

Is smartphone addiction really an addiction?

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Aims: In light of the rise in research on technological addictions and smartphone addiction in particular, the aim of this paper was to review the relevant literature on the topic of smartphone addiction and determine whether this disorder exists or if it does not adequately satisfy the criteria for addiction. *Methods:* We reviewed quantitative and qualitative studies on smartphone addiction and analyzed their methods and conclusions to make a determination on the suitability of the diagnosis “addiction” to excessive and problematic smartphone use. *Results:* Although the majority of research in the field declares that smartphones are addictive or takes the existence of smartphone addiction as granted, we did not find sufficient support from the addiction perspective to confirm the existence of smartphone addiction at this time. The behaviors observed in the research could be better labeled as problematic or maladaptive smartphone use and their consequences do not meet the severity levels of those caused by addiction. *Discussion and conclusions:* Addiction is a disorder with severe effects on physical and psychological health. A behavior may have a similar presentation as addiction in terms of excessive use, impulse control problems, and negative consequences, but that does not mean that it should be considered an addiction. We propose moving away from the addiction framework when studying technological behaviors and using other terms such as “problematic use” to describe them. We recommend that problematic technology use is to be studied in its sociocultural context with an increased focus on its compensatory functions, motivations, and gratifications.

Keywords: smartphones, addiction, technology, mobile phones, Internet, problematic use

INTRODUCTION

The recent development of the multifunctional smartphone and its subsequent global popularity has changed the communication and information landscape; remolded the interests, values, and desires of many users; and triggered concerns around the world about overuse and addiction. In the past few years, there has been a surge in literature on behavioral addictions to studying (Atroszko, Andreassen, Griffiths, & Pallesen, 2015), tanning (Nolan & Feldman, 2009), cosmetic surgery (Suissa, 2008), Argentinean tango (Targhetta, Nalpas, & Perney, 2013), Harry Potter (Rudski, Segal, & Kallen, 2009), and various other potential topics. This increase in interest is particularly notable in the discussion on mobile phone addiction (Bianchi & Phillips, 2005; Billieux, Maurage, Lopez-Fernandez, Kuss, & Griffiths, 2015; Chóliz, 2010; Pedrero, Rodríguez, & Ruiz, 2012), which has more recently evolved into smartphone addiction.

Mobile phones and smartphones are both mobile, personal devices that indicate social identity and status, but the main differentiating feature between them is that a smartphone has permanent access to the Internet and consequently all of the Internet’s appealing and problematic content. Smartphones provide numerous gratifications, such as sociability, entertainment, information finding, time management, coping strategies, and social identity maintenance (Bian & Leung, 2015;

Kuss, Kanjo, et al., 2018; Kwon et al., 2013; Lin et al., 2014; Skierkowski & Wood, 2012). The smartphone has become an essential part of daily life and research has shown that certain people become so attached to their device that they experience separation anxiety when it is not with them (Cheever, Rosen, Carrier, & Chavez, 2014; King et al., 2013). The device can even be comforting in times of stress, offering a “security blanket” effect whereby the initial negative response to a stressor is lowered in a similar way that occurs with children and a comfort object like a blanket (Panova & Lleras, 2016).

The smartphone’s popularity and users’ deep connection with it has therefore awoken concerns about its addiction potential. The American Psychiatric Association (APA, 2013) first categorized a behavior – gambling – as a non-substance-related addictive disorder and recommends further research on Internet gaming disorder. However, at this time, no mention has been made of smartphone addiction in either the DSM-5 or in the ICD-11’s draft. Nevertheless, research on smartphone and mobile phone addiction has notably increased in recent years (Aljomaa, Mohammad, Albursan, Bakhiet, & Abduljabbar, 2016; Bian & Leung, 2015;

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Chiu, 2014; Darcin et al., 2016; Demirci, Akgönül, & Akpınar, 2015; Fu Yuan, Chiu, & Huang, 2012; Haug et al., 2015; Hawi & Samaha, 2016; Körmendi, Brutóczy, Végh, & Székely, 2016; Leung, 2007; Lin et al., 2014; Lopez-Fernandez, 2015; Roberts, Pullig, & Manolis, 2015; Salehan & Negahban, 2013; Van Deursen, Bolle, Hegner, & Kommers, 2015) and there seems to be a rising tendency to label popular technological behaviors as addictive.

