

Internet addiction or problematic internet use? Which term should be used?¹

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Abstract: Internet use has increased exponentially worldwide. Although the use itself is not negative, since it integrates several benefits, some individuals seem to show problems related to its excessive, uncontrolled, and dysfunctional use. Therefore, the interest of researchers in exploring this use, when it is excessive and unhealthy, has been growing, especially in the last two decades. However, being a subject/construct treated by different authors with different theoretical frameworks, several terms are used in the literature to describe this phenomenon. Regarding this, this article proposes to present a literature review of two of the most used and shared concepts in the scientific literature, that is, internet addiction and problematic internet use.

Keywords: internet addiction, problematic internet use, conceptualization.

Introduction

Internet use has increased exponentially in recent years, being more common every day. For illustrative purposes, the most recent report by the Instituto Nacional de Estatística (Portuguese Institute of Statistics, 2014) tells us that about 65% of the Portuguese population between 16 and 74 years old uses the Internet regularly, and its use is more prevalent among young people aged 16 to 24. A report published by Marktest (2016) reported that the number of users increased more than ten times in the last 18 years, going from a penetration rate of 6.3% in 1997 to 65.4% in 2016. Worldwide, however, more than 7.5 billion people have access to the Internet, which is equivalent to 49.6% of the world population. Europe is the second place in the Internet penetration rate, with a percentage of 77.4% (Internet World Stats, 2017).

Although moderate and healthy use of the Internet alone does not represent significant risks and is generally beneficial for most users, a minority of the population shows problems related to their excessive, uncontrolled and dysfunctional use (Pontes, Caplan, & Griffiths, 2016). Given its relevance, the number of studies published on internet addiction has been increasing exponentially over the last two decades, and in 2018 more than 1,600 studies were published in national and international scientific journals (Wiederhold, 2018). In general, scientific literature reports consistent associations between problematic internet

use and a variety of psychosocial problems, such as poorer emotional well-being (cf. Griffiths, 2015; Piquet, Berchtold, Akre, & Suris, 2015; Pontes et al., 2016) or higher levels of psychopathology, such as depression (e.g. Cabral, Pereira, & Teixeira, 2018; Mendes & Silva, 2017; Pontes, Patrão, & Griffiths, 2014; Tokunaga & Rains, 2016).

The scientific community has not agreed on the best term to be used to describe the use and abuse of new technologies. On the one hand, some authors advocate the existence of an addiction to new technologies, included in behavioral addictions (Carbonell, Fúster, Chamarro, & Oberst, 2012; García del Castillo, 2013; Potenza, 2006; Vivas & Torres, 2011; Young, 1998). On the other hand, other authors claim that the addictive potential of new technologies is speculative (Carbonell et al., 2012; Echeburúa, & Corral, 2010; García del Castillo, 2013). Recently, several authors have been reinforcing the idea that the concept of internet addiction is not appropriate to describe the phenomenon associated with negative consequences resulted from excessive and dysfunctional use (Starcevic & Aboujaoude, 2017).

Therefore, different theoretical models and terminologies used to describe the excessive behavior of internet use exist, including *internet addiction* (Young, 1998), *pathological internet use* (Davis, 2001), *problematic internet use* (Caplan, 2002), or *internet dependence* (Chen, Tarn, & Han, 2004). Thus, this review will contribute to the clarification of the terminology used in this area, specifically on the *addiction* and *problematic use* terms.

Internet addiction

Most of the initial studies on internet addiction were conducted by Kimberly Young in the United

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States and Mark Griffiths in the United Kingdom (e.g., Griffiths, 1995; Young, 1998). According to Young (1998), internet addiction is a broad term that integrates a variety of behaviors and impulse control problems, which is categorized into five specific subtypes: *cybersexual addiction* (compulsive use of adult websites for *cybersex* and *cyberporn*), *cyber-relationship addiction* (excessive involvement in online relationships), *net compulsions* (obsessive online games or shopping), *information overload* (excessive navigation) and, lastly, *computer addiction* (obsessive computer game playing).

Internet addiction became a relevant study area (King, Delfabbro, & Griffiths, 2012); however, researchers did not reach consensus regarding the official definition of the problem and its place in the classifications, because it is a phenomenon still under study (Employer et al., 2017) and numerous methodological limitations are related to the construct evaluation (King et al., 2012).

Internet addiction can be seen as a specifically psychological addiction (such as sex addiction, shopping, video games etc.), with particularities common to other types of dependence, such as loss of control, withdrawal symptoms, strong psychological dependence, interference in daily life and loss of interest in other activities (Kuss & Griffiths, 2017). Internet addiction has also been characterized as a pattern of maladaptive use that can cause clinically significant damage in the person's life (Elhai, Dvorak, Levine, & Hall, 2017). Recently, Kuss and Pontes (2019) defined the phenomenon as a behavioral pattern involving the experience of dysfunctional craving regarding internet use for excessive periods of time without self-regulation by the individual, resulting in significant psychological, social, and functional damages. That is, the internet-dependent individual spends a considerable time daily on online activities that are not essential, developing a distancing from social contacts outside the Internet, a distortion of their personal goals, interests and a loss of academic and/or professional performance (Patrão et al., 2017).

