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The Relationship between Levels of Nomophobia Prevalence and Internet Addiction among High School Students: The Factors Influencing Nomophobia

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The Relationship between Levels of Nomophobia Prevalence and Internet Addiction among High School Students: the factors influencing Nomophobia

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Abstract

The purpose of this study is to investigate the relationship between nomophobia levels of high school students and their Internet Addiction. This study also investigates the factors including duration of smartphone and mobile Internet use that trigger and create this phenomenon. In order to explore the prevalence of nomophobia among high school students, the survey model was adopted in this study. As part of this survey, 929 high school students were randomly selected among 9th to 12th graders from Turkish high schools in different socioeconomic areas of Afyon, Ankara, and Mardin provinces. In the data collection process, a demographics questionnaire was employed, as well as a nomophobia scale and Internet addiction scale. According to the results, the nomophobia levels of high school students were found to be slightly above average. Pertaining to gender differences, female students have a higher tendency to exhibit nomophobic behaviors compared to male students. Additionally, students' grade levels (which could also be considered as age) has no effect on the prevalence of nomophobia. Considering the duration of smartphone ownership, it was found that the longer the duration of smartphone usage, the higher the risk of exhibiting nomophobic behaviors. Finally, the results indicated that the higher the level of student Internet addiction, the more nomophobic behaviors they tend to exhibit.

Introduction

Nomophobia, which is considered the phobia of the 21st century (Bivin et al., 2013), stands for NO MOBILE-Phone PHOBIA and has been described in clinical psychology as the irrational fear of not being able to reach to a mobile phone or not being able to communicate through a mobile device (King et al., 2013; Yildirim & Correia, 2015). Individuals who exhibit nomophobic behaviors become anxious when they forget to take their mobile phones with them, when the battery charge runs out, or when they have no network coverage. This state of anxiety adversely affects an individual's concentration to perform their daily activities (Dixit et al., 2010). Although nomophobia is not included in the field of clinical psychology, studies about nomophobia are being conducted and its worldwide prevalence among individuals. According to the findings of a study conducted among people in professional life (SecurEnvoy, 2012), it was reported that the number of cellphone users exhibiting nomophobic behaviors had increased over the past four years. Accordingly, 66% of smartphone and cellphone users stated that they felt anxious because of the idea of losing their phones and expressed their fear about it (SecurEnvoy, 2012). In a cross-sectional study conducted among 200 medical students aged between 17 and 28 years in Indore, India, it was found that 18.5% had nomophobic behaviors. 73% of the students stated that they keep their phones near them while sleeping, and 20% said they feel under pressure and lose concentration when they do not have their phones with them or when it runs out of battery charge (Dixit et al., 2010). Another study conducted in India examines the prevalence of nomophobia and smartphone usage among third-year medical students (Sharma, Sharma, Sharma, & Wavare, 2015). Their study was conducted with the participation of 130 students aged between 22 and 24 years. 73% of the students were found to be nomophobic and 83% of them reported having panic attacks when they cannot find their mobile devices. Panic disorder indicates frequent and constant anxiety attacks. In a study conducted by King et al. (2014) in Brazil, the symptoms and mood changes of patients with panic disorder due to mobile phone usage were examined. A total of 120 people participated in this experimental study and it was found that both the experimental group (with panic disorder) and the control group (reported as healthy) showed dependence on mobile phones. However, not being able to use a mobile device was found to cause more extensive mood changes and physical and psychological symptoms in patients with panic disorder. In another study conducted with the participation of 163 university students, the mobile phones of nearly half the participants were taken away, whilst the remainder

was asked to turn off their mobile phones and put them away. An anxiety scale, which was applied during time without phones, showed that anxiety levels of participants increased as time passed (Cheever et al., 2014). In a study conducted on university students in France, it was reported that nearly one-third of students suffer from nomophobia (Tavolacci et al., 2015). When nomophobia studies in Turkey are examined, it is found that nomophobia levels of students are above the average, based on the findings of a study conducted with the participation of 433 students from a state university (Adnan & Gezgin, 2016). In another study, the prevalence of nomophobia among 838 teacher candidates from different departments was found to be high (Yildirim et al., 2016). Similarly, in a study conducted on adolescents from high schools in Edirne and Izmir, it was revealed that the prevalence of nomophobia is above average (Gezgin & Çakır, 2016).

