



## Full length article

## Psychometric validation of the Generalized Problematic Internet Use Scale 2 in a Portuguese sample

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## ABSTRACT

The Generalized Problematic Internet Use Scale 2 (GPIUS2) assesses individuals' generalized problematic Internet use (PIU) cognitions, behaviors, and negative outcomes. To date, the GPIUS2 has only been validated in English, Spanish, German, and Italian language. Therefore, the aim of this study was to validate a Portuguese version of the GPIUS2 and provide a taxonomy of the potential risk of PIU among participants. A sample of 641 Portuguese-speaking Internet users was recruited online after a process of translation and back-translation of the original GPIUS2. In-depth validity and reliability analyses were conducted alongside latent profile analysis (LPA) to identify the potential risk of PIU of participants. The validity and reliability analyses revealed adequate results concerning the psychometric properties of the Portuguese GPIUS2. According to the LPA results, participants were classed as "low risk" ( $n = 289$ , 46.7%), "medium risk" ( $n = 256$ , 40.7%), and "high risk" ( $n = 77$ , 12.6%) of PIU with key differences emerging among the three classes. The present findings support the overall validity and usefulness of the Portuguese GPIUS2 and the results from the LPA may be potentially useful in informing practitioners currently working with clients struggling with PIU.

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## 1. Introduction

## 1.1. Background

Ever since the first reports of excessive and unhealthy Internet use were published almost two decades ago (e.g., Griffiths, 1996; Young, 1996), research in this area has grown rapidly, particularly over the last decade (Pontes, Kuss, & Griffiths, 2015). Some scholars conceptualize problematic Internet use (PIU) as a disease (i.e., the pathology paradigm) while others view PIU as a problem with habits and self-regulation (i.e., the cognitive-behavioral paradigm). According to Tokunaga (2015), the term problematic Internet use (PIU) has been adopted by a majority of researchers who employ the cognitive-behavioral model (i.e., Caplan, 2002, 2010; Davis, 2001) and the social-cognitive model of unregulated Internet use developed by LaRose and colleagues (i.e., Kim, LaRose, & Peng, 2009; LaRose, Eastin, & Gregg, 2001a; LaRose, Lin, & Eastin, 2003;

LaRose, Mastro, & Eastin, 2001). From these perspectives, PIU is not conceptualized as a disease, pathology, or clinical disorder. Rather, the term captures a more common and relatively less severe problem than is suggested by the Internet addiction (IA) paradigm. Accordingly, PIU is usually situated by cognitive-behavioral researchers in the middle range of the continuum [of problem severity] and emphasizes the mild, benign nature of related negative outcomes (e.g., truancy, foregoing a social event). Conversely, addiction researchers place IA at the upper end of the continuum, requiring the experience of serious negative life consequences (e.g., divorce, dropping out of school, dismissal from a job, etc.) (Tokunaga, 2015).

The theoretical framework for understanding PIU initially drew upon the cognitive-behavioral theory of pathological Internet use (Davis, 2001; Davis, Flett, & Besser, 2002), which attempted to model the etiology, development, and outcomes associated with PIU. Moreover, the cognitive-behavioral model (i.e., Caplan, 2002, 2003; Davis, 2001) does not conceptualize PIU as an addiction but rather as "a distinct pattern of Internet-related cognitions and behaviors that result in negative life outcomes." (Caplan, 2002, p. 556). Generalized PIU, which is the focus of the current study, refers

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to “maladaptive cognitions and behaviors related to Internet use that are not linked to any specific content as individuals may develop problems due to the unique communicative context of the Internet.” (Caplan, 2002, p. 557). Conversely, specific PIU refers to the condition in which an individual uses the Internet problematically for a particular purpose (e.g., online sex, online gambling, online gaming, etc.) (Davis, 2001). From the cognitive-behavioral perspective, PIU involves a specific cycle of innate dysfunction leading to Internet use that in turn exacerbates the dysfunction (Caplan, 2003).

When specifying the nature of maladaptive Internet behaviors, it is imperative to distinguish between PIU and excessive use. According to Caplan (2003, 2006), excessive Internet use involves a quantity or degree of online activity that exceeds what a person thinks of as normal, usual, or planned, whereas PIU involves difficulty with impulse control that plays a key role in the development of negative outcomes from Internet use. As a result, the quantity or amount of time online is not necessarily indicative of a problem because many functional Internet behaviors require excessive time online (Caplan & High, 2006; Caplan, 2003, 2006).

Many studies have found PIU to be associated with a variety of psychosocial problems. For example, researchers have identified associations between PIU and increased social anxiety (Weinstein, Dorani, Elhadif, Bukovza, & Yarmulnik, 2015), higher levels of depression (Pontes, Patrão, & Griffiths, 2014), a higher incidence of attention deficit and hyperactivity disorder (Sariyska, Reuter, Lachmann, & Montag, 2015), lower levels of family functioning and life satisfaction (Wartberg, Kriston, Kammerl, Petersen, & Thomasius, 2015), increased loneliness in the educational context (Pontes, Griffiths, & Patrão, 2014), poorer emotional well-being (Piguet, Berchtold, Akre, & Suris, 2015), and increased substance use behaviors (Kuss, van Rooij, Shorter, Griffiths, & van de Mheen, 2013; Rucker, Akre, Berchtold, & Suris, 2015).