To better understand internet addiction, Griffiths (2005) developed a components model of addiction, which indicates that all addictions are based on six distinct common components (salience, mood modification, tolerance, withdrawal, conflict, and relapse). That is, addictions (with or without the use of substances) are part of a biopsychosocial process and increasing data suggest that excessive behaviors of all types seem to have many similarities. This is a conclusion supported from recent studies that reveal similarities between different types of addictive behaviors (with or without substance uses) at the neural circuit level and activation of the behavioral reinforcement area in the brain (Sharifat, Rashid, & Suppiah, 2018).

Over the years, several authors have proposed other models to explain the development and

maintenance of excessive behaviors related to internet use, such as the model of anonymity, convenience and escape (ACE) developed to evaluate cybersex addiction (Young, Griffin-Shelley, Cooper, O'Mara, & Buchanan, 2000), Grohol's (2017) model of pathological internet use and the comprehensive model of the development and maintenance of internet addiction by Winkler and Döring (as cited by Cash, Rae, Steel, & Winkler, 2012). A neurobiological-centralized model proposed by Brand, Young and Laier (2014) was developed to attempt to explain internet-related disturbances. Currently, this model has been updated to better define the idea that all addictive behaviors are developed as a consequence of the interaction between risk factors, affective and cognitive responses to specific stimuli, as well as executive functions (inhibitory control and decision making) (Brand et al., 2019). However, this model lacks empirical validation (Pontes, Kuss, & Griffiths, 2015). Regarding the internet addiction evaluation, one of the most popular psychometric instruments is the Internet Addiction Test (IAT) by Young (1998), which was used to conduct factorial, construct, convergent and discriminant validity studies in the Portuguese population by Pontes, Patrão and Griffiths (2014).

However, despite the lack of agreement, internet addiction is not related to what actually determines the dependencies (tolerance, dependence, withdrawal syndrome, etc.) and the proposed diagnosis criteria for the addiction disturbance to be included in the formal diagnoses of the Diagnostic and Statistical Manual of Mental Disorders (DSM) have also not been admitted, neither by the American Psychiatric Association nor by the World Health Organization—only the internet game disturbance was included with a suggestion for future studies (American Psychiatric Association, 2013). According to Starcevic (2013, p. 16), the concept of internet addiction faces two types of challenges: “The first one is about it being an addiction. The second refers to the Internet as a medium to which a person is presumably addicted” That is, several authors (e.g. Griffiths & Szabo, 2014; Pontes & Patrão, 2014; Pontes, Szabo, & Griffiths, 2015) consider that the term “addiction” would be more concrete and appropriate to refer to the specific activity understood as addictive (e.g. dependence on online video games). Hence, the existing and frequently used nomenclature to define the phenomenon shows conceptual problems resulted from different theoretical positions. In addition, empirical evidence suggests that the term “internet addiction” should be replaced by another term that reflects addictions in specific online activities (Pontes, Szabo, & Griffiths, 2015).

Therefore, we can affirm that internet addiction seems to be related to specific uses of some internet features and not with its general use. Thus, users are not “addicted” to the Internet, but rather to one or several specific online

activities (Billieux, 2012). Besides internet addiction, other cybernetic addictions are frequent (Billieux, 2012), such as the “addiction to online video games” (Billieux et al., 2011), “addiction to online gambling” (Griffiths, 2003), “addiction to online sex” (Meerkerk, Van den Eijnden, & Garretsen, 2006) and “addiction to social networks” (Wilson, Fornasier, & White, 2010). All these addictions entail negative consequences for the individual’s life and show common risk factors (Billieux, 2012). Internet addiction should be conceptualized within a broader range of “cybernetic addictions” that undergo behaviors that depend on specific online activities and/or activities involving communication between individuals through technology devices (Billieux, 2012).

Another debatable element associated with internet addiction is that, unlike dependencies, the Internet offers multiple benefits and, as such, should not be seen as a device to be criticized as “addictive”: (1) the Internet enables speed in communication, has an interactive character and is a support for learning (Spizzirri, Wagner, Mosmann, & Armani, 2012); (2) the Internet has become an important social context for older people as it influences their well-being, that is, by using the Internet they increase perceived levels of social support, reduce loneliness, improve life satisfaction and improve their psychological well-being (Heo, Chun, Lee, Lee, & Kim, 2015); (3) university students, in particular, can obtain many benefits from the use of the Internet for educational purposes (Rayan et al., 2017)—access to online journals, language learning, academic research, online library navigation (Al-Gamal, Alzayyat, & Ahmad, 2016)—and also for relational purposes—navigation in social networks, online socialization and, even, establishing relationships (Jones, Johnson-Yale, Millermaier, & Pérez, 2009); (4) the Internet can be seen as an important means to increase life satisfaction among more fragile citizens and social groups—people of low economic levels and/or people suffering from health problems that interfere with the normal functioning of their daily life (Lissitsa & Chachashvili-Bolotin, 2016); (5) it can be used as a way to increase perceived social support, for example, through Facebook, which in turn decreases stress levels and increases psychological well-being. That is, Internet can be seen as an indirect benefit to health (Wiederhold, 2017). In general, it is a highly diffused technology tool that hinders addiction detection and diagnosis (Young, 2004).