The world over, it is the younger generation, especially students, that tend to be more adaptive to technological devices like smartphones when compared to their elders (Arif & Aslam, 2014). Recent statistical reports on smartphone usage in Turkey and across the world support this finding (Google Turkey, MEB [Ministry of National Education], & İGK [Internet Development Board], 2015; TUIK [Turkish Institute of Statistics], 2015; Kemp, 2015). According to the data presented in these reports, the popularity of smartphones has increased. In a study conducted on teenagers in Australia, it is stated that smartphone usage is an important part of their life and it is becoming more popular day by day (Walsh, White, & Young, 2008). It is believed that the recent increase in popularity of smartphones has also increased the prevalence of nomophobia amongst teenagers. Frequent and extensive use of smartphones has brought about numerous disadvantages to individuals' lives, and especially to teenagers (Attamimi, 2011). Teenagers have become dependent on their smartphones because of factors such as social pressure, leisure and the need for social relations (Arif & Aslam, 2014). Empirical evidence indicates that teenagers and students who lack self-confidence in face-to-face communication, and make social connections through their smartphones, become more dependent on their smartphones (Walsh, White, & Young, 2008). During adolescence, young individuals can experience several psychological and sociological symptoms such as social withdrawal, dullness, conflicts in the family, having problems with friends, the fear for not being popular among friends, and feeling anxious and pessimistic about their own lives and the world's future (Saygılı, 2002). Thomée, Härenstam, and Hagberg (2011) stated that people who use or check their smartphones extensively during the day can experience sleeping disorders, stress, anxiety, and a decrease in academic performance, as well as not feeling well and a reduction in their physical activities. Samaha and Hawi (2016) also revealed a positive relationship between smartphone addiction and stress levels. However, there are also contradictive studies claiming a negative relationship between mobile phone usage and students' academic performance (Judd, 2014; Karpinski et al., 2013; Rosen, Carrier, & Cheever, 2013; Samaha & Hawi, 2016; Wentworth & Middleton, 2014; Kibona & Mgaya, 2015).

Adolescents try to escape feelings of loneliness, conflicts in their social life, or irresolvable problems in their daily life by turning to the Internet (Byun et al., 2009; Kiran Esen, 2009). Many young people use the Internet in a controlled manner in accordance with their purpose and try to avoid excessive use. On the other hand, some teenagers are not as self-controlled and eventually face problems in their academic and social lives due to their excessive Internet usage. It is stated that Internet addiction (Young, 1996; Ko et al., 2005), which can be described as the excessive and misuse of the Internet, is a significant factor in the negligence of daily routine tasks and family relations, which can be a cause of emotional imbalance (Anderson, 2001; Davis, 2001; Lin & Tsai, 2002; Ryu et al., 2004; Young & Rogers, 1998). In the study conducted by Kaya, İkiz, and Asıcı (2016) with the participation of science high school students, a statistically significant positive relationship was found between problematic Internet use and psychological symptoms. In a study conducted by Akın and İskender (2011) on university students, it was reported that Internet addiction causes depression, high level of stress and anxiety. Therefore, the problematic use of the Internet and the psychological symptoms of students may be a cause that triggers one another. Studies performed on the variable of Internet addiction indicate that usage frequency and time of Internet differs among individuals who are Internet addicts, those who are at risk, and those who are not Internet addicts (Aktepe et al., 2013; Bakken et al., 2009; Whang, Lee, & Chang, 2003; Yang & Tung, 2007). An increase in the frequency and duration of Internet use also increases the risk of Internet addiction. Following the same pattern, the popularity of smartphones increases the use of mobile Internet. In the joint study conducted by Google Turkey et al. (2015), it was reported that teenagers who have smartphones and access to the Internet on their phones are more active Internet users. In addition to this, the development of mobile Internet networks, low cost and the extensive availability of wireless Internet are other factors causing an increase in mobile Internet usage. Moreover, various applications (known as "apps") on smartphones enable people to stay online longer and use smartphones excessively (Okazaki & Hirose, 2009). There is a common sense among scholars that there exists a strong relation between the nomophobia levels of the younger generation and mobile Internet usage due to the inevitable combination of smartphones and the Internet (Anshari et al., 2016). Additionally, it is thought that there is a high relation among over Internet usage, Internet addiction, and nomophobia levels. Studies conducted on the relation among users' demographics and their

