



# Modelling smartphone addiction: The role of smartphone usage, self-regulation, general self-efficacy and cyberloafing in university students



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## ABSTRACT

The present study investigates the roles of smartphone usage, self-regulation, general self-efficacy and cyberloafing in smartphone addiction. We conducted an online survey which received responses from 598 participants attending a public university in Ankara, Turkey. The results showed that both the duration of smartphone usage and cyberloafing positively affected smartphone addiction. The effect of self-regulation on smartphone addiction was negative and significant. In addition, neither self-regulation nor general self-efficacy had an effect on cyberloafing. Research results are discussed within the context of the effect of smartphone addiction on learning environments and individuals.

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## 1. Introduction

Along with providing the opportunity to access the internet, mobile phones have today become more than just a means of communication among individuals. They have transformed into tools which provide virtual environments and digital identities through which people seek enjoyment, and which also enable users to do shopping and manage their finances. This change has also altered the patterns of mobile phone usage and left this technology subject to potentially problematic usage. Such problematic usage of mobile phones interferes with other activities in daily life, alters interpersonal relations and may even affect people's health and happiness (Augner & Hacker, 2012; Chóliz, 2012; Leung, 2008). Problematic mobile phone usage can be categorized as: dangerous usage (e.g. using a mobile phone while driving), inappropriate usage (e.g. using a phone in cinema or class), and overuse (Walsh, White, & Young, 2007). All three usage types are considered as

important indicators that someone is on the path to smartphone addiction (Chóliz, 2012). Smartphone addiction causes either directly or indirectly various problems in terms of mental health, campus life and interpersonal relationships (Choi, Lee, & Ha, 2012). There correlation between loneliness, timidity and smart phone addiction (Bian & Leung, 2015). According to the phenomenological research results regarding smartphone addiction, problematic behaviors such as desperate efforts to connect with others, excessive time spent on smartphones, losing temper, psychological disorders and disruptions in daily works were reported (Ko, Lee, & Kim, 2012).

It seems possible that those young people who tend to have a smartphone addiction are also likely to have social, domestic and academic problems. In fact, it has been stated that such individuals' use of smartphones is higher compared to others, and their tendency to use them gradually increases (Kwon et al., 2013). Young people of the most recent generation, also sometimes known as the 'wired generation' (Barnes, 2009), continually organize their activities through their smartphones in class or elsewhere, manage their social networks and use smartphones to keep in touch with each other (Jacobsen & Forste, 2011). When it is considered that

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young people's tendency to suffer from smartphone addiction is directly proportional to their mobile phone usage (Augner & Hacker, 2012; Martinotti et al., 2011; Walsh et al., 2007), and that mobile phone addiction is the most extreme unhealthy behaviour with regard to mobile phone usage (Hong, Chiu, & Huang, 2012), it can be assumed that inappropriate use of mobile phones in the classroom environment will affect students in a negative way. Furthermore, the opportunity to access the internet everywhere, using various methods, and the increase of eye-catching applications, may cause students to engage in extraneous activities during class, in other words, to practice 'cyberloafing' (Kim, Triana, Chung, & Oh, 2015). Cyberloafing might include communicating with friends via social networks, surfing on the internet or shopping online etc., and it affects students negatively (Blanchard & Henle, 2008; Tindell & Bohlander, 2012). While there are studies in which factors affecting cyberloafing behaviours have been studied (Junco, 2012; Tindell & Bohlander, 2012; Yilmaz, Yilmaz, Öztürk, Sezer, & Karademir, 2015), there have not yet been any studies examining the relation of cyberloafing to smartphone addiction. In addition, how certain personal traits (e.g. self-regulation, self-efficacy) affect smartphone addiction is not well enough known. In this regard, this study aims to analyse the effects of cyberloafing, self-regulation, and self-efficacy on smartphone addiction.

The rest of this paper is structured as follows. First, smartphone addiction and its causal factors are explained. These factors form variables including smartphone usage, self-regulation, general self-efficacy, and cyberloafing. Next, research hypotheses are provided along with the actual research regarding these variables. In the conclusion, the method used and the results of the research are discussed, and a model concerning the variables that explain smartphone addiction is provided.

## 2. Literature review

### 2.1. Smartphone addiction

In the literature mobile phone addiction has been given various different names such as 'problematic mobile phone usage', 'habitual mobile phone usage', and 'compulsive mobile phone usage' (Kim & Byrne, 2011). However, as a result of the addition of computational features to mobile phones and their enrichment through various applications, which have led to the transformation of mobile phones into today's smartphones, the expression 'smartphone addiction' is now used more commonly than 'mobile phone addiction'. While these concepts are sometimes used interchangeably (Kim & Byrne, 2011), this study is based on and uses the concept 'smartphone addiction'. Smartphone addiction is the excessive use of smartphones in a way that is difficult to control and its influence extends to other areas of life in a negative way (Park & Lee, 2012).

