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NOMOPHOBIA AMONG UNDERGRADUATE STUDENTS AND ITS LINK TO MOBILE LEARNING

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Abstract

The purpose of this study was to investigate the level of nomophobia among undergraduate students and its link to mobile learning. The present study utilized a correlational research design. The sample consisted of 146 undergraduate students from a Turkish public university in Ankara. As data collection tools, the Turkish version of Nomophobia Questionnaire (NMP-Q), Mobile Learning Attitude Scale (MLAS) were administrated. The students' mobile phone use for educational purposes were also asked. Descriptive and inferential statistical analyses were conducted via SPSS 22.0. The results of the study showed that undergraduate students had an average nomophobia level and they used their mobile phones for several educational purposes. The students' level of nomophobia was significantly related to educational activities performed by their mobile phones. A weak relationship was also found between nomophobia and social media use on mobile phones. Furthermore, the relationship between nomophobia level and mobile learning attitude was examined. It was found that the students' level of nomophobia was significantly correlated with their attitudes towards mobile learning.

Keywords: Nomophobia, mobile learning, higher education.

1 INTRODUCTION

Computer games, e-mail, the Internet, cell phones and instant messaging are essential parts of young people's live [1]. And today all is in one, which is a smartphone. Thus, the popularity of smartphones among young adults is more than the other age-groups. In Turkey, the report of the Information and Communication Technologies Agency [2] showed that highest proportion (30 %) of smartphone ownership were aged between 16 and 24 years old. The major motivations of smartphone use among young people were information and entertainment seeking, relationship development, security, and relaxation [3]. Related to meeting most of the needs, people have started to become dependent on their mobile phones. In the literature, there are several terms used for problematic mobile phone behaviours such as mobile phone dependency [4], mobile phone addiction [5], and smartphone addiction ([6], [7]). Moreover, a new term "nomophobia"-no mobile phone phobia- also emerged, which was defined "the fear of being out of mobile phone contact" by SecurEnvoy [8]. Nomophobia was firstly studied by King, Valenca, and Bardi [9], in which it was described as a disorder of the modern world. In their studies, King and his colleagues made a comprehensive definition: "The feelings of discomfort or anxiety experienced by individuals when they are unable to use their mobile phones or utilize the affordances these devices provide" [10, p. 141]. American Psychiatric Association [11] evaluated nomophobia as a situational phobia, and suggested to list under "specific phobia".

Besides the dark side of mobile phones, mobile learning has led significant changes in the field of education in terms of providing a flexible learning environment. "Mobility" can be considered as a key term of the definition of mobile learning. This means that learners are not delimited with any physical location. Learners have the opportunity to reach any books, electronic resources, places and even out of class or in various locations. It can be said that not only informal learning but also formal learning can be carried in daily life by mobile learning. "Personalization" is another important term in mobile learning. Current learning theories and instructional theories overemphasize the importance of learner differences. Especially, theories based on cognitive and constructivist domains want to create learner-based environments. That is why computer-based or web- based learning has taken an importance place in education. Compared to those mentioned media, mobile phones are more personal than equivalent desktop or static devices. There are many mobile applications providing personalized learning. Mobile-Blended Collaborative Learning model proposed that mobile technologies are a bridge between formal and informal learning [12]. In this sense, this study is important to analyse whether students perceive mobile technologies and applications as a bridge between formal and informal learning.

The purpose of this study is to investigate the level of nomophobia among undergraduate students and its relationship with mobile learning. More specifically. the present study addressed the following research questions:

1 How do undergraduate students currently use their mobile phones informally for educational purposes?
2 What is the level of nomophobia among undergraduate students?
3 What is the relationship between students' nomophobia level and mobile phone use?
   - Is there any relationship between nomophobia and educational use of mobile phone?
   - Is there any relationship between nomophobia and social media use?
4 What is the relationship between students' nomophobia level and mobile learning attitude?

2 METHODOLOGY

This study utilized a correlational research design. The sample consisted of 146 undergraduate students from a Turkish public university in Ankara. The data was collected by using non-random convenience sampling method. Of 146 students, 72 were female and 74 male students. Four different faculties and all grade level included the study. While the majority were from the faculty of education (n = 81), the faculty of art and science had the least number (n = 6) as seen in Table 1. The distribution of students' level of the study was as followings: 55 of them were junior (37.7), 52 of them were senior (35.6 %), 36 of them sophomore (24.7 %), and 3 of them were freshman students (2.1 %). The participants had a mean age of 22.45 (SD = 2.30) ranging from 19 to 34. While the mean of smartphone ownership was 3.74 years (SD = 1.87) ranged between .50 and 10, the mean of cell phone ownership was 9.10 years (*SD* = 2.71) ranged between 1 and 16.

