Research in Social Sciences and Technology
Volume 4 Issue 2, 2019

Sociodemographic factors influencing smartphone addiction in university students

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Received : 03.07.2019
Accepted : 08.09.2019

How to cite this paper: Diaz-Aznar, I., Trujillo-Torres, J. M., Garcia, S. A., & Jimenez, C. R. (2019). Sociodemographic factors influencing smartphone addiction in university students. *Research in Social Sciences and Technology*, *4(2),* 137-146.

Abstract

The development of mobile devices has affected the way of life of university students, affecting their daily habits and sometimes their health. Specifically, in recent years a series of illnesses have developed as a result of the constant use of smartphones by the university population, which has come to be catalogued as an at-risk population. The aim of this work was to analyze the sociodemographic factors that influence the smartphone addiction of university students. For the measurement of the levels of addiction, the standardized instrument Smartphone Addiction Scale was used in a sample of 385 students from the University of Granada, Spain. A multiple linear regression model was used as a statistical test, highlighting that the factor influencing smartphone addiction is the time of use. Finally, the study includes a series of implications derived from the results obtained, with the aim of establishing preventive measures to help to mitigate smartphone addiction.

Keywords: Mobile devices, Smartphone addiction, Internet addiction, Higher education

Introduction

Initially, the democratization of information and communication technologies (ICT) enabled their use at the social level (Tarman et. al, 2015; 2019). Today, business competitiveness in technology has made the prices of mobile devices affordable for the general public, boosting consumption and increasing the number of hours dedicated to these devices. Among them, the smartphone has reached great popularity due to its characteristics and reduced dimensions.

Research in Social Sciences and Technology
Volume 4 Issue 2, 2019

In Spain, consumption has reached such an extreme that, of populations that spend the most time on smartphones, Spain is fifth in the world (Rodríguez, 2017). This abusive use is mostly by teenagers (Ruiz-Palmero, Sánchez-Rodríguez, & Trujillo-Torres, 2016) and young adults, who belong to the generation that has grown up with technology and is more prone to a certain addiction to the smartphone (Wang, Sigerson, & Cheng, 2019).

This type of addiction has been closely linked to Internet addiction (Jeong, Suh, & Gweon, 2019), forming part of the behavioral addictions. One of its variants is nomophobia, which is characterized by a state of anxiety caused by the impossibility of having access to a smartphone (Anshari, Alas, & Sulaiman, 2019).

For its part, addiction to the smartphone has been increased by the growth and development of social networks and the need for the user to be connected as long as possible to them (Cha & Seo, 2018; Noë, Turner, Linden, Allen, Winkens, & Whitaker, 2019). At the same time, the development of videogames through mobile applications (apps) has led to a greater dedication to smartphones and, therefore, a greater predisposition to addiction (Gaspar & Cuesta, 2015).

This problem associated with the abuse of the Internet entails other risky behavior on the Internet, such as being an aggressor or victim of cyberbullying (Qudah, Salamah, Attallah, Hashem, Alfnan, Aljomaa, & Ateik, 2019). Thus, excessive use of mobile devices accentuates the possibilities of exercising or receiving aggressions online.

In addition, the largest population at risk of smartphone addiction are university students (Polo, Mendo, León, & Castaño, 2017). Therefore, a priori, it is a well-educated population that is studying at a higher level and may develop negative consequences such as depression and anxiety (Boumosleh & Jaalouk, 2017; Kim, Park, Kim, Pan, Lee, & McIntyre, 2019), worsening physical health (Kumcagiz, 2019), and low academic performance (Alzubi, 2019; Chang, Chiu, Chen, Chiang, Miao, Chuang, & Liu, 2019).

In spite of these consequences for the user, the educational field is beginning to introduce the mobile device to improve the teaching-learning process in the classroom. This methodology is called mobile learning (Hinojo, Aznar, & Romero, 2018). In this line, it is essential that teachers implement measures for education in the good use of the smartphone and the application of good teaching practices (Aznar, Cáceres, & Romero, 2018) in order to reduce malpractice with the mobile device.

