Journal of Computer and Education Research
April 2020 Volume 8 Issue 15
http://dergipark.org.tr/jcer
(ISSN:2148-2896)

Research Article

Smartphone Addiction and Fear of Missing out: Does Smartphone Use Matter for Students' Academic Performance?

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Article Info

Received: *29 February 2020*
Accepted: *23 March 2020*

Keywords: Academic performance, foreign language learning, smartphone addiction, university students, fear of missing out

10.18009/jcer.696481

Publication Language: English

Abstract

The aim of this study was to determine the associations between smartphone addiction, fear of missing out and academic performance amongst Preparatory Year Programme (PYP) students in Turkey. Data were collected using the Fear of Missing Out scale (FoMOs), the Smartphone Addiction Scale – Short Version (SAS-SV) and the Versant English Test from a sample of Turkish students enrolled in different undergraduate programmes (n = 139). On the whole, the findings of this study show that there is a significant difference, with consistently higher means in the female group, between the groups' levels of smartphone addiction. The findings also indicate a negative relationship between the students' academic performance and their levels of smartphone addiction. The SAS-SV was found to be a significant predictor of academic performance. The classroom implications of these data in terms of teaching and learning processes are discussed.

To cite this article: Ozer, O. (2020). Smartphone addiction and fear of missing out: does smartphone use matter for students' academic performance?. *Journal of Computer and Education Research*, *8* (15), 344-355. DOI: 10.18009/jcer.696481

Introduction

The capabilities of smartphones have increased at an exponential rate and have already gone far beyond the basic mobile phones of some twenty years ago (Dickinson et al., 2014). Smartphones are capable of running downloaded applications and have a number of purposes including communication, entertainment and accessing information (Boumosleh & Jaalouk, 2018; Seemiller & Stover, 2017). As smartphones become more sophisticated and more functional, they keep on replacing a multitude of devices (Jiang & Li, 2018; Samaha & Hawi, 2016) such as PCs, tablets, cameras, radios and portable music players. With their increasingly larger screen size, smartphones enable users to have more diverse and ubiquitous forms of communication and bring them enormous benefits (Ozer & Kilic, 2018; Samaha & Hawi, 2016). Despite the potential benefits of using mobile technologies in the classroom, however, mobile devices can seriously distract students if they are used for non-

class-related purposes (Seemiller & Stove, 2017). A body of research has reported consistent findings indicating that the use of mobile phones for non-course-related purposes creates an adverse effect in terms of learning (Seemiller & Stover, 2017).

The risks related to problematic mobile phone use includes physical, psychological and mental health conditions. Social media usage behaviours might be another source for problematic mobile phone use (Çelikkaleli, Ata & Avcı, 2018). This problematic use is likely to start after a strong tendency of people to stay tuned to others' lives by means of following posts, statuses, likes, and so on (Przybylski, Murayama, DeHaan & Gladwell, 2013). University students are at potential risk because they reportedly spend a considerable amount of time using their smartphones for either academic or entertainment related purposes (Park, Kwon, Baek, Han, 2014). Fear of Missing Out, commonly referred to as FoMO, is defined as "a pervasive apprehension that others might be having rewarding experiences from which one is absent" (Przybylski et al., 2013: p. 1841). In this sense, FoMO is a sort of continuous need to stay connected with what others are doing. A review of the literature shows that FoMO is related with academic performance and problematic mobile phone use (Qutishat & Sharour, 2019). Traş and Öztemel (2019) found significant positive correlations between Facebook intensity, age, duration of Internet use, duration of Facebook use, FoMO and smartphone addiction on a sample of Turkish university students.

All age groups are susceptible to problematic mobile phone use but younger people reportedly show a worrying tendency for problematic mobile phone use (Choliz, 2010; Ozer & Ozer, 2018). Individuals who have problematic mobile phone use are more prone to smartphone addiction and thereby at risk of developing behavioural and psychological problems (Jenaro, Flores, Gomez-Vela, Gonzales-Gil & Caballo, 2007). Samaha and Hawi (2016) reported that mobile phone addiction can seriously affect students by causing low academic performance and perceived stress.