nomophobia levels focus on mobile phone usage time rather than the effects of mobile Internet usage behaviors on nomophobia. Therefore, in this current study, the aim is to examine the effects of various demographics on nomophobia and the relationship between Internet addiction and nomophobia.

The purpose of this current study is to investigate nomophobia levels of high school students studying at high schools in different socioeconomic areas in terms of various factors, including duration of smartphone use and mobile Internet use. This study will further investigate its relation with Internet addiction in order to identify possible underlying factors that trigger and cause this phenomenon. In accordance with this purpose, answers to the following research questions are sought and examined:

1. What is the prevalence level of nomophobia among high school students?
2. Is there a difference in students' nomophobia levels based on gender, grade level, duration of smartphone ownership, and mobile Internet ownership?
3. Is there a relationship between students' nomophobia levels and Internet addiction levels?

Method

Research Design

This is a survey study that aims to explore the prevalence of nomophobia among high school students and factors related to their nomophobia. In survey studies, the researchers do not manipulate the context or apply any intervention to the context, but rather they define the existing condition (Fraenkel & Wallen, 2006).

Research Sample

In this study, 963 high school students were randomly selected among 9th to 12th graders from high schools in different socioeconomic areas in the Turkish provinces of Afyon, Ankara, and Mardin. The study was conducted during the spring semester of the 2015-2016 academic year. 21 students were excluded from the study for not possessing a smartphone and 13 for not completing the questionnaire. Therefore, the study was carried out with a total of 929 high school students, whose demographics are presented in Table 1.

Table 1. Demographics of participants

Province	N	%
Afyon	116	12.5
Ankara	224	24.1
Mardin	589	63.4
Gender		
Female	372	40.0
Male	557	60.0
Type of High School		
Anatolian High School	294	31.6
Vocational and Technical High School	635	68.4
Grade Level		
9 th Grade	360	38.8
10 th Grade	329	35.4
11 th Grade	208	22.4
12 th Grade	32	3.4
Duration of Smartphone Ownership		
Less than 1 year	266	28.6
Between 1-4 years	482	51.9
More than 4 years	181	19.5
Duration of Mobile Internet Ownership		
Less than 1 year	313	33.7
Between 1-4 years	448	48.2
More than 4 years	168	18.1
Total	929	100.0

Students' smartphone purposes of use are presented in Table 2, with social networks counted as 776 (83.5%), listening to music as 703 (75.7%), communication as 681 (73.3%), sharing and viewing photography as 563 (60.6%), playing online games as 544 (58.6%), education and research as 523 (56.3%), watching video as 518 (55.8%), news as 361 (38.9%), shopping as 238 (25.6%), navigation as 206 (22.2%), and e-books as 157 (16.9%) respectively.

Table 2. Students' smartphone use purposes

	Yes		No	
	N	%	N	%
Social Networks	776	83.5	153	16.5
Listening to music	703	75.7	226	24.3
Communication	681	73.3	248	26.7
Sharing and viewing photography	563	60.6	366	39.4
Playing online games	544	58.6	385	41.4
Education and research	523	56.3	406	43.7
Watching videos	518	55.8	411	44.2
News	361	38.9	568	61.1
Shopping	238	25.6	691	74.4
Navigation	206	22.2	723	77.8
E-book	157	16.9	772	83.1

Research Instrument and Procedure

In this research, a questionnaire for demographics, a nomophobia scale, and an Internet addiction scale were used to collect data.