Even though the disorder is not recognized in psychiatry manuals, screening studies estimate that smartphone addiction ranges from anywhere between just above 0% and 35%, with one study reporting that 48% of undergraduate university students were smartphone addicted (Aljomaa et al., 2016), and the most frequent range being between 10% and 20% (see Billieux, Maurage, et al., 2015 and Carbonell et al., 2012 for a review). However, most of these studies use self-report measures, thereby relying on the accuracy of users' perceptions about their own use, and each study uses different methods and questionnaires to determine the existence of addiction.

Before pathologizing technology-related behaviors, it is important to analyze them in context. For example, there has been a considerable amount of research conducted on smartphone addiction in countries, such as South Korea, China, and Taiwan (Carbonell, Guardiola, Fuster, Gil, & Panova, 2016; Sánchez-Carbonell, Guardiola, Bellés, & Beranuy, 2005). It has been suggested that this may be because the cultural norms in some Asian societies make it difficult for people to find the time and opportunity to freely socialize with one another and be themselves, which in turn contributes to the high use of personal mobile devices (Ito, 2005). Other culturally oriented studies have highlighted how the values of certain cultures are reflected and expressed in mobile phone behavior (Horst & Miller, 2005; Leonardi, Leonardi, & Hudson, 2006). These studies suggest that the sociocultural context has an important influence on why and how certain smartphone behaviors occur and therefore should be considered when studying problematic use. Professional, social, and academic contexts should also be considered when studying problematic smartphone behavior, because much of smartphone use is dependent on professional, social, or academic demands.

Most of the smartphone addiction studies at the moment focus on discovering what percentage of the sample are smartphone-addicted and then looking for correlations between the addiction scores with various other behaviors and characteristics. However, at this time, there is not a strict set of standardized criteria applied to the diagnosis of smartphone addicts. Moreover, a critical analysis of whether smartphone use can even be considered addictive has not been conducted. With all the above in mind, this paper is going to consider whether smartphones can be considered addictive by analyzing the literature on the subject through the lens of addiction criteria and determining whether the concern about "smartphone addiction" is merited.

SMARTPHONE ADDICTION ANALYZED THROUGH ADDICTION CRITERIA

In order for substance and behavioral addictions to be comparable, they must share the core symptoms of the

disorder and have many similarities in phenomenology and adverse consequences. According to Goodman (1990), addiction defines a condition whereby a problematic behavior is characterized by (a) recurrent failure to control the behavior and (b) continuation of the behavior despite significant negative consequences. The well-accepted symptoms of addiction proposed by Griffiths are mood modification, tolerance, salience, withdrawal symptoms, conflict, and relapse (Griffiths, 1995, 2005). However, the descriptions of these criteria can cover a broad-spectrum of severity, which can be more or less significant. Recently, Saunders et al. (2017) stated that in the ICD-11 draft, the primary features of substance dependence are (a) a strong internal drive to use the substance, coupled with an impaired ability to control that use; (b) increasing priority given to using the substance than doing other activities; and (c) persistence of use despite harm and adverse consequences. On the topic of behavioral addiction specifically, Kardefelt-Winther et al. (2017) proposed a definition of two components: (a) significant functional impairment or distress as a direct consequence of the behavior and (b) persistence over time. We can therefore summarize the theoretical definition of addiction from its various sources by two key points: the (severe) harm, impairment, or negative consequences and the psychological (craving, salience, and loss of control) and physical dependence (tolerance and withdrawal) that leads one to carry on the behavior. At this point, we will review the critical criteria for addiction and determine how well smartphone addiction satisfies them.

Significant functional impairment

One of the essential features of a behavioral addiction should be the functional impairment in clinical settings (Kardefelt-Winther et al., 2017). If the harm is not significantly severe, the disorder would be better classified as problematic or maladaptive use or else considered as a side effect/manifestation of another primary disorder. The screening studies have indicated negative consequences associated with high smartphone use, such as interpersonal and academic problems (Bian & Leung, 2015; Darcin et al., 2016; Hawi & Samaha, 2016; Murdock, 2013). However, although face-to-face relationships may suffer with the prioritization of smartphone use over in vivo interaction and academic achievement may be negatively impacted by high use, these problems can also be associated with a variety of other reasons and stressors that are not considered to fall in the category of addiction.

