



A repeat cross-sectional analysis of the psychometric properties of the Compulsive Internet Use Scale (CIUS) with adolescents from public and private schools



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ABSTRACT

The development and validation of compulsive Internet use instruments has recently gained the attention of the research community. Recent literature has recommended examining the psychometric properties of different assessment instruments with diverse user groups, cultures and populations. To address this need, the present study examined the psychometric properties of the Compulsive Internet Use Scale (CIUS) with adolescent Internet users attending public and private schools, using a repeated cross-sectional study. Three studies were carried out, namely Study A (n = 2369), Study B (n = 997) and Study C (n = 274), the results of which suggest that CIUS possesses excellent factorial and construct validity and reliability across time, and is suitable for both public and private school attending adolescents. Additionally, the study examined the powers of demographics and technology accessibility attributes in predicting CIUS among adolescent Internet users over time. It was found that male adolescents with low life satisfaction and low academic performance tend to experience compulsive Internet use; personal mobile Internet access and daily time spent on Internet use also significantly predicted CIUS scores. The theoretical and practical implications of the study are presented.

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1. Introduction

Internet use has become an essential part of our daily lives. It has affected the way we manage different aspects of our daily routine, including searching for online information, communicating with friends and family, entertainment, shopping, and carrying out different work related activities (Khazaal et al., 2011). Although the introduction of the Internet has brought several positive changes to our lives, its negative impacts cannot be ignored. The continuous use of the Internet could become uncontrollable and excessive, resulting in various mental well-being related problems (Griffiths & Wood, 2000; Liu & Potenza, 2007). Compulsive Internet use or Internet addiction (IA) is a psychological state in which an Internet user tends to spend more time on the Internet than actually intended, despite knowing the obvious consequences (Young, 1996). Prior literature suggests that compulsive Internet use could lead to lack of sleep, day dreaming, degradation of academic performance, psychiatric disorders, and poor concentration and social skills, as well as causing frustration and even irritation (Griffiths & Wood, 2000; Krajewska-Kulak et al., 2011; Liu & Potenza, 2007; Yen, Ko, Yen, Wu, & Yang, 2007; Yen et al., 2008; Young & Case, 2004).

In the last decade, a number of instruments for the assessment of compulsive Internet use have been developed. These instruments enable researchers and practitioners to quickly screen compulsive users from a normal population of Internet users. Relatively recent research has stressed the need to examine the psychometric properties of these different instruments for the assessment of compulsive Internet use (Chang & Law, 2008; Wartberg, Petersen, Kammerl, Rosenkranz, & Thomasius, 2014). These investigations help researchers and practitioners to better understand the compulsive Internet use phenomenon (Chang & Law, 2008).

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The Compulsive Internet Use Scale (CIUS) is a 14-item instrument for assessing compulsive Internet use, which was developed in 2009 (Meerkerk, Van Den Eijnden, Vermulst, & Garretsen, 2009). CIUS is a short and concise instrument that has recently caught the interest of researchers and practitioners engaged in research examining compulsive Internet use. To date, several psychometric validations of CIUS have been carried out in different languages and cultures. However, the majority of these existing studies have been carried out based on a single cross-sectional survey, which is limited to a single point of time and interest, i.e. they can only provide the situation of one specific user group at one specific point in time (Levin, 2006). Since the characteristics and behavior of Internet users are witnessing a continuous change, cross-sectional surveys might not be able to provide precise information on the actual situation. Due to these reasons, researchers have suggested the need to conduct longitudinal studies where repeated sampling over time is carried out with the same subjects (Yee & Niemeier, 1996). However, longitudinal studies suffer from various inherent challenges, namely selecting and tracking of the study participants, maintaining a sufficiently reliable pool of participants, and also controlling the attrition of participants (Yee & Niemeier, 1996). In order to overcome these limitations, repeated cross-sectional (RCS) studies, also referred to as “pseudo longitudinal studies,” are a possible alternative. In RCS studies, the study participants can be selected from outside the original pool of participants (Levin, 2006). The main benefits of RCS surveys include: (1) the cost effectiveness of resampling the new study participants compared to longitudinal studies (Yee & Niemeier, 1996). New study participants can be included in different waves of data collection in order to compensate for the loss in the sample size in longitudinal studies; and (2) the inclusion of new study participants at different stages, which enables researchers to maintain a steady level of sample reliability (Yee & Niemeier, 1996).