This concept has received numerous criticisms, for instance: (1) lack of theoretical specificity and dependence concept—disregards what people are really doing when they are online (Caplan, 2002); (2) Lack of international consensus on the concept and diagnosis (Griffiths, Kuss, Billieux, & Pontes, 2016); (3) Lack of clarification of specific issues on internet addiction include three closely related problem areas: terminology, diagnostic conceptions, and measurements

(Demetrovics, Szeredi, & Rózsa, 2008; Tokunaga, 2015); (4) Part of the studies about internet addiction are exploratory studies, which resort to self-selected samples and do not show control groups (DeAngelis, 2000; Tokunaga, 2015) (5) Some researchers consider that perhaps the personal, professional and social consequences attributed to this behavior might, in fact, only be symptoms of other disturbances or primary psychological problems (Pies, 2009; Shaffer, Hall, & Vander Bilt, 2000); and (6) Published investigations lack theoretical reference approaches and fail to determine causal relations between the consequences described and internet use falling into the error of “ignoring the common cause” (Grohol, 2017).

In conclusion, using the term internet addiction is a mistake and the expression must be abandoned, even though it has become widely used (Pontes et al., 2016). A tendency of “overpathologizing” addictive behaviors has been shown, which may lead to a doubtful assessment of the studies on behavioral dependence and a negligence in the main psychological processes (Billieux, Schimment, Khazaal, Maurage, & Heeren, 2015). A necessity to investigate more about behavioral dependence and move from a criteria-based approach to one focused on the psychological—motivational, affective, cognitive, interpersonal, and social—processes involved (Billieux et al., 2015). Therefore, internet use should cease to be seen as a disease—a pathology paradigm—and be related to self-regulation habits—cognitive-behavioral paradigm (Pontes et al., 2016).

Problematic internet use

The concept of problematic internet use (PIU) then arises, which, according to Tokunaga (2015), was adopted by many researchers who use the cognitive-behavioral model developed by Davis (2001) and the socio-cognitive model of the unregulated internet usage developed by LaRose, Lin and Eastin (2003). According to these perspectives, PIU is not seen as a disease, pathology or clinical disturbance (Pontes et al., 2016), but rather as a distinct pattern of cognitions and behaviors that result in negative results for daily life (Assunção & Matos, 2017). Tokunaga (2015) states that PIU is situated in the middle range of the severity *continuum* of the problem and has a benign nature, while internet addiction is placed at the upper end of the *continuum*, requiring the experience of serious negative life consequences.

The “problematic internet use” concept was proposed by Beard and Wolf (2001) and adopted by researchers such as Caplan and Davis. This term emerged to define internet use that causes, in people’s lives, psychological, social, academic, and/or professional struggles. According to these authors, the term “problematic” is more appropriate as it shows fewer theoretical discrepancies than other terminologies. In

other words, PIU is a multidimensional syndrome, composed of cognitive and behavioral symptoms that result in social, academic or professional problems (Caplan, 2002). Shapira et al. (2003), however, define PIU as a maladaptive concern with internet use that causes significant suffering and/or impairment. Some investigators understand PIU as a form of seeking reaffirmation and/or an avoidance behavior intended to reduce negative emotions (Wan & Chiou, 2006). In addition, it might be associated with a greater subjective suffering, functional impairment and psychiatric disturbances (Shapira, Goldsmith, Keck, Khosla, & McElroy, 2000). In short, PIU could be characterized by the inability of the individual to control internet use, which in turn leads to feelings of anguish and daily activity impairment (Shapira et al., 2000).

According to the literature, PIU can also be defined as specific or generalized. According to Davis (2001), specific PIU refers to the excessive use of specific features of Internet content, such as playing or viewing online material of sexual nature, but these behavioral problems can be manifested alternatively if the individual is unable to access Internet. On the other hand, Davis (2001) conceptualizes generalized PIU as a non-specific and multidimensional internet use that results in negative consequences for the individual. Generalized PIU manifestations include cognitions and maladaptive behaviors related to non-specific internet use. In other words, the Internet is, in these cases, used as a multipurpose vehicle.

As previously mentioned, Davis (2001) developed the PIU cognitive-behavioral model that suggests that individuals suffering from psychosocial problems are more likely to develop PIU. This model mentions that this phenomenon is closely related to problematic cognitions and associated with behaviors that maintain or increase these mismatched cognitions, resulting in negative consequences for the individual (Davis, 2001). The central point of this model connects to maladaptive cognitions, which emerge due to a cognitive dysfunction about oneself and/or the world and are, according to the author, sufficient for the PIU onset. The first ones regards a negative view of oneself, leading to a search for positive answers by others, in a non-fearsome way, through the Internet (Davis, 2001). The second ones are related to the fact that the individual considers that the Internet is the only place in which he is loved and respected by others (Davis, 2001).