A subsection of functional impairment related to addiction is also financial problems. With drug addictions, gambling addiction and others, one of the primary problems is the significant loss of money associated with maintaining the addiction. When Billieux, Van der Linden, and Rochat (2008) built the Problematic Mobile Phone Use Questionnaire (PMPU-Q), one of the dimensions they looked at was the financial problems associated with mobile phone use. However, this dimension has been excluded in the Problematic Mobile Phone Use Questionnaire – Revised (Kuss, Harkin, Kanjo, & Billieux, 2018), because the new use policies and rates of telecommunications companies make it insignificant, once again highlighting the importance of a technology-related behavior's sociocultural context.

It is also important to consider that although many studies have addressed the issue of smartphone addiction, it has not been reported in any of those reviewed that the researchers or the ethics committees in the universities felt the ethical obligation to provide a psychological treatment to the “phone addicts” identified in the research. This is itself an important indicator of the level of functional impairment exhibited by “addictive” smartphone use. It is necessary to distinguish serious psychopathology, such as addiction from passion, high engagement, lack of adaptive, self-control, or coping strategies, so that we do not undermine the severity of mental disorders (Carbonell & Panova, 2017; Petry & O’Brien, 2013).

Severe physical consequences

One main characteristic of an addiction is the impairment of physical health. Smokers have little psychological impairment, but they suffer from demonstrable physical harm. This does not seem to be the case for smartphone use. There are no more physical consequences than mild tendinitis (Fernandez-Guerrero, 2014) and anecdotal reports of suffering from lightheadedness or blurred vision, pain in the wrists, or at the back of the neck and urban incidents from people talking/texting while walking.

Tolerance

Tolerance, in the framework of mobile phone addiction, has been described as “a gradual increase in mobile phone use to obtain the same level of satisfaction, as well as the need to substitute operative devices with the new models that appear on the market” (Chóliz, 2010). In the screening studies, the factor analysis put many items about loss of control in a tolerance factor, i.e., “I try cutting my smartphone usage time, but I fail” (Kim, Lee, Lee, Nam, & Chung, 2014) and “I use smartphone for a longer period of time and spend more money than I intended” (Lin et al., 2014). The number of hours employed on the phone is used as criteria without considering that smartphone use is a normalized part of everyday life in many societies today even when engaged with very frequently (Kardefelt-Winther et al., 2017); therefore, increase in use should not be a valid criterion.

Other items used in questionnaires are vague, such as “I need to spend an increasing amount of time on smartphone to achieve same satisfaction as before” (Lin et al., 2014). Although tolerance may be a true aspect of smartphone use, variables such as satisfaction and enjoyment are rarely operationalized and standardized, thereby leaving them open to interpretation by each participant. In addition, without exploring the motivations behind increased use of the smartphone, its consequences cannot be categorized as indicative of a disorder. For some, higher use of the device could mean being more active at work or increasing one’s social circle. As Billieux et al. (2014) concluded, inferring tolerance based on the increasing use of the mobile phone is highly tentative. Similarly, King, Herd, and Delfabbro (2018) conclude that the use of time spent with a technology as a measure of tolerance may be simple and objective but can be criticized, because it does not capture the essence of what people are actually doing with the technology and

why. This same reasoning can be applied to smartphone-related tolerance measures, such as “time on the phone” or “number of messages.” Increased time on the smartphone and higher messaging behavior can be indicators of problematic use or they may indicate a promotion at work, new friends, etc. Therefore, a deeper analysis of motivations and gratifications associated with the behaviors is necessary.

Saliency

In the Smartphone Addiction Scale (Kwon et al., 2013), the item “Having my smartphone in my mind even when I am not using it” relates to the concept of saliency. In Griffiths’ (2005) component model of addiction, saliency is when the activity in question becomes the most important activity to the user and dominates their thinking. Although many smartphone users may agree that they think about the smartphone frequently, even when they are not using it, so much of a user’s social, professional, and personal life is mediated through the smartphone that we would argue it is reasonable for the device to be at the forefront of one’s thoughts and that this does not constitute an indicator of addiction.