Table 1. *Demographic Information of the Students*

Variables	f	%
Gender		
Female	72	49.3
Male	74	50.7
Faculty		
Arts & Science	6	4.11
Economics & Administrative Sciences	20	13.70
Education	81	55.48
Engineering	39	26.71
Study Year		
Freshman (1.)	3	2.1
Sophomore (2.)	36	24.7
Junior (3.)	55	37.7
Senior (4.)	52	35.6

Table 1. Cont.

Variables	M	SD	Min	Max
Age	22.45	2.30	19.00	34.00
Smart Phone Ownership (in year)	3.74	1.87	.50	10.00
Cell Phone Ownership (in year)	9.10	2.71	1.00	16.00
Total			146	100.0

As data collection tools, three instruments were used. One of them was the Turkish version of Nomophobia Questionnaire (NMP-Q) developed by Yildirim and Correia [13]. The NMP-Q included 20 items and four dimensions as followings: (I) not being able to communicate; (II) losing connectedness; (III) not being able to access information items; and (IV) giving up convenience. The instrument was a 7-point Likert type, ranged from 1 (strongly disagree) to 7 (strongly agree). It was translated to the Turkish language by Yildirim, Sumuer, Adnan, and Yildirim [14]. In their study, the four factors were extracted as the original scale, and showed a good construct validity, with the Cronbach's alpha values of .90, .74, .94, and .91, respectively. The Turkish scale was also validated by Arpaci [15]. He reported alpha coefficients for each factor as followings: .90, .74, .94, and .91, respectively. According to Field [20] and Kline [19], the reliability coefficients above .70 were acceptable. Secondly, Mobile Learning Attitude Scale (MLAS) was administrated, which was developed by Çelik [16]. The MLAS had 21 items with four factors as followings: (I) Advantages, (II) Disadvantages, (III) Utility, and (IV) Freedom. The factors had high reliability coefficients: .79, .77, .78, and.77, respectively. Lastly, as a descriptive measurement, the students were also asked how they use their mobile phone informally for educational purposes with 14 items. The items were developed by Pollara [17] and translated into Turkish language by the researchers. There was also a demographic part including gender, age, year of study, department, the year of cell phone ownership, and the year of smart phone ownership.

Before the data collection, the ethical approval was obtained the Research Center for Applied Ethics at the university. The data gathered during the fall semester of 2015-2016. Descriptive and inferential statistics analyses were conducted via SPSS 22.0. In the current study, the educational use of mobile phone and the level of nomophobia of the students were given as descriptive. Additionally, the relationship between nomophobia and mobile learning was investigated performing the Pearson Product-Moment Correlations. As a preliminary analysis, the assumptions of normality, linearity, and homoscedasticity were checked [17] and no violation was found.

3 RESULTS

Below main and sub-research questions were presented. (I) How undergraduate students currently use their mobile phones informally for educational purposes, (II) What the level of nomophobia among undergraduate students is, (III) What the relationship between students' nomophobia level and mobile phone use is, and lastly (IV) What the relationship between students' nomophobia level and their mobile learning attitudes is investigated, respectively.

3.1 How do undergraduate students currently use their mobile phones informally for educational purposes?

The students were asked how they often use their mobile phones for educational purposes. They indicated their use "never (1)" to "always (5)" with 13 items. The researchers categorized 13 items under three main titles based on the literature, which were (I) getting information/research, (II) communication, and (III) using tools. The results showed that that the students mostly use their mobile phones to look up something that they do not know or do not understand during class (M = 3.91, SD = .91). Secondly, they read an article or assignment on their mobile phones (M = 3.78, SD = 1.19). The third most frequent activity that the students reported to access an Educational Management System (M = 3.60, SD = 1.11). On the other hand, the students rarely text a classmate about the level of engagement in the class (M = 2.33, SD = 1.41), the teacher's ability (M = 2.54, SD = 1.36), and the content of the class (M = 2.97, SD = 1.36). In spite of this, they text much more with their classmates during class (M = 3.11, SD = 1.31). Playing educational games on the mobile phone was the other lowest frequent activity done by the students (M = 2.88, SD = 1.30).