The positive responses that result from being online reinforce the individual's behavior, thus increasing the likelihood of a new occurrence. Once the reinforcement occurred, the individual becomes conditioned to perform the activity more constantly to achieve the same response as the one in the first event (Davis, 2001).

PIU's cognitive and behavioral symptoms seem to be especially associated to online social interaction. In addition, Caplan (2010) acknowledged that individuals suffering from psychosocial problems will tend to develop negative perceptions of their social competences, which will lead them to prefer establishing online social interactions, rather than traditional face-to-face interactions. This preference may lead the individual to self-regulate in an deficient way when it comes to using the Internet (through increased cognitive concern for being online and its compulsive use) and to use the Internet to regulate mood (which, in turn, will increase deficient self-regulation). This deficient self-regulation will ultimately reveal negative consequences at many levels of the individual's life (e.g., economic, academic/work, family, social etc.). In other words, Caplan (2010) recognizes cognitive and behavioral constructs that relate to negative consequences associated with internet use—preference for online social interaction; mood regulation; deficient self-regulation; cognitive concern and compulsive behavior.

Therefore, in an attempt to advance the PIU conception, Caplan (2010) sought to clarify the cognitive-behavioral constructions of Davis (2001), developing two psychometric instruments based on Davis (2001) theory to evaluate Generalized PIU – Generalized Problematic Internet Use Scale (GPIUS) (Caplan, 2002) and *Generalized Problematic Internet Use Scale 2* (GPIUS2) (Caplan, 2010; the factorial, construct, convergent and discriminant validity studies in the Portuguese population were conducted by Pontes et al., 2016).

In many investigations, the problematic internet use is associated to the presence of several comorbidities, such as mood disturbances, substance use, anxiety, impulse, and personality control. As well as with the presence of several risk factors, such as age, male gender (Tsai et al., 2009), lack of emotional support (Griffiths, 2015), deficient family functioning (Wartberg, Kriston, Kammerl, Petersen, & Thomasius, 2015), deficit of social skills (Caplan, 2005), social isolation (Tokunaga, 2015), poorer emotional well-being (Piguet et al, 2015) and poor academic performance (Boubeta, Ferreira, Salgado, & Couto, 2015). Therefore, defining if the problematic internet use is the primary disturbance or if it is associated with other pathologies (Carli et al., 2013; Echeburúa, 2000) is still not possible, due to the scarce longitudinal studies (cf. Tokunaga, 2014).

In conclusion: what term should be used?

The term “problematic internet use” can be considered the most appropriate for two reasons: firstly, we agree with Beard and Wolf (2001) and Caplan (2002) who defend that the addiction perspective is inadequate due to the lack of concept accuracy and the theory that

excessive internet is an addiction is still debatable; Secondly, compared to “pathological” or “inappropriate”, the term “problematic” describes the behavior in a broader way, covering the whole range of problematic behaviors—from mild to severely disturbed behaviors (Ang, Chong, Chye, & Huan, 2012).

Moreover, the cognitive-behavioral perspective used in the PIU definition shows greater flexibility and clinical value when contemplating a severity *continuum* regarding excessive internet use, allowing a better understanding by mental health agents about the form and intensity that PIU can affect the many aspects of troubled users’ lives.

Although this review study concluded that the “problematic internet use” is the most appropriate term to describe and characterize the phenomenon under analysis, this conclusion can be interpreted as potentially limited since is not resulted from an

empirical data analysis, but rather from a deductive process according to the literature analyzed. Hence, it is suggested that future studies systematically investigate the adequacy of this conclusion at the empirical level. For instance, as PIU is associated with specific online activities, having therefore a focus (Griffiths & Szabo, 2014; Bridges, Szabo, & Griffiths, 2015), it is pertinent to explore how the use of specific *apps* and features contribute to excessive and potentially problematic internet use. As such, studies with experimental design may be useful in exploring and deepening the nature of online addictive behaviors. Similarly, future studies using behavioral data may be beneficial in fulfilling this objective and clarifying the distinction between normal use, excessive use and problematic use of the Internet, since the existing literature does not provide a conclusive answer to this issue.

Adição à internet ou uso problemático da internet? Qual dos termos usar?

Resumo: O uso da internet tem aumentado exponencialmente a nível mundial. Ainda que ele não seja por si só negativo, já que integra benefícios vários, alguns indivíduos parecem exibir problemas relacionados com o seu uso excessivo, descontrolado e disfuncional. Consequentemente, tem sido crescente, particularmente nas últimas duas décadas, o interesse dos investigadores em explorar este uso, quando excessivo e pouco saudável. Porém, e sendo um tema/constructo tratado por diferentes autores com quadros teóricos também diferentes, são vários os termos usados na literatura para descrever este fenómeno. Neste sentido, este artigo propõe-se a apresentar o trabalho uma revisão de literatura de dois dos conceitos mais usados e espartilhados na literatura científica, ou seja, adição à internet e uso problemático da internet.