Withdrawal

It is not mandatory that a substance produces withdrawal to be considered a substance-use disorder (i.e., hallucinogens) and, besides that, withdrawal is not one of the criteria for gambling disorder (APA, 2013, p. 585). In the case of Internet gaming disorder, Kaptis, King, Delfabbro, and Gradisar (2016) also concluded after a systematic review that available evidence on the existence of true addictive withdrawal in Internet gaming is very underdeveloped. But scholars in smartphone addiction found that some items could be grouped in a withdrawal factor when questionnaires were administered to their samples. Examples of items loading the withdrawal factor are: “I feel restless and irritable when the smartphone is unavailable” (Lin et al., 2014), “It would be painful if I am not allowed to use smartphone” (Kim et al., 2014), and “Bringing my smartphone to the toilet even when I am in a hurry to get there” (Kwon et al., 2013). However, this reported discomfort of being far from the smartphone must be viewed in context.

For most users, after a period of time and adaptation, the multifaceted functionality of the smartphone becomes an essential part of everyday life, therefore not having it on hand leads to the need for restructuring and adapting one’s regular activities, something which is always initially uncomfortable and/or stressful. In addition, being far from the device can be a stressful state for many because of the awareness that their contacts, both personal and professional, will feel displeasure and/or offense at being ignored (Thomé, Dellve, Harenstam, & Hagberg, 2010). Therefore, the reaction of stress at having this important tool missing is not abnormal. It is also important to note that smartphones are often expensive and contain sensitive personal information; therefore, a primary stressor during their absence may be a fear that the device can fall into the wrong hands, get damaged, or get stolen, which are normal reactions when viewed in context.

Loss of control

Loss of control is, besides craving and salience, a component of psychological dependence (Sánchez-Carbonell, Beranuy, Castellana, Chamarro, & Oberst, 2008). In the case of smartphone use, the loss of control exhibited is still far beneath the threshold of severity that would merit clinical attention. Again, the screening test literature supports the evidence of psychological dependence and loss of control, but the level of its severity is not often reported or standardized. For example, items of loss of control are “*I try to spend less time on smartphone, but the efforts were in vain*” (see Lin et al., 2014); “*I fail to control the impulse to use smartphone*” (see Lin et al., 2014); and “*I find myself engaged on the mobile phone for longer periods of time than intended*” (see Bianchi & Phillips, 2005). However, even when a university student rates this type of item high on a Likert scale, the answer does not necessarily have clinical relevance (Billieux, Schimmenti, Khazaal, Maurage, & Heeren, 2015; Kardefelt-Winther, 2015). If there is not a perceived severe consequence associated with failure to limit smartphone use and if there are perceived benefits of the activities on the smartphone, then this type of “loss of control” is not indicative of a “disorder.”

Stability of the dysfunctional behavior

There are no longitudinal studies to confirm stability and durability of the disorder. In behavioral and substance addictions, spontaneous remission (Stall & Biernacki, 1986; Walters, 2000) may occur not because the disorder occurs and then spontaneously disappears but because there is no real disorder in the first place. However, there is insufficient research on the topic to make conclusions in this regard.

Relapse

This condition is very distressing and harmful in substance addicts (Marlatt & Gordon, 1985), but there is no information about relapse with the presumed smartphone addiction. However, this may be because there are no clinical samples and longitudinal studies.

“Better explained by”

Finally, one important criterion is that the disorder is not better explained by another condition. For example, the criteria B for gambling disorder is “The gambling behavior is not better explained by a manic episode” (APA, 2013). As Billieux et al. (2014) have commented in their case study, “Thalia” could fit the criteria for mobile phone addiction but her condition could be better understood through a psychological process-based clinical formulation where the irrational beliefs about the self, the dependent relationship-maintenance style, the insecure attachment style, the low impulse control in emotional contexts, the repetitive negative thoughts, and the reassurance behaviors could better explain her mobile phone overuse. According to Billieux et al. (2014), this overuse should not be directly targeted by a psychological intervention but will improve as the emotional distress improves. The negative effects associated with

smartphone use may therefore be better explained by other conditions in many other instances.