Demographics Questionnaire: This questionnaire was used to collect information such as gender, class, type of school, the duration of smartphone and mobile Internet usage and students' aims for their smartphone purposes.

Nomophobia Scale: The Nomophobia Scale (NMP-Q) was developed by Yildirim and Correia (2015) and adapted to Turkish by Yildirim et al. (2016), and was used in the study as the data collection tool. The scale has 20 items with 7-point, Likert-type questions. The reliability coefficient of the original scale was found to be .95 and the reliability coefficient of the scale adapted to Turkish was calculated as .92 which both indicate a high reliability for the scale (Field, 2005). The scale has four sub-dimensions. These are "not being able to reach to information" (4 items), "losing connectedness" (5 items), "not being able to communicate" (6 items) and "giving up convenience" (5 items). In the original scale, reliability coefficients of these dimensions were reported as .94, .87, .83, and .81 respectively, whilst in the Turkish version they were reported as .90, .74, .94 and .91 respectively. Cronbach Alpha Internal Consistency Coefficient was found as .90 for the reliability of the study. It was also found that the Cronbach Alpha Internal Consistency Coefficient values of the sub-dimensions of nomophobia were found .73, .72, .85, .84 respectively.

Internet Addiction Scale: In the current study, the subscale of Internet addiction developed by Ayas et al. (2011) is used to determine the level of Internet addiction. The Internet addiction subscale has a total of 28 items, which has 5-point, Likert-type responses ranging from of 1 = "Rarely", to 5 = "Always". All items had primary loading values ranged from .512 to .795. Twenty-eight items explain 29.49% of the total variance. Internal consistency of the scale was examined using Cronbach's alpha. Internal consistency test results for the Internet addiction subscale was reported as .96. However, for the current study, Cronbach's alpha for internal consistency of the scale is calculated as .94. The maximum and minimum scores that can be obtained from the scale is 28 and 140, respectively. The level of Internet addiction increases as the scores obtained from the scale increases.

Data Collection and Analysis

The Data of the study was collected in April, 2016-2017, spring semesters, visiting high schools in three different provinces in Turkey. Firstly, the students were informed about the purpose of the research, and the data collection instrument was introduced. There was a consent form attached to the scale which students were asked to read and sign. The filling out time of the scale took about 20 minutes. Independent sample t-test analysis was used to compare nomophobia levels of participants in terms of gender and ANOVA was used to determine

nomophobia levels of participants in terms of grade level, duration of smartphone and mobile Internet use. Kolmogorov-Smirnov test was used to test the normality of the distribution and normal distribution curve was found to be smaller than statistical significance ($p < .05$). Therefore, the values of Skewness and Kurtosis were used to assess normal distribution.

As known, in the case of a high number of participants in the study group, having a Skewness and Kurtosis value of ± 1.96 provides the assumption of normality (Tabachnick & Fidell, 2007). It was found that the obtained data provided an assumption of normality, with no risk of extensive Skewness and Kurtosis. After descriptive statistics about the scores were obtained, Levene test ($p > .05$) was used to check variance homogeneity of comparable groups. Statistical significance level was taken as .05 for the purposes of statistical analysis.

Findings

According to the mean score ($\bar{X}=3.61$) taken from the nomophobia scale, the nomophobia levels of the high school students were found to be slightly above average. The finding shows that nomophobia prevalence of high school students is at moderate level ($\bar{X}=3.61$) which is based on Yildirim & Correia's, (2015) classification in which scores from 3 to less than 5 means are described in moderate level category. When the sub-dimensions of the scale were examined, it was revealed that the mean scores obtained from the dimensions of "Not Being able to Reach to Information" ($\bar{X}=3.75$), "Losing Connectedness" ($\bar{X}=3.72$) and "Not Being Able to Communicate" ($\bar{X}=3.99$) were also above average. Only the mean score obtained from the dimension of "Giving up Convenience" ($\bar{X}=2.94$) was found to be below average.