Palavras-chave: adição à internet, uso problemático da internet, conceptualização.

Dépendance à Internet ou utilisation problématique d’Internet? Quel terme utiliser?

Résumé: L’utilisation d’Internet a augmenté de manière exponentielle dans le monde. Bien que l’utilisation d’Internet ne soit pas négative en soi, étant donné qu’elle intègre plusieurs avantages, certaines personnes semblent présenter des problèmes liés à son utilisation excessive, incontrôlée et dysfonctionnelle. En conséquence, l’intérêt des chercheurs pour exploiter cet usage, qu’il soit excessif ou malsain, a augmenté, particulièrement au cours des deux dernières décennies. Cependant, étant un thème/constructo traité par différents auteurs avec différents cadres théoriques, plusieurs termes sont utilisés dans la littérature pour décrire ce phénomène. En ce sens, nous proposons de présenter dans cet ouvrage une analyse de deux des concepts les plus utilisés et les plus partagés dans la littérature scientifique, à savoir l’addition à internet et son utilisation problématique.

Mots-clés: ajout à l’Internet, utilisation d’Internet problématique, conceptualisation.

Adición a Internet o uso problemático de Internet: ¿Qué término usar?

Resumen: El uso de Internet ha aumentado exponencialmente a nivel mundial. Aunque esto no es por sí solo negativo ya que integra diversos beneficios, algunos individuos parecen presentar problemas relacionados con su uso excesivo, descontrolado y disfuncional. En consecuencia, en las últimas dos décadas ha aumentado cada vez más el interés de los investigadores en estudiar este uso, cuando es excesivo o poco saludable. Sin embargo, y siendo un tema/constructo tratado por diferentes autores con cuadros teóricos también diferentes, son varios los términos usados en la literatura para describir este fenómeno. En este sentido, nos proponemos presentar en este trabajo una revisión de dos de los conceptos más usados y más divididos en la literatura científica, es decir, adición a Internet y uso problemático de Internet.

Palabras clave: adición a Internet, uso problemático de Internet, conceptualización.