In order to address this gap in the prior literature concerning CIUS, we carried out an RCS study with Indian adolescent Internet users (aged 12–19 years) in order to examine (1) the psychometric properties of CIUS over time, and (2) the relationships between CIUS, demographics, and the technology accessibility attributes of the adolescent Internet users.

2. Background literature

2.1. The Compulsive Internet Use Scale (CIUS)

The choice of an instrument for the assessment of compulsive Internet use is guided by two important constraints, namely the length of the scale and the time taken for the administration and scoring (Laconi, Rodgers, & Chabrol, 2014). The time taken for scoring is generally short for most validated scales (Laconi et al., 2014). Furthermore, there is a need to validate short instruments with larger samples so as to assess the severity of compulsive Internet use behavior (Meerkerk et al., 2009).

CIUS is a short compulsive Internet use assessment instrument that has been developed based on the recommended criteria for pathological gambling and DSM-IV substance dependence (American Psychological Association, 1994) and behavioral addiction (Griffiths, 1999). CIUS assesses five core elements of compulsive Internet use behavior, namely Loss of control, Withdrawal, Conflict, Coping, Escape and Mood Modification, and Preoccupation (Meerkerk et al., 2009). CIUS is known for its conciseness, ease of use, high reliability, test-retest validity and presence of one-dimensional factorial structure across languages and cultures (Meerkerk et al., 2009; Wartberg et al., 2014). The summation of the 14-items of CIUS gives a summative CIUS score, which is also a determinant of compulsive Internet use (Wartberg et al., 2014).

Since the inception of CIUS, several empirical studies have investigated the relationship between CIUS and other instruments, personality attributes, and Internet users' characteristics. These examinations have investigated the relationship with the online cognition scale (Meerkerk et al., 2009), compulsive Internet use (Meerkerk et al., 2009; Wartberg et al., 2014), time spent on the Internet (Khazaal et al., 2011; Meerkerk et al., 2009), diminished impulse control (Meerkerk et al., 2009), satisfaction with life (Wartberg et al., 2014), frequency of excessive media use (Wartberg et al., 2014), frequency of conflicts at home (Wartberg et al., 2014), parents' perceptions of excessive media use (Wartberg et al., 2014), and demographic variables, e.g. age and gender (Khazaal et al., 2011, 2012). However, most of these studies utilized a single cross-sectional study to examine the relationships. Due to this reason, it is currently unknown if the findings suggested by the prior CIUS literature are still valid since they were examined at a single point in time or interest. To address this research gap, the present study has examined the relationship shared between CIUS, Internet users' demographic aspects (age, gender, economic status, academic performance and life satisfaction) and technology accessibility (home Internet, mobile phone and mobile Internet ownership, daily Internet use and Internet experience) over time by using an RCS study.

2.2. Prior psychometric validations of CIUS

In a recent systematic literature review, Laconi et al. (2014) examined 45 different instruments developed for the assessment of compulsive Internet use. The literature review concluded with several theoretical and practical implications for IA researchers and practitioners. First, the majority of these developed instruments have rarely been used and have not received enough psychometric validation nor possess sufficient psychometric properties. Due to this, Laconi et al. (2014) recommended that efforts should be made to investigate the psychometric properties of the existing instruments with diverse user groups and cultures, rather than developing new assessment instruments. This will be a move towards developing a ‘gold standard’ for the assessment of compulsive Internet use (Beard, 2005; Huang, Wang, Qian, Zhong, & Tao, 2007; Jia & Jia, 2009; Wallace & Masiak, 2011). Second, although the research concerning assessment instruments on IA is growing, there is still no consensus on the unified process of assessment. There is a need to establish an instrument that is well validated so that IA findings could be compared and synthesized. Third, the majority of the earlier validations were carried out with small sample sizes (Guertler et al., 2014; Huang et al., 2007) and revalidation was absent. Of 45 instruments, 26 have only a single study supporting their psychometric properties. Simply put, future research should examine the psychometric properties of the different assessment instruments with different cultures, user groups and also with large samples (Byun et al., 2009; Huang et al., 2007; Pezoa-Jares, Espinoza-Luna, & Vasquez-Medina, 2012).

A review of the prior psychometric validations of CIUS was carried out (see Table 1). The main findings were that: (1) CIUS has received psychometric validation in different languages and cultures, e.g. Dutch (Meerkerk et al., 2009), Arabic (Khazaal et al., 2011), French (Khazaal et al., 2012), Persian (Alavi, Jannatifard, Eslami, & Rezapour, 2011), German (Guertler et al., 2014; Peukert et al., 2012; Wartberg et al., 2014),

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