Some students are more prone to becoming addicted to their smartphones in the same way as if they were addicted to gambling or cigarettes. Like addictive substances, behavioural addictions can pose a serious risk to health. Recent research has suggested that addiction should be widened to cover a broader range of behaviours (Chen, 2020; Young, 2010). Nonetheless, this approach is open to criticism. For example, Billieux, Maurage, Lopez-Fernandez, Kuss and Griffiths (2015) and Panova and Carbonell (2018) proposed using other terms such as 'problematic use' when studying excessive use and the negative

consequences caused by technological behaviours. On the question of whether behaviours such as excessive use of internet-enabled mobile devices should be classified as an addiction, a large number of researchers across the globe have suggested that excessive use of these technologies should be considered problematic (Griffiths, 1998; Panova & Carbonell, 2018; Panova, Carbonell, Chamarro & Puerta-Cortes, 2020). Some researchers have observed mobile phone users and found symptoms of addiction such as withdrawal, salience, phantom phone signals (Li & Lin, 2019) and anxiety (Ha, Chin, Park, Ryu & Yu, 2008). Researchers have even developed instruments to determine the craving associated with problematic mobile phone use (De-Sola, Talledo, Rubio & de Fonseca, 2017).

Research Questions

Interest in studying new addictions related to new technologies does not have a long history (Jenaro et al., 2007) and excessive internet use and problematic mobile-phone use have only been studied for the last two decades (Billieux et al., 2015; Sanal & Ozer, 2017). This current study was devised on the basis of previous studies (Han & Yi, 2018; Jenaro et al., 2007; Lepp, Barkley & Karpinski, 2015; Kuznekoff & Titsworth, 2013; Samaha & Hawi, 2016; Sert, 2019) which showed that to some extent users' academic performance was affected. As Boumosleh and Jaalouk (2018) put it, the availability of prior research investigating the impact of problematic smartphone use, either in the form of smartphone addiction or the fear of missing out, is limited and scarce. Furthermore, studies exploring these variables in English-language-learning contexts are almost non-existent (Boumosleh & Jaalouk, 2018; Klimova, 2019).

The objective of this current study was to determine the associations between problematic mobile phone use, fear of missing out and academic performance amongst PYP students. Based on the discussion above, the following two research questions were formulated:

RQ1: Is there a significant difference in problematic mobile phone use and fear of missing out between male and female students?

RQ2: Is SAS-SV or FoMOs a more significant predictor of the academic performance of PYP students?

Method

Participants

A non-random method of convenience sampling was used to recruit participants. The sample group in the current study comprised 139 undergraduate students (59 females and 80 males) at a state English-medium university in the south of Turkey. The participants, all of whom were in their preparatory year of study, ranged in age from 18 to 26 years (M= 19.88, SD= 1.59). All incoming students, regardless of their degree programmes, have to participate in the PYP unless they get a pass score in an in-house English proficiency examination (Macaro, Akincioglu & Dearden, 2016). Participation in the study was voluntary and the respondents took approximately six minutes to complete the questionnaire.

Data Collection and Analysis

The study involved two different survey tools, each of which has been previously developed and independently validated in the literature. Permission (Doc. Nr. E.5797) to administer the questionnaires had been obtained before the research was conducted. Both survey tools, the FoMOs (Gökler, Aydın, Ünal & Metintaş, 2016) and the SAS-SV (Noyan, Enez-Darçın, Nurmedov, Yılmaz & Dilbaz, 2015), had been independently adapted into Turkish. The main reason for using Turkish versions of the scales in the present study was an attempt to make the items easier to understand and thereby increase the reliability of the responses.

Data were checked for completeness and accuracy and incomplete data were excluded from the further analysis. First, the analyses necessary to ensure that there was no violation of the assumptions of normality were run and the skewness and kurtosis of the instruments were found to be within the normal limits. In order to check the reliability of the items in each scale, Cronbach's alpha correlation coefficient was confirmed for the ten items in each scale. Using SPSS Statistics (version 20), the acquired data were analysed using means, standard deviation, two sample t-test, simple linear regression and Pearson correlation analyses. Comparisons between females and males were carried out using t-tests. Statistical significance was assumed at $p < .05$ and the Pearson Correlation coefficient was calculated to determine the relationship between the scales. The scales and other instruments used in this study were as follows.