Table 2. *Students' educational use of mobile phone*

Items (How often do you…)	M	SD
Getting Information/Research		
1. …download an application that helps you learn something new?	3.33	1.00
2. …use mobile phone to look up something that you do not know or do not understand during class?	3.91	.91
3. …access an Educational Management System on your mobile phone?	3.60	1.11
4. …read an article or assignment on your mobile phone?	3.78	1.19
5. …use your mobile phone as a study tool?	3.27	1.12
6. …play an educational game on your mobile phone?	2.88	1.30
Communication		
7. …text a classmate during class?	3.11	1.31
8. …text a classmate about the content of the class?	2.97	1.36
9. …text a classmate about the teacher's ability?	2.54	1.36
10. …text a classmate about the level of engagement in the class?	2.33	1.41
Using Tools		
11. …write notes on your mobile phone to remind yourself of an assignment?	3.47	1.11
12. …set an alarm or reminder on your mobile phone to help you remember that an assignment was due or a test was coming up?	3.03	1.26
13. …take pictures or video with your mobile phone that you used for an assignment?	3.20	1.10

As seen in Table 2, the other six items had similar mean scores, which were ranked between *sometimes – very often*. Students use the mobile phone tools for their assignment such as writing notes (*M* = 3.47, *SD* = 1.11), taking pictures or video (*M* = 3.20, *SD* = 1.10), and setting an alarm or reminder (*M* = 3.03, *SD* = 1.26). Students were also asked how frequently they use their mobile phones as a study tool, which was a crucial question in terms of mobile learning. The results showed that students had an average meaning (*M* = 3.27, *SD* = 1.12) ranged between *sometimes* and *very often*. Similarly, students download applications that help them learn something new with a mean score of 3.33 (*SD* = 1.00). It might be said that students use their mobile phones as a facilitator for educational purposes.

3.2 What is the level of nomophobia among undergraduate students?

The students were asked to report their level of nomophobia with 20 items from strongly disagree (1) to strongly agree (7). The results showed that the students' level of nomophobia had a mean of 3.90 (*SD* = .146). It might be said that they had an average nomophobia level. Among the dimensions of nomophobia, "not being able to access information" had the highest score (*M* = 4.40, *SD* = 1.75) as seen Table 3. "Not being able to communicate" was the second highest score (*M* = 4.15, *SD* = 1.71). Then, the fear of losing connectedness was the third one with a mean of 3.92 (*SD* = 1.56). The students had the lowest score in fear of giving up convenience (*M* = 3.19, *SD* = 1.77). According to the results, it might be said that accessing information and communication were two major motivations of undergraduate students for their mobile phone use.

Table 3. *Students' level of nomophobia*

Factors	M	SD
I - Not being able to communicate	4.15	1.71
II - Losing Connectedness	3.92	1.56
III - Not being able to access information	4.40	1.75
IV - Giving up convenience	3.19	1.77
Nomophobia (total)	3.90	1.46

3.3 What is the relationship between students' nomophobia level and mobile phone use?

3.3.1 Is There any Relationship between Nomophobia and Educational Use of Mobile Phone?

In order to investigate the relationship between nomophobia and educational use of mobile phone, the Pearson Product-Moment correlations were performed. The frequency of educational use of mobile phones was asked with 3 items, which included the correlational analysis. The items ranged from 1 to 5, such as *never* (1), *rarely* (2), *sometimes* (3), *very often* (4), and *always* (5). For performing correlational analysis, the rankings were transformed to binary coding as *never-rarely* (0), *sometimes-very often-always* (1).

Table 4. *The relationship between students' level of nomophobia and educational use of mobile phone*

Items (How often do you…)	Nomophobia
1. …download an application that helps you learn something new?	.24**
2. …use mobile phone to look up something that you do not know or do not understand during class?	.03
3. …use your mobile phone as a study tool?	.25**

** $p < .01$ (2-tailed).

The results showed that the students' level of nomophobia was related with two items; downloading an application that helps to learn something new ($r = .24$, $p < .01$), and using mobile phones as a study tool ($r = .25$, $p < .01$). On the other hand, it was not related to the item of using mobile phone to look up something that you do not know or do not understand during class. While the weak relationship is between .10 and .29, medium is between .30 and .49 ([19], [20]). Accordingly, the students' level of nomophobia had a weak significant relationship with aforementioned two items as seen in Table 4.