ISSUES WITH THE SCREENING STUDIES

At present, we want to point out that the symptoms of smartphone addiction have been identified in screening and correlational studies with healthy people (many of the university students) instead of clinical samples (not identified). It is worth stating that Billieux, Schimmenti, et al. (2015); Carbonell and Panova (2017); and Kardefelt-Winther et al. (2017) have already criticized in detail how these studies give undue support to behavioral addictions and the same analysis could be applied to the smartphone. In the studies, the “addictive” use of the phone is first described according to a variety of psychological symptoms like excessive use, high economic cost, academic, work and family relationship impairment, tolerance, salience, withdrawal, and so on using a variety of diverse scales and questionnaires. After the often arbitrary definition of addictive smartphone use is outlined, screening tools identify the “addicts,” estimate their prevalence and correlate the “disorder” with various intrapsychic measures, such as shyness (Bian & Leung, 2015), stress (Chiu, 2014; Van Deursen et al., 2015), depression (Demirci et al., 2015; Elhai, Levine, Dvorak, & Hall, 2016), self-esteem (Fu Yuan et al., 2012), life satisfaction (Hawi & Samaha, 2016), loneliness (Bian & Leung, 2015), and self-perceived sleep disturbances (Demirci et al., 2015) among others.

Regarding these studies, let us address some primary concerns: (a) there is a lack of longitudinal studies to confirm the disorder’s stability; (b) the screening instruments used are not valid for diagnosis; (c) there is a large probability of false positives; (d) there are many arbitrarily designed items like “*eleven or more calls or SMS messages per day (high use)*” (i.e., Thomée, Härenstam, & Hagberg, 2011); (e) exploratory studies rely on self-report data, which are collected using convenience samples; and (f) there is a lack of consistency in methodology, definitions, measurement, cut-off scores, and diagnostic criteria across studies. These concerns highlight the general lack of construct validity surrounding smartphone addiction research and the consequent lack of strength of its conclusions.

To study clinical-level impairment such as addiction, it is recommended to assess the functional impairment in clinical settings, supported by a health professional, rather than through surveys implemented in a healthy population (Kardefelt-Winther et al., 2017). There is one case study reported in the academic literature on mobile phone addiction, in which the authors conclude that “... *social network addiction is a better concept to describe Anette’s case than the cell phone addiction*” (Körmendi et al., 2016). There is one other mobile phone addiction case study (Billieux et al., 2014), but its presentation has only a pedagogical purpose.

SMARTPHONE AS AN OBJECT

The smartphone is a physical object used to access the Internet and its content. In comparison with substance addiction, this object would be like the glass in alcohol

addiction or the needle in heroin addiction. “Needle addiction” (Levine, 1974) and “bottle addiction” are visual words and are accepted in colloquial language, but the addiction is to the substance not to the vessel or to the route of administration. There is a tendency in research on this subject to address smartphones as a single addictive entity, measuring the level of “smartphone use” or “smartphone addiction,” although the smartphone itself is causing the problems in the way that a drug does. The physical, mobile aspect of the smartphone facilitates problematic Internet behaviors (i.e., obsessive social media use, porn, and gambling addiction) by making them accessible anytime and anywhere and therefore increasing how often they are used, but the problem is not the smartphone device itself. The problems arising from smartphone use are dependent on what activities the user engages with while on the smartphone, the motivations for engaging with these activities, and the gratifications received from them which then reinforce continued use (Jeong, Kim, Yum, & Hwang, 2016; Lopez-Fernandez et al., 2017).

CONFUSING SMARTPHONE ADDICTION WITH OTHER ADDICTIONS

In the discussion on technological addictions, it is important to distinguish between addictions *to* the Internet and addictions *on* the Internet (Király et al., 2014). When a pathological gambler uses the Internet to play poker, it is more accurately an addiction *on* the Internet, secondary to his first problem (gambling). Another prevalent activity on the smartphone is game playing (Balakrishnan & Griffiths, 2018; Lopez-Fernandez, Männikkö, Kääriäinen, Griffiths, & Kuss, 2018). Balakrishnan and Griffiths (2018) found frequent claims of “addictiveness” of smartphone games by game players; however, in this scenario, the potential addiction would be to the gaming behavior specifically, not to the device as a whole. Thus, to use the smartphone for gambling or to engage in other addictive behaviors should not be confused with a *smartphone* addiction (Lopez-Fernandez et al., 2017).

Related to the above is the issue of the relationship between “smartphone addiction” and “Internet addiction.” The smartphone is used to access the Internet; therefore, if there is an addictive problem, it is with the Internet and not with the smartphone. This same reasoning has been used to distinguish between an Internet addiction and addictions to specific activities carried out on the network, with one of the most prevalent behaviors online being social networking (Jeong et al., 2016; Muñoz-Miralles et al., 2013; Pontes, Szabo, & Griffiths, 2015; Salehan & Negahban, 2013). Since many people access their social networks on their device, it can lead to the impression of device addiction; however, the rationale of distinguishing the platform from the behavior needs to be observed. We argue that common behaviors conducted on the smartphone, such as specific Internet uses, social networking, and gaming, should be cautiously explored in the context of their own motivations, gratifications, and sociocultural context and not as components of a smartphone addiction.