References

- Al-Gamal, E., Alzayyat, A., & Ahmad, M. M. (2016). Prevalence of internet addiction and its association with psychological distress and coping strategies among university students in Jordan. *Perspectives in Psychiatric Care, 52*(1), 49-61. doi: 10.1111/ppc.12102
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5a. ed.)*. Arlington: American Psychiatric Association.
- Ang, R. P., Chong, W. H., Chye, S., & Huan, V. S. (2012). Loneliness and generalized problematic internet use: parents' perceived knowledge of adolescents' online activities as a moderator. *Computers in Human Behavior, 28*(4), 1342-1347. doi:10.1016/j.chb.2012.02.019
- Assunção, R. S., & Matos, P. M. (2017). The generalized problematic internet use scale 2: validation and test of the model to Facebook use. *Journal of Adolescence, 54*, 51-59. doi: 10.1016/j.adolescence.2016.11.007
- Beard, K. W., & Wolf, E. M. (2001). Modification in the proposed diagnostic criteria for internet addiction. *CyberPsychology & Behavior, 4*(3), 377-383. doi:10.1089/109493101300210286
- Billieux, J. (2012). Problematic use of the mobile phone: a literature review and a pathways model. *Current Psychiatry Reviews, 8*(4), 299-307. doi: 10.2174/157340012803520522
- Billieux, J., Chanal, J., Khazaal, Y., Rochat, L., Gay, P., Zullino, D., & Van der Linden, M. (2011). Psychological predictors of problematic involvement in massively multiplayer online role-playing games: illustration in a sample of male cybercafé players. *Psychopathology, 44*(3), 165-171.
- Billieux, J., Schimmenti, A., Khazaal, Y., Maurage, P., & Heeren, A. (2015). Are we overpathologizing everyday life? A tenable blueprint for behavioral addiction research. *Journal of Behavioral Addictions, 4*(3), 119-123. doi: 10.1556/2006.4.2015.009
- Brand, M., Wegmann, E., Stark, R., Müller, A., Wölfling, K., Robbins, T. W., & Potenza, M. N. (2019). The Interaction of Person-Affect-Cognition-Execution (I-PACE) model for addictive behaviors: update, generalization to addictive behaviors beyond internet-use disorders, and specification of the process character of addictive behaviors. *Neuroscience and Biobehavioral Reviews, 104*, 1-10. doi: 10.1016/j.neubiorev.2019.06.032
- Brand, M., Young, K. S., & Laier, C. (2014). Prefrontal control and internet addiction: a theoretical model and review of neuropsychological and neuroimaging findings. *Frontiers in Human Neuroscience, 8*, 375. doi: 10.3389/fnhum.2014.00375
- Boubeta, A. R., Ferreira, S. G., Salgado, P. G., & Couto, C. B. (2015). Variables asociadas al uso problemático de internet entre adolescentes. *Health and Addictions, 15*(1), 25-38.
- Cabral, F., Pereira, M., & Teixeira, C. M. (2018). Internet, physical activity, depression, anxiety and stress. *PsychTech & Health Journal, 2*(1), 15-27. doi: 10.26580/PTHJ.art10-2018
- Caplan, S. E. (2002). Problematic internet use and psychosocial well-being: development of a theory-based cognitive-behavioral measurement instrument. *Computers in Human Behavior, 18*(5), 553-575. doi:10.1016/S0747-5632(02)00004-3
- Caplan, S. E. (2005). A social skill account of problematic internet use. *Journal of Communication, 55*(4), 721-736. doi: 10.1111/j.1460-2466.2005.tb03019.x
- Caplan, S. E. (2010). Theory and measurement of generalized problematic internet use: a two-step approach. *Computers in Human Behavior, 26*(5), 1089-1097. doi:10.1016/j.chb.2010.03.012
- Carbonell, X., Fúster, H., Chamarro, A., & Oberst, U. (2012). Adicción a internet y móvil: una revisión de estudios empíricos españoles. *Papeles del Psicólogo, 33*(2), 82-89.
- Carli, V., Durkee, T., Wasserman, D., Hadlaczky, G., Despalins, R., Kramarz, E., et al. (2013). The association between pathological internet use and comorbid psychopathology: a systematic review. *Psychopathology, 46*(1), 1-13. doi: 10.1159/000337971
- Cash, H., Rae, C. D., Steel, A. H., & Winkler, A. (2012). Internet addiction: a brief summary of research and practice. *Current Psychiatry Reviews, 8*(4), 292-298. doi: 10.2174/157340012803520513
- Chen, K., Tarn, J. M., & Han, B. T. (2004). Internet dependency: its impact on online behavioral patterns in e-commerce. *Human Systems Management, 23*(1), 49-58.
- Davis, R. A. (2001). A cognitive-behavioral model of pathological INTERNET use. *Computers in Human Behavior, 17*(2), 187-195. doi: 10.1016/S0747-5632(00)00041-8
- DeAngelis, T. (2000). Is internet addiction real? *Monitor on Psychology, 31*(4), 1-5.
- Demetrovics, Z., Szeredi, B., & Rózsa, S. (2008). The three-factor model of internet addiction: the development of the problematic internet use questionnaire. *Behavior Research Methods, 40*(2), 563-574. doi: 10.3758/BRM.40.2.563
- Echeburúa, E. (2000). Medición clínica en trastornos fóbicos y de ansiedad. In A. Bulbena Vilarrasa, G. Berrios, & P. Fernández de Larrinoa Palacios (Orgs.), *Medición Clínica en Psiquiatría y Psicología* (pp. 369-375). Barcelona: Masson.
- Echeburúa, E., & Corral, P. (2010). Adicción a las nuevas tecnologías y a las redes sociales en jóvenes: un nuevo reto. *Adicciones, 22*(2), 91-95. doi: 10.20882/adicciones.196
- Elhai, J. D., Dvorak, R. D., Levine, J. C., & Hall, B. J. (2017). Problematic smartphone use: a conceptual overview and systematic review of relations with anxiety and depression psychopathology. *Journal of Affective Disorders, 207*, 251-259. doi: 10.1016/j.jad.2016.08.030
- García Del Castillo, J. A. (2013). Adicciones tecnológicas: el auge de las redes sociales. *Salud y Drogas, 13*(1), 5-13.