3.3.2 Is There any Relationship between Nomophobia and Social Media Use?

The Pearson correlation was conducted to find the relationship between the students' level of nomophobia and their social media use on mobile phones. As seen in Table 5, the results showed that there is a weak significant relationship between nomophobia and social media use on mobile phone ($r = .28$, $p < .01$).

Table 5. *The relationship between students' level of nomophobia and social media use*

Items (How often do you…)	Nomophobia
1. …access a social networking site on a mobile phone?	**.28****

** $p < .01$ (2-tailed).

3.4 What is the relationship between students' nomophobia level and mobile learning attitude?

The last research question was whether there was a relationship between nomophobia level and mobile learning attitude. The Pearson correlation was again performed to answer the aforementioned question. As seen in Table 6, it was found that nomophobia has a weak relationship with mobile learning attitude ($r = .25$, $p = .00$). There was also a correlation between nomophobia and the dimensions of mobile learning attitude. More specifically, nomophobia had a medium negative relationship with the dimension of advantages ($r = .42$, $p = .00$), the dimension of disadvantages ($r = -.30$, $p = .00$), and the dimension of the freedom ($r = .33$, $p = .00$). There was also a weak relationship between nomophobia and the dimension of utility ($r = .26$, $p = .00$).

Table 6. *The relationship between nomophobia and the dimensions of mobile learning attitude.*

	Attitude Total	Advantages Factor-I	Disadvantages Factor-II	Utility Factor-III	Freedom Factor-IV
Nomophobia	.25**	.42**	-.30**	.26**	.33**
P	.00	.00	.00	.00	.00
N	146	146	146	146	146

It can be concluded that while positive dimensions of the mobile learning attitude scale had positively related nomophobia, negative dimensions had negatively related. Based on the results, it was seen that the students who had high nomophobia level had positive attitudes towards mobile learning.

4 CONCLUSIONS

The present study aimed to examine nomophobia level of undergraduate students and its link to mobile learning. The present study showed that undergraduate students performed several activities with their mobile phones for educational purposes. These titles were categorized under three main titles as followings; getting information/research, communication, and using tools. The students reported that they used their mobile phones as a facilitator in the academic environment. The results of the present study supported some previous studies ([21], [22], [23], [24]). More specifically, they use their mobile phones for looking up something that they do not understand during class, accessing Moodle, reading academic articles, and writing notes related their assignments. Furthermore, the findings showed that the undergraduate students used their mobile phones as a study tool. On the other hand, the study revealed that undergraduate students had an average nomophobia level, which supported the previous research [14]. Similarly, the present study resulted that two dimensions of nomophobia – the fear of “not being able to access information” and “not being able to communicate” were higher than the other dimensions. Based on the results of educational use of mobile phones and nomophobia level of undergraduate students, the researchers had an idea about whether there was a relationship between nomophobia and educational mobile phone use among undergraduate students or not. Thus, they decided to conduct a correlational analysis. As expected, the results of the correlational analysis showed that there was a weak, yet significant, positive relationship between nomophobia and educational mobile phone use - especially with the items of downloading applications that help to learn something new, and using mobile phones as a study tool. Another important point was the social media use among young people. It was found that there was a weak, yet significant, relationship between nomophobia and accessing a social networking site. Then, in order to understand the relationship between nomophobia and mobile learning deeply, a correlational analysis was performed between nomophobia level of students and their attitudes towards mobile learning. The results supported the previous findings of the current study. The level of nomophobia among undergraduate students positively related to three dimensions of mobile learning attitude scale; advantages, utility, and freedom. On the other hand, it was negatively related to one dimension - disadvantages of the mobile learning-.

This study provided preliminary evidence that undergraduate students used their mobile phones as a facilitator in academic environment despite showing some problematic phone use behavior. Beside the dark side of mobile phone use among undergraduate students, it is important to see with its positive aspects to be able to evaluate the whole picture robustly. Thus, the future studies should emphasize on undergraduate students’ relationship with mobile phone use through more in-depth qualitative investigation to examine both sides of this behavior. Moreover, nomophobia and its link with mobile learning should be examined by adding some other variables in order to make a distinction between the students who use their mobile phones as a facilitator or who are disturbed by their mobile phones. Personality or current addiction behaviors of students might be examined with nomophobia behaviors. Also, other inferential statistical analyses might be performed to examine nomophobia phenomenon from different aspects. The study had also some limitations related to the generalizability which was negatively affected by small sample size, consisting of only one university students, and convenience sampling method.

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