions. We conducted an online survey in 1001 US adults (56% female; mean age = 35.0 years, range = 18−83). Two conceptual models were formulated and tested. Moreover, correlations of the information technology addictions with both problematic gambling and alcohol use disorder were examined. The confirmatory factor analysis showed that there was a common factor underlying various types of information technology addiction. In addition, problematic gambling was more strongly correlated with information technology addiction than alcohol use disorder was. Our findings are interpreted in light of a spectrum approach, which conceptualizes information technology addiction as a cluster of disorders comprising not only shared risk factors and symptoms but also distinct characteristics. The findings further reveal that information technology addiction is more similar to other behavioral addictions than substance-related addictions. Implications for researchers and practitioners are discussed.

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1. Introduction

Information technology has become an integral part of modern humans' lives. People use it to facilitate the functioning of nearly all life domains. With the help of information technology, users now can acquire information, connect with people, satisfy their leisure and entertainment wants and needs, and achieve much more with speed and precision that were unforeseeable one to two decades ago. Despite the extensive benefits of information technology, excessive use of it can be detrimental. There is an increasing concern that people can suffer from pathological technology use with symptoms that resemble that of an addiction (see Sim, Gentile, Bricolo, Serpelloni, & Gulamoydeen, 2012 for a review). Much research has focused on studying how different types of information technology addiction can be accessed as well as their causes and consequences. Yet, some important research questions remain unknown. For instance, are different types of information

technology addiction a cluster of closely related disorders or simply separate constructs? Also, how are these more recently proposed addictions related to the more "traditional" types of addiction such as problematic gambling? The present study was conducted to address these unexplored timely issues.

The overarching aim of this study is twofold. First, our study is the first to provide a systematic test of the relationships among four common kinds of information technology addiction: Internet addiction, Internet gaming disorder, smartphone addiction, and Facebook addiction. The results help researchers and clinicians determine whether there can be a latent factor underlying these disorders and advance the conceptualization of information technology addiction prior to its possible inclusion in the Diagnostic and Statistical Manual of Mental Disorders (DSM). Second, this study also examines how information technology addiction is related to other behavioral addictions (i.e., problematic gambling) and substance addictions (i.e., alcohol use disorder). The effect of having multiple addiction problems can be synergistic and greatly impair psychosocial functioning (Zimmerman & Mattia, 1999); hence, it is essential to find out if and how different types of addiction tend to covary. The findings yielded from this study can

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potentially inform treatment and prevention strategies.

1.1. Four common kinds of information technology addiction

A review of the literature identified four kinds of information technology addiction that have been most frequently studied, namely Internet addiction, Internet gaming disorder, smartphone addiction, and Facebook addiction. These kinds of information technology addiction share some common symptoms, but they each also have some unique characteristics.

Internet addiction is one of the earliest examined kind of information technology addiction. Young (1998) proposed a set of eight symptoms for this disorder. Examples of the symptoms are preoccupation with the Internet and tolerance. A recent meta-analysis indicates that the global prevalence of this disorder is approximately six percent (Cheng & Li, 2014). In the United States, the prevalence rates range from 0.3 to 25 percent (Weinstein & Lejoyeux, 2010). This kind of information technology addiction is frequently found to be associated with psychosocial problems such as depression, loneliness, and social anxiety (Burnay, Billieux, Blairy, & Larøi, 2015; Weinstein et al., 2015; Özdemir, Kuzucu, & Ak, 2014). There is longitudinal evidence revealing that excessive Internet use can lead to impairment in academic performance, work, and social relations (e.g., Cheng, Sun, & Mak, 2015; Tokunaga, 2014).

Internet gaming disorder, originally proposed as a subtype of Internet disorder (Young, 2009), is the first and only kind of information technology addiction mentioned in the DSM-V (American Psychiatric Association, 2013). It is a disorder characterized by symptoms such as withdrawal and tolerance. People having this disorder may spend a substantial amount of time playing video games online or offline. According to the review by Kuss and Griffiths (2012), the estimates of prevalence of Internet gaming disorder range from 30 to 50 percent based on gender, age, and types of games played. Similar to Internet addiction, Internet gaming disorder is associated with depression, loneliness, and social anxiety (e.g., Sarda, Bègue, Bry, & Gentile, 2016; Sigerson, Li, Cheung, Luk, & Cheng, 2017). Internet gaming disorder, however, is conceptually distinct from Internet addiction in that only the former is associated with aggression—possibly due to exposure to violent video games (Lemmens, Valkenburg, & Peter, 2011).