- Griffiths, M. D. (1995). Technological addictions. *Clinical Psychology Forum*, 76, 14-19.
- Griffiths, M. (2003). Internet gambling: issues, concerns, and recommendations. *CyberPsychology & Behavior*, 6(6), 557-568. doi: 10.1089/109493103322725333
- Griffiths, M. D. (2005). A “components” model of addiction within a biopsychosocial framework. *Journal of Substance Use*, 10(4), 191-197. doi: 10.1080/14659890500114359
- Griffiths, M. D. (2015). Classification and treatment of behavioural addictions. *Nursing in Practice*, 82, 44-46.
- Griffiths, M. D., Kuss, D. J., Billieux, J., & Pontes, H. M. (2016). The evolution of internet addiction: a global perspective. *Addictive Behaviors*, 53, 193-195. doi: 10.1016/j.addbeh.2015.11.001
- Griffiths, M. D., & Szabo, A. (2014). Is excessive online usage a function of medium or activity? An empirical pilot study. *Journal of Behavioral Addictions*, 3(1), 74-77. doi: 10.1556/JBA.2.2013.016
- Grohol, J. M. (2017). Internet addiction guide. Retrieved from <https://psychcentral.com/netaddiction/>
- Heo, J., Chun, S., Lee, S., Lee, K. H., & Kim, J. (2015). Internet use and well-being in older adults. *Cyberpsychology, Behavior, and Social Networking*, 18(5), 268-272. doi: 10.1089/cyber.2014.0549
- Instituto Nacional de Estatística. (2014). *Mais de metade dos utilizadores da internet fazem-no em mobilidade*. Retrieved from <http://bit.ly/2YTeB7W>
- Internet World Stats (2017). 2017 World stats. Retrieved from <http://www.internetworldstats.com/>
- Jones, S., Johnson-Yale, C., Millermaier, S., & Pérez, F. S. (2009). US college students’ internet use: race, gender and digital divides. *Journal of Computer-Mediated Communication*, 14(2), 244-264. doi: 10.1111/j.1083-6101.2009.01439.x
- King, D., Delfabbro, P., & Griffiths, M. (2012). Clinical interventions for technology-based problems: excessive internet and video game use. *Journal of Cognitive Psychotherapy*, 26(1), 43-56. doi: 10.1891/0889-8391.26.1.43
- Kuss, D., & Griffiths, M. (2017). Social networking sites and addiction: ten lessons learned. *International Journal of Environmental Research and Public Health*, 14(3), E311. doi: 10.3390/ijerph14030311
- LaRose, R., Lin, C. A., & Eastin, M. S. (2003). Unregulated internet usage: addiction, habit, or deficient self-regulation? *Media Psychology*, 5(3), 225-253. doi: 10.1207/S1532785XMEP0503_01
- Lissitsa, S., & Chachashvili-Bolotin, S. (2016). Life satisfaction in the internet age: changes in the past decade. *Computers in Human Behavior*, 54, 197-206. doi: 10.1016/j.chb.2015.08.001
- Marktest (2016). 5,6 milhões de utilizadores de internet em Portugal. Retrieved from <http://www.marktest.com/wap/a/n/id~209b.aspx>
- Meerkerk, G. J., Van den Eijnden, R. J. V. D., & Garretsen, H. F. (2006). Predicting compulsive internet use: it’s all about sex! *CyberPsychology & Behavior*, 9(1), 95-103. doi: 10.1089/cpb.2006.9.95
- Mendes, I., & Silva, I. (2017). Uso problemático da internet em adultos: que relação com sintomas clínicos? *Revista de Estudios e Investigación en Psicología y Educación, Extr.*, (13), 129-133. doi: 10.17979/reipe.2017.0.13.2565
- Patrão, I., Reis, J., Madeira, L., Paulino, M. C. S., Barandas, R., Sampaio, D., et al. (2017). Avaliação e intervenção terapêutica na utilização problemática da internet (UPI) em jovens: revisão da literatura. *Psicologia da Criança e do Adolescente*, 7(1-2), 221-243.
- Pies, R. (2009). Should DSM-V designate “internet addiction” a mental disorder? *Psychiatry (Edgmont)*, 6(2), 31-37.
- Piguet, C., Berchtold, A., Akre, C., & Suris, J. C. (2015). What keeps female problematic internet users busy online? *European Journal of Pediatrics*, 174(8), 1053-1059. doi: 10.1007/s00431-015-2503-y
- Pontes, H., Caplan, S. E., & Griffiths, M. D. (2016). Psychometric validation of the generalized problematic internet use scale 2 in a Portuguese sample. *Computers in Human Behavior*, 63, 823-833. doi: 10.1016/j.chb.2016.06.015
- Pontes, H. M., Kuss, D. J., & Griffiths, M. D. (2015). Clinical psychology of internet addiction: a review of its conceptualization, prevalence, neuronal processes, and implications for treatment. *Neuroscience & Neuroeconomics*, 4, 11-23. doi: 10.2147/NAN.S60982
- Pontes, H. M., & Patrão, I. M. (2014). Estudo exploratório sobre as motivações percebidas no uso excessivo da internet em adolescentes e jovens adultos. *Psychology, Community & Health*, 3(2), 90-102. doi: 10.5964/pch.v3i2.93
- Pontes, H. M., Patrão, I. M., & Griffiths, M. D. (2014). Portuguese validation of the internet addiction test: an empirical study. *Journal of Behavioral Addictions*, 3(2), 107-114. doi: 10.1556/JBA.3.2014.2.4
- Pontes, H. M., Szabo, A., & Griffiths, M. D. (2015). The impact of internet-based specific activities on the perceptions of internet addiction, quality of life, and excessive usage: a cross-sectional study. *Addictive Behaviors Reports*, 1, 19-25. doi: 10.1016/j.abrep.2015.03.002
- Kuss, D. J., & Pontes, H. M. (2019). *Internet addiction* (Vol. 41). Boston, MA: Hogrefe.
- Potenza, M. N. (2006). Should addictive disorders include non-substance-related conditions? *Addiction*, 101(Suppl. 1), 142-151.
- Rayan, A., Dadoul, A. M., Jabareen, H., Sulieman, Z., Alzayyat, A., & Baker, O. (2017). Internet use among university students in south West Bank: prevalence, advantages and disadvantages, and association with psychological health. *International Journal of Mental Health and Addiction*, 15(1), 118-129. doi: 10.1007/s11469-016-9658-2
- Shaffer, H. J., Hall, M. N., & Vander Bilt, J. (2000). “Computer addiction”: a critical consideration.