The FoMOs. This ten-item scale was originally developed by Przybylski et al. (2013) as a self-reported assessment to measure the FoMO construct as an individual difference. Gökler et al. (2016) adapted the scale for use with Turkish samples. Respondents are expected to indicate how true each statement is to them based on a five-point Likert-type scale (1= not at all true of me, 2= slightly true of me, 3= moderately true of me, 4= very true of me, and 5= extremely true of me). In the current study, a reliability test of the FoMOs yielded a Cronbach's alpha of 0.80.

The SAS-SV. The SAS-SV is a self-reported assessment to measure smartphone addiction predisposition in adolescents. It was originally developed by Kwon, Kim, Cho and Yang (2013). Noyan et al. (2015) adapted it for use in Turkey. The Cronbach's Alpha coefficient of the Turkish version of the SAS-SV was 0.87. The SAS-SV comprises ten items scored with a six-point Likert-type scale ranging from 1= strongly disagree to 6= strongly agree. Respondents indicate their agreement or disagreement with items such as 'Missing planned work due to smartphone use' and 'The people around me tell me that I use my smartphone too much'. The Cronbach's alpha for this scale was 0.88 in the present study.

The Versant English Test. This placement test was developed by Pearson to automatically evaluate the speaking, listening, reading and writing skills of English-language learners by computer. As a fully automated language test, the computer can analyse students' responses and generate a score report within minutes of completion of the test (Fan, 2014). The Versant English Placement Test comprises various question types, namely, conversations, sentence building, reading aloud, repeating, typing, sentence completion, summary and opinion, passage reconstruction and dictation ('Student Placement', n.d.).

Procedure

Data were collected during the last week before the finals in the 2017-2018 academic years. The instruments were administered in nine language classes at the PYP and each class consisted of approximately twenty students. The informed consent form was read by the researcher in the classroom environment. All of the students who participated in the study had voluntarily agreed to participate. The participation rate was not very high because of the falling attendance at classes in the final weeks of the semester. The researcher calculated the

means of the female and male groups and conducted t-tests to test for statistical significance between those means.

Findings

In an attempt to answer the first research question, the means of students obtained from the FoMOs and SAS-SV were measured to determine whether there was a difference in their problematic mobile phone use between male and female students.

Table 1. Means, standard deviations and gender comparisons

	Female (n=59)		Male (n=80)			
Instrument	***M***	**SD**	**M**	**SD**	**t**	**p**
FoMOs	2.58	.62	2.40	.72	1.554	.122
SAS-SV	3.21	.98	2.76	1.04	2.611	.010

As Table 1 shows, higher means were consistently found in the female group. The results of an independent samples t-test confirmed that this difference based on the SAS-SV scores was statistically significant. However, means from the FoMOs did not show a statistical significance. The effect size for the SAS-SV was small to medium, according to Cohen's (1988) thresholds (d = 0.36).

In order to answer the second research question which investigated whether there was a positive or a negative association between the scales used and academic performance, the Pearson correlation coefficient was calculated.

Table 2. Pearson correlations between academic performance, FoMOs and SAS-SV

Variable		**Academic Performance**	**FoMOs**	**SAS-SV**
Academic Performance	Pearson Correlation		-.055	-.315
	Significance (2-tailed)		.524	.000
	N		139	139
FoMOs	Pearson Correlation	-.055		
	Significance (2-tailed)	.524		
	N	139		
SAS-SV	Pearson Correlation	-.315		
	Significance (2-tailed)	.000		
	N	139		

Correlation is significant at the 0.01 level.

Correlation analyses were used to examine the relationship between language learners' academic performance and their scores on the two different scales. Correlations of academic performance with the FoMO was not significant (r = -.055, n = 139, p = .524).

However, the results showed a negative significant correlation between academic performance and the students' scores on the SAS-SV (r = -.315, n = 139, p = .000). Furthermore, the data were subjected to a simple linear regression analysis to determine if high levels of SAS-SV could predict a decrease in academic performance.