Some previous studies that focus attention on smartphone addiction on the part of university students pick up positive aspects that can predict this type of behavior. Thus, self-control is a key piece in reducing smartphone addiction (Heo & Lee, 2018). Age influences when presenting a predisposition to smartphone addiction in university students (Gligor & Mozos, 2019). Time of use is directly related to smartphone addiction (Rozgonjuk, Elhai, Täht, Vassil, Levine, &

Asmundson, 2019). The individual differences of university students explain the excessive use of technology (Elhai, Rozgonjuk, Yildirim, Alghraibeh, & Alafnan, 2019). A high degree of awareness is linked to a low addiction to smartphones in university students (Lian, 2018). On the other hand, other studies warn that smartphone addiction correlates positively with anxiety (Konan, Durmus, Türkoglu, & Bakir, 2018). Depression, anxiety, and smartphone addiction in college students showed a significant positive correlation (Kim & Kwon, 2019), and high smartphone use and low social support is positively and significantly related to smartphone addiction (Herrero, Urueña, Torres, & Hidalgo, 2019; Kuss, Harkin, Kanjo, & Billieux, 2019).

Based on these considerations, the objectives of the study were to evaluate the degree of smartphone addiction of university students in the Primary Education degree at the University of Granada and to determine the sociodemographic factors that influence smartphone addiction. There were also established as research questions:

RQ1: What is the degree of addiction to the smartphone (understood as the abusive use of the internet that interferes with daily life) of future teachers?
RQ2: Are there differences between gender (male or female), age, educational level (level attained in the educational system), employment status, and time spent on smartphone addiction?
RQ3: Does gender, age, educational level, employment status, and time spent influence smartphone addiction?

Method

Participants

The sample under study was extracted from a population of students of the Faculty of Education Sciences at the University of Granada. An online survey based on a standardized questionnaire was applied to different grade levels in Primary Education. The selection of the sample was made on the basis of stratified random sampling, taking into consideration that the sample size reached a significant sample size at 95% confidence with a margin of error of 5% (N = 385). The characteristics of the participants are shown in Table 1. The sample consisted of a total of 147 men and 238 women ages 18-55 (M = 23.98; SD = 5.40).

Table 1.
Socio-demographic data

	N	*M*(*SD*) or %
Gender		
Male	147	38.2
Female	238	61.8
Age	385	23.98(5.40)
18-21	123	31.9
22-25	134	34.8
26-29	85	22.1
30 or more	43	11.2
Studies		
A-Levels	358	93
High-level Vocational Training	27	7
Employment situation		
Active	199	51.7
Inactive	186	48.3
Usage time (hours)		
Less than 1	118	30.6
Between 1-2	146	37.8
Between 2-3	68	17.7
More than 3	53	13.9

Measures

Smartphone Addiction Scale (SAS-SV)

Addiction to the smartphone was evaluated with the SAS application in its short version. This scale measures smartphone addiction through 10 items. The response mode is based on a Likert scale of four levels ranging from 1 (Strongly disagree) to 4 (Strongly agree). The scores obtained in each item are added up, being able to reach from a minimum of 10 points to a maximum of 40; the scores close to 40 indicate a greater degree of addiction to the smartphone. This scale has good psychometric properties and internal consistency (Kwon, Kim, Cho, & Yang, 2013). Reliability in this study was great (Cronbach's a = 0.82).

Data analysis

The data were analyzed using different statistical tests with the help of the IBM SPSS version 24 quantitative analysis software. From this, the statistical-descriptive (RQ1 and RQ2) values were calculated and the significance of the independent variables in smartphone addiction was verified from the establishment of a multiple linear regression model (RQ3).

Results

The descriptive statistical values, which answer RQ1 and RQ2, include scores that fall within the range of smartphone addiction in age (18-21, 22-25, and 30 years or older), educational level (superior grade), employment situation (inactive), and time of use (between 2-3 and more than 3 hours). At the same time, statistically significant differences are established between different groups (Table 2). Specifically, these are the age groups 18-21 and 26-29 years (p = 0.003), 22-25 and 26-29 years (p = 0.007), 26-29 and 30 years or more (p = 0.032); employment status (p = 0.011); and between all times of use.

Table 2.