Smartphone addiction has received increasing attention since the popularization of smartphones around the globe. In the United States, 68 percent of adults own a smartphone, and the figure increases to 86 percent for adults under 30 years of age (Anderson, 2015). Prior to the invention of smartphones, people mostly used their mobile phones solely for communication purposes. Text-message addiction has been a major public concern. It is noteworthy that modern smartphones function like mobile mini-computers. Smartphone users can surf the Web and make use of a plethora of mobile applications downloaded from the Internet. Those with a smartphone addiction show addictive symptoms such as functional impairment and withdrawal (Lin et al., 2014). The new features of smartphones are not only addictive to adults but also to adolescents. Smartphone addiction is a relatively new research topic, and thus not many studies have investigated its prevalence rate. A study in South Korea reported a 17 percent and 27 percent prevalence rate of smartphone addiction among adolescent boys and girls, respectively (Kwon, Kim, Cho, & Yang, 2013). Similar to other kinds of information technology addiction, smartphone addiction is associated with depression, loneliness, and anxiety (Bian & Leung, 2015; Demirci, Akgönül, & Akpinar, 2015; Mok et al., 2014). In addition, smartphone addiction is associated with fear of ostracism (Igarashi, Motoyoshi, Takai, & Yoshida, 2005), and such an association is unique to this kind of information technology addiction.
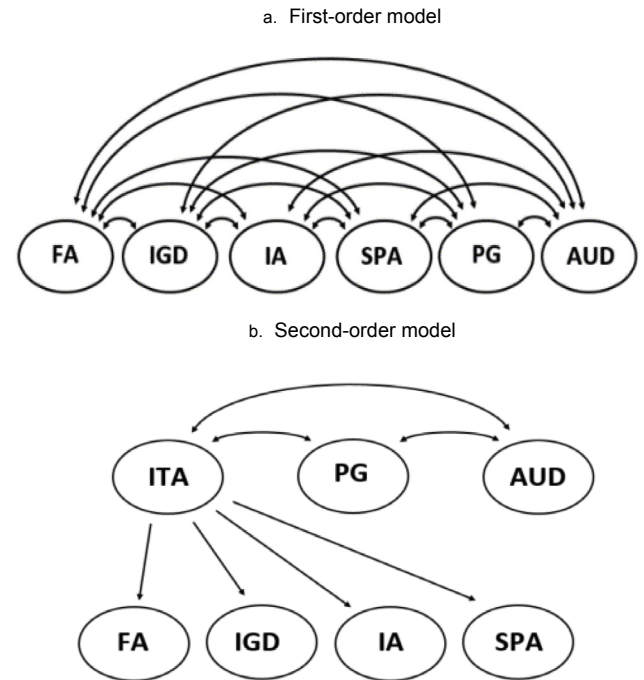

Fig. 1. Conceptual overview of the two proposed models.[1]

Facebook addiction is a phenomenon that has emerged over the past decade while the percentage of adults using social networking sites has soared from 7 to 65 percent (Perrin, 2015). There is still no consensus to date on how social networking should be defined; hence, most studies have focused on the use of and addiction to individual social networking sites since the development and validation of the Bergen Facebook Addiction Scale (BFAS). This measure assesses symptoms of Facebook addiction such as salience and withdrawal (Andreassen, Torsheim, Brunborg, & Pallesen, 2012). As of now, the prevalence of Facebook addiction is unclear. Recent studies have revealed that Facebook addiction is similar to other kinds of information technology addiction in its association with depression, loneliness, and anxiety (Ryan, Chester, Reece, & Xenos, 2014). As Facebook is unique in that it allows self-expression, and sometimes false self-expression (Gil-Or, Levi-Belz, & Turel, 2015), it may be related to specific correlates such as motives for impression management.

1.2. Two proposed conceptual models

The present study has two aims. First, we investigated the relationships among the four most frequently studied information technology addictions, namely Internet addiction, Internet gaming disorder, smartphone addiction, and Facebook addiction. Second, we examined whether these types of information technology addiction were related to non-technology-related behavioral addiction and substance addiction, respectively. To achieve the first aim, we constructed two models: the first-order model (see Fig. 1a) and second-order model (see Fig. 1b). These models were tested with a large sample to investigate if they had good statistical fit to

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[1] Including the following variables: Facebook addiction (FA), Internet Gaming Disorder (IGD), Internet addiction (IA), smartphone addiction (SPA), information technology addiction (ITA), problematic gambling (PG), and alcohol use disorder (AUD).