- American Journal of Orthopsychiatry*, 70(2), 162-168. doi: 10.1037/h0087741
- Shapira, N. A., Lessig, M. C., Goldsmith, T. D., Szabo, S. T., Lazoritz, M., Gold, M. S., & Stein, D. J. (2003). Problematic internet use: proposed classification and diagnostic criteria. *Depression and Anxiety*, 17(4), 207-216. doi: 10.1002/da.10094
- Shapira, N. A., Goldsmith, T. D., Keck, P. E., Khosla, U. M., & McElroy, S. L. (2000). Psychiatric features of individuals with problematic internet use. *Journal of Affective Disorders*, 57(1), 267-272. doi: 10.1016/S0165-0327(99)00107-X
- Sharifat, H., Rashid, A. A., & Suppiah, S. (2018). Systematic review of the utility of functional MRI to investigate internet addiction disorder: recent updates on resting state and task-based fMRI. *Malaysian Journal of Medicine and Health Sciences*, 14(1), 21-33.
- Spizzirri, R. C. P., Wagner, A., Mosmann, C. P., & Armani, A. B. (2012). Adolescência conectada: mapeando o uso da internet em jovens internautas. *Psicologia Argumento*, 30(69), 327-335.
- Starcevic, V. (2013). Is internet addiction a useful concept? *Australian and New Zealand Journal of Psychiatry*, 47(1), 16-19. doi: 10.1177/0004867412461693
- Starcevic, V., & Aboujaoude, E. (2017). Internet addiction: reappraisal of an increasingly inadequate concept. *CNS Spectrums*, 22(1), 7-13. doi: 10.1017/S1092852915000863
- Tsai, H., Cheng, S., Yeh, T., Shih, C., Chen, K., Yang, Y., & Yang, Y. (2009). The risk factors of internet addiction: a survey of university freshmen. *Psychiatry Research*, 167(3), 294-299. doi: 10.1016/j.psychres.2008.01.015
- Tokunaga, R. S. (2014). A unique problem or the manifestation of a preexistent disorder? The mediating role of problematic internet use in the relationships between psychosocial problems and functional impairment. *Communication Research*, 41(4), 531-560. doi: 10.1177/0093650212450910
- Tokunaga, R. S. (2015). Perspectives on internet addiction, problematic internet use, and deficient self-regulation: contributions of communication research. *Annals of the International Communication Association*, 39(1), 131-161. doi: 10.1080/23808985.2015.11679174
- Tokunaga, R. S., & Rains, S. A. (2016). A review and meta-analysis examining conceptual and operational definitions of problematic internet use. *Human Communication Research*, 42(2), 165-199. doi: 10.1111/hcre.12075
- Vivas, G. P. M., & Torres, F. C. (2011). Internet y pánico moral: revisión de la investigación sobre la interacción de niños y jóvenes con los nuevos medios. *Universitas Psychologica*, 10(3), 855-865.
- Wan, C., & Chiou, W. (2006). Psychological motives and online games addiction: a test of flow theory and humanistic needs theory for Taiwanese adolescents. *CyberPsychology and Behavior*, 9(3), 317-324. doi: 10.1089/cpb.2006.9.317
- Wartberg, L., Kriston, L., Kammerl, R., Petersen, K. U., & Thomasius, R. (2015). Prevalence of pathological internet use in a representative German sample of adolescents: results of a latent profile analysis. *Psychopathology*, 48(1), 25-30. doi: 10.1159/000365095
- Wiederhold, B. K. (2017). Beyond direct benefits: indirect health benefits of social media use. *Cyberpsychology, Behavior, and Social Networking*, 20(1), 1-2. doi: 10.1089/cyber.2016.29059.bkw
- Wiederhold, B. K. (2018). Stop scrolling, start living: the growing reality of internet addiction disorder. *Cyberpsychology, Behavior, and Social Networking*, 21(5), 279-280. doi: 10.1089/cyber.2018.29111.bkw
- Wilson, K., Fornasier, S., & White, K. M. (2010). Psychological predictors of young adults' use of social networking sites. *Cyberpsychology, Behavior, and Social Networking*, 13(2), 173-177.
- Young, K. S. (1998). Internet addiction: the emergence of a new clinical disorder. *Cyberpsychology & Behavior*, 1(3), 237-244. doi: 10.1089/cpb.1998.1.237
- Young, K. S. (2004). Internet addiction: a new clinical phenomenon and its consequences. *American Behavioral Scientist*, 48(4), 402-415. doi: 10.1177/0002764204270278
- Young, K. S., Griffin-Shelley, E., Cooper, A., O'mara, J., & Buchanan, J. (2000). Online infidelity: a new dimension in couple relationships with implications for evaluation and treatment. *Sexual Addiction & Compulsivity: The Journal of Treatment and Prevention*, 7(1-2), 59-74. doi: 10.1080/10720160008400207

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