Although there are ongoing debates regarding the best way to conceptualize PIU (see Pies, 2009; Shaffer, Hall, & Vander Bilt, 2000; Tokunaga, 2015; Van Rooij & Prause, 2014), longitudinal evidence may help shed light on the issue. A recent longitudinal study conducted by Tokunaga (2014) of 139 undergraduate students in the US found that PIU predicted later difficulties in familial relationships, friendships, and academic or occupational responsibilities, even when underlying psychological problems (i.e., social anxiety, loneliness, and depression) were controlled for. Despite the study's limitations (e.g., small sample size, use of self-report data, etc.), the longitudinal design provided preliminary evidence that PIU may be a unique construct that can be distinguished from underlying psychiatric disorders and that may be associated with psychosocial problems.

As an attempt to move forward the conceptualization and measurement of PIU, Caplan's work (Caplan, 2002, 2003, 2005, 2010; Caplan & High, 2006, 2010) sought to clarify and expand the main constructs of the cognitive-behavioral theory of PIU (Davis, 2001) by developing two theory-driven instruments to assess generalized PIU and also empirically test the underlying relationships between the main PIU constructs (Caplan, 2002, 2003, 2010). The first of these two instruments, the Generalized Problematic Internet Use Scale (GPIUS), assesses the prevalence of cognitions, behaviors, and the negative outcomes associated with generalized PIU (Caplan, 2002). The GPIUS originally had seven factors, six of which were related to generalized PIU cognitions (i.e., mood alteration, social benefits, compulsivity, excessive time, withdrawal, and interpersonal control) and one representing the negative consequences or outcomes resulting from unhealthy Internet use (i.e., negative outcomes) (Caplan, 2002).

After showing that generalized PIU was a multidimensional phenomenon, Caplan (2002) noted that two of the seven original

factors of the GPIUS (i.e., social benefits and perceived social control) were of particular relevance in that they could help operationally distinguish generalized PIU from specific PIU. In addition to developing the GPIUS, Caplan also found in his initial GPIUS study that negative outcomes occurring due to PIU were associated with psychosocial health (i.e., loneliness) and PIU-related cognitions and behaviors (i.e., social benefits, compulsive use, excessive time, withdrawal, and social control) (Caplan, 2002).

More recently, Caplan developed the Generalized Problematic Internet Use Scale 2 (GPIUS2) (Caplan, 2010), a revised version of the GPIUS (Caplan, 2002) grounded upon Davis' cognitive-behavioral theory of pathological Internet use (Davis, 2001), Caplan's own works with preference for online social interaction (Caplan, 2003, 2005), and the socio-cognitive model of unregulated Internet use (i.e., Kim et al., 2009; LaRose, Eastin, et al., 2001a; LaRose et al., 2003; LaRose, Mastro, et al., 2001b). The GPIUS2 operationalizes four main constructs: preference for online social interaction, mood regulation, deficient self-regulation, and negative outcomes. Preference for online social interaction is an important cognitive symptom of generalized PIU characterized by beliefs that one is safer, more efficacious, more confident, and more comfortable with online interpersonal interactions and relationships than with traditional face-to-face social activities (Caplan, 2003, 2010).

Additionally, mood regulation is as a cognitive symptom of generalized PIU reflecting individuals' motivation to use the Internet in order to enhance their mood states. Deficient self-regulation refers to the failure experienced by individuals when they attempt to adequately monitor and judge their Internet usage when trying to adjust their pattern of Internet use (Caplan, 2010). Deficient self-regulation is operationalized as a higher-order construct in the GPIUS2 model reflecting the interplay between cognitive preoccupation (i.e., obsessive thought patterns involving the use of the Internet) and compulsive Internet use symptoms (i.e., behavioral and compulsive nature of poorly regulated Internet use) of generalized PIU (Caplan, 2010). Table 1 depicts the conceptual evolution of the GPIUS to the current GPIUS2 model.

## 1.2. Internet use and PIU findings in Portugal

Internet use is widespread and has grown steadily over time in Portugal and yet, with the exception of a few published peer-reviewed studies (e.g., Patrão, Rita, & Pontes, 2013; Pontes, Griffiths, et al., 2014; Pontes & Patrão, 2014; Pontes, Patrão, et al., 2014), research into Portuguese Internet use is sparse. The latest official report from the Portuguese government on the use of the Internet in Portugal (i.e., Instituto Nacional de Estatística, 2014) estimated that about 65% of the entire Portuguese population aged between 16 and 74 years old now use the Internet on a regular basis. Furthermore, Internet use in Portugal is more widespread amongst the younger population as the highest proportion of Internet users are those between the ages of 16 and 24 years (Instituto Nacional de Estatística, 2014).

A recent study conducted by Pontes and Patrão (2014) with a sample of 144 Portuguese Internet users found that 77% of the participants reported using the Internet on their cell phones while the most frequently used channel for accessing the Internet was via laptop computers (43.1%), followed by desktop computers (34%). Additionally, participants reported spending an average of 28 h a week for leisure purposes on the Internet, and had been Internet users for an average of 13 years. Additionally, a recent pilot study conducted by Pontes, Griffiths, et al. (2014) and Pontes, Patrão, et al. (2014) found that a relatively high percentage (13%) of the sample were potentially struggling with IA. However, a larger study in Portugal found a more conservative prevalence rate of IA that was

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