TERMINOLOGY

As we previously stated in the study of Carbonell and Panova (2017), the problems associated with the conceptualization and acceptance of technological and behavioral addictions may be, to a great degree, an issue related to the terminology. We would argue that it is unlikely that the majority of scientists in this field believe smartphone “addiction” is comparable to heroin or tobacco addiction in terms of the severity and/or associated health problems; however, there is no other accepted term for a behavior that manifests similar problems with a lack of self-control, attachment, high use, and problematic consequences. Therefore, for lack of a better word, “addiction” has become an accepted umbrella term. However, this is a problem because extending the term “addiction” to conditions better described as problematic or maladaptive use can undermine the integrity of this term and the severity of disorders that truly merit it. It can also misguide the research and treatment efforts for the current problem, because they are being designed within an addiction framework when in actuality a different approach may be more suitable and effective. Therefore, the authors propose seeking a different term to associate with this problem in the academic literature, such as problematic use. In fact, recent papers on the topic use alternative terms such as “problematic smartphone use” (Kuss, Kanjo, et al., 2018) or “self-reported dependence on mobile phones” (Lopez-Fernandez et al., 2017).

CONCLUSIONS

The aim of this study was to critically consider whether smartphone addiction exists. After reviewing the literature on smartphone addiction, we have concluded that the weakness of screening and correlational studies, the scarcity of the case and longitudinal studies, the vague definitions of the criteria for smartphone addiction, and the lack of severe psychological or physical consequences associated with it do not support the existence of smartphone addiction at this time and we therefore suggest moving away from an addiction framework when addressing and studying this issue.

Although certain parallels exist between classically defined addiction and high use of the smartphone, the levels of severity for smartphone use are much lower, an important fact since severity of impairment is one of the primary criteria for distinguishing between addiction and problematic behavior. A person who bites their nails compulsively also exhibits self-harm, loss of control, physical consequences, relapse, and craving, but we do not label it a nail-biting addiction. It is important not to diagnose excessive, maladaptive, or problematic behavior as an addictive in order to avoid generating false epidemics of misidentified pseudopatients (Frances & Widiger, 2012) and pathologizing common behaviors (Karddefelt-Winther et al., 2017).

It is important to note that research shows that smartphone use is associated with various problems. In correlational studies, overuse of the smartphone is associated with various mental health concerns, such as anxiety, depression, stress, and low self-esteem (for a review, see Elhai et al., 2016; Panova & Lleras, 2016). However, the existence of

negative consequences is not the same as the existence of addiction. We would like to shift the perspective on this issue away from an addiction framework and view smartphone use in a context that considers the compensatory functions of the device and how it interacts with the user's needs, desires, and primary disorders.

One reason that smartphone use may be pathologized is because the role the device plays in people's lives is not yet fully understood. Surrat (1999) has explained how the limited understanding of any new information and communication technologies is often taken advantage of by the media who capitalize on the suspicion that accompanies new technological developments and publish sensationalist news stories about addictions and psychopathology, which contribute to the social construction of a pathology. More recently, Frances and Widiger (2012) have detailed a background of overdiagnosis in mental health. In our opinion, to consider intensive smartphone use a disorder in the same category as cocaine or alcohol addiction undermines the severity of addiction.

In summary, the smartphone's defining features – portable, quick, convenient, and private – may facilitate the access to certain problematic behaviors and the corresponding rewards received from them that make the behaviors more frequent, but addiction is more than a matter of impulse-control and excessive behavior. Therefore, although the media may turn to terminology such as “addiction” because it seems like the closest metaphor for the technology-related behavioral problems, we are observing in society today, we believe it is the responsibility of academics to use more accurate language and diagnostic terms and at the current moment the research does not support the claim that addiction is a correct term for the problems associated with smartphone use. The use of smartphones and other devices are associated with various negative consequences and research on them should continue; however, in order to address and treat their associated problems accurately and effectively, they should not be misdiagnosed as consequences of addiction.

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