There were 4.55 billion mobile phone users worldwide in 2014, of whom 1.75 billion were smartphone users (EMarketer, 2014). While smartphone ownership by adults in America in 2011 was 35%, this rate was 64% in 2015 and younger Americans own more smartphones than others (Pew Research Center, 2015). Having reached such a wide rate of usage, smartphones are now more than just means of communication and affect human life in many different ways, especially as they are the devices which are in closest daily physical contact with individuals (Lee, Chang, Lin, & Cheng, 2014). Along with providing access to information through the internet, smartphones also enable the sharing and production of new material, and provide opportunities for communication, social interaction, game-playing, application use, and the creation of media files. Although they are beneficial devices which facilitate countless social and individual activities, the use of mobile phones

brings with it various problems in the domestic, academic, occupational, and social spheres (Chóliz, 2012). As a type of problematic usage, smartphone addiction (Salehan & Negahban, 2013) has been described as 'an addiction-like behaviour leading individuals to use the cell phone compulsively' (Takao, Takahashi, & Kitamura, 2009). It has been argued that although smartphone addiction resembles other technological addictions it can be much more dangerous because smartphones offer unique features such as portability and ease-of-connectivity (Demirci, Orhan, Demirdas, Akpınar, & Sert, 2014).

Smartphone addiction is different from drug-based physiological addictions such as addiction to alcohol or heroin and is behaviour-based (Griffiths, 1998; Kim & Kim, 2002; van Deursen, Bolle, Hegner, & Kommers, 2015). The pleasure and excitement that initially arise from the use of smartphones may turn into a condition that is disruptive for both the individual and society in the long term. Overuse of smartphones and habitual checking may eventually push the users into compulsive usage or even to mobile phone addiction (Lee et al., 2014). While overuse causes sleeping problems and various health disorders, it also results in stress (Thomee, Harenstam, & Hagberg, 2011), and physical and mental development problems (Hadlington, 2015; Park & Park, 2014). When individuals cannot access their smartphones, they may fall into nomophobic behaviour such as: '(1) not being able to communicate, (2) losing connectedness with others, (3) not being able to access information, and (4) giving up convenience' (Yildirim, Sumuer, Adnan, & Yildirim, 2015).

When the research on smartphone addiction is studied, it can be observed that numerous variables have been taken into consideration. These include: user characteristics (Park & Lee, 2011); life stress (Chiu, 2014); academic success (Kibona & Mgaya, 2015; Mok et al., 2014; Olufadi, 2015; van Deursen et al., 2015); learning (Lee, Cho, Kim, & Noh, 2015); habits (Chen, Zhang, & Zhao, 2015); age (Kibona & Mgaya, 2015); self-regulation (Jeong, Kim, Yum, & Hwang, 2016; van Deursen et al., 2015; Ko et al., 2015); and duration of mobile phone usage (Hong et al., 2012; Kwon et al., 2013; Lin et al., 2015). Some research has suggested that smartphones might have an effect on the academic success of students (Junco & Cotten, 2012; Lepp, Barkley, & Karpinski, 2014; Kibona, & Mgaya, 2015). In this respect, smartphone addiction may cause individuals to disengage from class activities, to cheat in exams or break off their studies, and it may affect academic performance (Roberts, Yaya, & Manolis, 2014). Moreover, research has shown that students think smartphone addiction will have negative effect on academic success (Olufadi, 2015), but that they are not aware of their own smartphone addictions (Roberts et al., 2014).

While various features of smartphones have been pointed to as causes of addiction (Roberts et al., 2014), the major factors affecting smartphone addiction have yet to be revealed (Pi, 2013). Researchers have stressed the significance of research regarding smartphone usage and argued that it is necessary to conduct many more studies. Furthermore, it has been stated that self-regulation and the duration of smartphone usage are important variables affecting smartphone addiction (Jeong et al., 2016; Kwon et al., 2013; Lin et al., 2015). However, no relation has yet been suggested between cyberloafing and smartphone addiction. And there has been no research into how these variables, considered together, impact on and explain smartphone addiction. For this reason, the effects of self-regulation, the duration of smartphone usage and cyberloafing on smartphone addiction are analysed in this study.

### 2.2. Predictors of smartphone addiction

#### 2.2.1. The duration of smartphone usage

Many smartphone users see their smartphone not only as a

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