Table 3. Regression results for the SAS-SV on academic performance

Variable	B	95% CI	β	t	p
Constant	48.124	45.648, 50.600		38.435	.000
SAS-SV	-1.557	-2.350, -.764	-.315	-3.884	.000

Dependent variable: academic performance

In terms of the prediction of academic performance, it was found that the SAS-SV was a significant predictor. A significant regression equation was found (F(1,137) = 15.089, p < .000), with an R2 of .099. Academic performance decreased -1.557 for each unit of the SAS-SV. Therefore, it can be said that smartphone addiction might undermine a student's academic achievement.

Discussion and Classroom Implications

The main aim of this study was to investigate the relationships between problematic mobile phone use, fear of missing out and academic performance in language learners. The results showed that the female respondents scored significantly higher than the males on the means of the SAS-SV. The results of this study regarding problematic smartphone use by gender are congruent with those of Shahrestanaki et al. (2020), but in contrast with those of other studies (Hawi & Samaha, 2016; Sanal & Ozer, 2017) which have reported that there are no statistical differences between females and males in problematic smartphone use. Şar (2013) reported that smartphone addiction was significantly higher in males and this finding is incongruent with the finding of the current study.

Another result of the current study is that the SAS-SV was found to be a statistically significant predictor of academic performance. The results also indicate that a negative relationship exists, which supports the findings of Hawi and Samaha (2016), Rosen, Carrier and Cheever (2013) and Samaha and Hawi (2016). Therefore, it can be said that smartphone addiction might undermine an individual's academic performance. In other words, problematic mobile phone use was found to be a predictor of the level of academic performance. That is to say, students who reported high usage levels on the SAS-SV were

unlikely to be the ones with a good academic performance in foreign-language learning. Several studies have reported that high rates of smartphone use, especially among adolescents and young adults, leads to problems (Winskel, Kim, Kardash & Belic, 2019), and that when problematic smartphone use exists, it will potentially result in a number of negative consequences including poor academic performance (Rosen, Carrier & Cheever, 2013), inattention in class (Kushlev, Proulx & Dunn, 2016) and extra costs to academic performance (David, Kim, Brickman, Ran & Curtis, 2015).

There are several limitations to this current study which should be acknowledged. First, the availability of research on the impact of problematic mobile phone use on the teaching and learning processes is limited to particular contexts. Second, the design of this study enabled the research team to identify associations between the FoMO, SAS-SV and academic performance, but not to identify any cause and effect relationships. Third, this study was not immune to response bias despite all the explanatory information which the researcher provided to the participants before the data collection began.

Some directions for further research are suggested. First, future researchers might reverse some of the questions in order to decrease the potential influence of response bias. Second, future research might target and study a wider population in order to better portray the problematic mobile phone across different age groups. Third, future research might use different proficiency tests of academic achievement in English-language learning. This study has provided a methodology and a number of findings relating to problematic mobile phone use among language learners for future researchers to examine and help language learners who are unwilling to disconnect from interruptions and avoid distractions.

Conclusion

Despite the large variety of applications with which smartphone users are provided, some of these applications might reportedly have more negative consequences for students' academic performance. Texting, instant messaging and social media applications are both potentially useful and potentially put student learning at risk, and that risk is associated with an all-inclusive term, namely, problematic mobile phone use. This current study has investigated the relationship between different forms of problematic mobile phone use and students' academic performance.

Overall, the findings of the study show clearly that there is a significant difference, with consistently higher means in the female group, between the groups' levels of smartphone addiction. The findings also show a negative relationship between the students' academic performance and their levels of smartphone addiction. The SAS-SV was found to be a significant predictor of academic performance. That is, the higher the scores on the SAS-SV, the lower the academic performance will be. Nevertheless, the proportion of the variance in the 'academic performance' variable was rather limited. Most of the findings are in parallel with those reported in other studies, especially the findings relating to academic performance (Samaha & Hawi, 2016), or partially support (Wentworth & Middleton, 2014) those of many other research studies across different contexts.

Acknowledgement

The data used in this study was confirmed by the researcher that it belongs to the years before 2020.

Authorship Contribution Statement

Omer OZER: *Study Conception and Design, Methodology, Acquisition of Data, Analysis and Interpretation of Data, Drafting of Manuscript, Writing, Review and editing*

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