Descriptive statistics and test t

Independent variable	*M*	*SD*	*T*	df	*p*
Gender					
Male	19.88	5.70	-0.072	383	0.943
Female	19.92	5.61			
Age					
18-21	20.56	5.86			
18-21/22-25			0.521	255	0.603
18-21/26-29			3.091	206	0.003
18-21/30 or more			0.112	164	0.911
22-25	20.19	5.43			
22-25/26-29			2.702	217	0.007
22-25/30 or more			-0.250	175	0.803
26-29	18.22	4.97	-2.165	126	0.032
30 or more	20.44	6.35			
Studies					
A-Levels	19.89	5.66	-0.162	383	0.871
High-level Vocational Training	20.07	5.35			
Employment situation					
Active	19.20	5.76	-2.566	383	0.011
Inactive	20.66	5.41			
Usage time					
Less than 1	17.58	4.66			
Less than 1/Between 1-2			-2.949	262	0.003
Less than 1/ Between 2-3			-5.285	184	0.000
Less than 1/ More than 3			-8.008	169	0.000
Between 1-2	19.36	5.04			
Between 1-2/Between 2-3			-2.950	212	0.004
Between 1-2/ More than 3			-5.882	197	0.000
Between 2-3	21.62	5.59	-2.603	119	0.010
More than 3	24.40	6.10			

The multiple linear regression model, which answers RQ3, has a good fit and is significant (F-statistic = 15.341; p = 0.000) (Table 3). It is established that the only significant variable in smartphone addiction is time of use (p = 0.000). The remaining variables are not significant to explain the addiction.

Table 3.
Multiple linear regression analysis

	Independent variable	*B*	SE	*T*	*p*	*β*	R^2
Smartphone addiction	Gender	-.0184	0.569	-0.324	0.746	-0.016	0.16
	Age	0.523	0.328	1.597	0.111	0.092	
	Studies	-0.436	0.528	-0.825	0.410	-0.039	
	Employment situation	0.996	0.610	1.633	0.103	0.088	
	Usage time	2.321	0.281	8.263	0.000	0.415***	

Note: ∗p < 0.05; ∗∗p < 0.01; ∗∗∗p < 0.001.

Discussion and Conclusions

The data obtained confirm that university students are a population at risk for technological addiction (Polo et al., 2017). It is detected that there is a greater addiction in young adults and in adults aged 30 years or more, with statistically significant differences between age groups. However, the 26-29 age group is not addictive. On the other hand, there are significant differences in the work situation; the fact of being inactive is an incentive for smartphone addiction. Having more free time intervenes in the use of that time to devote it to the mobile device.

Differences between independent variables also indicate that the sociodemographic factors of university students may explain smartphone addiction (Elhai et al., 2019). On the other hand, longer usage time indicates a greater addiction to the smartphone, with significant differences being found between all estimated usage bands. This is confirmed in the multiple linear regression analysis where the time invested is the only variable that influences significantly. Thus, time of use is significantly related to smartphone addiction (Rozgonjuk et al., 2019). Consequently, those university students with higher smartphone use are more likely to develop pathologies such as depression or anxiety (Boumosleh & Jaalouk, 2017; Konan et al., 2018; Kim & Kwon, 2019; Kim et al., 2019) and poor academic performance (Chang et al., 2019).
For its part, age did not significantly influence smartphone addiction, despite what was found in other studies (Gligor & Mozos, 2019).

In short, smartphone addiction is an endemic disease of 21st century society. Establishing measures for its prevention and treatment is a challenge for public administrations, especially in the field of education. This work has responded to the objectives of assessing the degree of smartphone addiction of university students in the degree in Primary Education at the University of Granada and determines the sociodemographic factors that influence addiction to the smartphone. At the same time, the research questions collected the findings of the study: (RQ1) The degree of addiction of future teachers is medium-high, as established by Polo, Mendo, León, and Castaño (2017). (RQ2) There are significant differences between age groups, work situations, and time invested (Gligor & Mozos, 2019). Adults aged 26-29 are less likely to engage in these addictive behaviors. Conversely, the two extremes 18-21 and 30 or older reflect higher levels of smartphone addiction. The work situation is also an incentive. Gender and

educational attainment are not determining factors. (RQ3) Time of use significantly influences smartphone addiction, so the more time spent on the mobile device, the higher the score (Rozgonjuk et al., 2019) on the SAS measurement scale.

Finally, among the limitations of the study is the establishment of the sample. When set with random criteria, they are representative of the population. However, it is a population limited only to future Primary Education teachers of a specific university. In future studies, it would be of interest to extend the sample to more degrees. Another limitation relates to independent variables, which were limited to a few sociodemographic factors. It is recommended that in future work, the factors that can influence smartphone addiction be expanded.

Finally, determining usage time as a predictor of smartphone addiction helps prevent this type of behavior. Based on this, education in the proper use of technology and the reduction of mobile device consumption should be fundamental pillars in the technological education that university students receive, being a key piece to avoid the negative consequences arising from abuse of the smartphone.

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