Table 3. Scale and sub-dimension mean and standard deviation scores

	Item	Min	Max	\bar{X}	Std. Deviation	
Nomophobia Scale						
	Not Being Able to Access Information	4	1.00	7.00	3.75	1.76
	Losing connectedness	5	1.00	7.00	3.72	1.65
	Not Being Able to Communicate	6	1.00	7.00	3.99	1.78
	Giving up Convenience	5	1.00	7.00	2.94	1.77
	Total Score	20	1.00	7.00	3.61	1.38
Internet Addiction Scale						
	Total Score	28	1.00	5.00	2.17	.79

Gender

Independent sample t-test was conducted to examine whether or not nomophobia levels of high school students differ in terms of gender. The independent sample t-test analysis indicates that there was a significant difference between female students ($M=3.78$, $SD=1.36$) and male students ($M=3.49$, $SD=1.39$) regarding to their nomophobia levels. This finding indicates that female students have more tendency to show nomophobic behaviors compared to the male students.

Table 4. Independent t-test analysis: Gender

Gender	N	\bar{X}	Std. Deviation	df	t	p
Female	372	3.78	1.36	927	3.14	.00*
Male	557	3.49	1.39			

* $p < 0.05$ There was a significant difference.

Grade Level

One-way ANOVA was used to examine whether or not nomophobia levels of high school students differ according to their grade levels. The results indicate that there was no significant difference between high school students' nomophobia levels in terms of their grade levels [$F(3, 925) = 2.097$, $p = .09$]. This finding suggests that students' grade levels (it could also be considered as age) has no effect on the prevalence of nomophobia.

Table 5. One-way variance analysis: Grade level

Source	Sum of Squares	df	Mean Squares	F	p
Intergroups	12.069	3	4.023	2.097	.09
Within Groups	1774.218	925	1.918		
Total	1786.286	928			

Duration of Smartphone Ownership

One-way ANOVA was used to examine whether or not nomophobia levels of high school students differ in terms of the duration of smartphone use. According to the results of the analysis, a significant difference was found between the nomophobia levels of high school students in terms of the duration of smartphone use [F (2, 926) =4.454, p=.01].

Table 6. One-way variance analysis: Duration of smartphone ownership

Source	Sum of Squares	Df	Mean Squares	F	p	Significant Difference
Intergroups	17.019	2	8.509			
Within Groups	1769.267	926	1.911	4.454	.01*	C-A, C-B
Total	1786.286	928				

*p<0.05 There was a significant difference. (A: Less than 1 year, B: Between 1-4 years, C: More than 4 years)

TUKEY test was applied to find out which groups are differed. It was found that this difference was in favor of those who use smartphones for more than four years. The average scores of the group that uses smartphones for more than four years (M = 3.87, SD = 1.48) is higher than the group that uses smartphones for less than one year (M = 3.48, SD = 1.34) and the group who uses smartphones for between one and four years (M = 3.58, SD = 1.36). It can be concluded that the longer the duration of smartphone usage is, the higher the risk of exhibiting nomophobic behaviors are.

Duration of Mobile Internet Ownership

One-way ANOVA was used to examine whether or not nomophobia levels of high school students differ in terms of the duration of mobile Internet usage. According to the result of the analysis, a significant difference was found in terms of the duration of mobile Internet use [F (2, 926) =2.942, p=.04].

Table 7. One-way variance analysis: Duration of mobile internet ownership

Source	Sum of Squares	Df	Mean Squares	F	p	Significant Difference
Intergroups	11.279	2	5.640			
Within Groups	1775.007	926	1.917	2.942	.04*	C-A
Total	1786.286	928				

*p<0.05 There was a significant difference. (A: Less than 1 year, B: Between 1-4 years, C: More than 4 years)

TUKEY test was applied to find out which groups differed. Based on the findings of the analysis, a significant difference was found between the student group that uses mobile Internet for more than four years (M = 3.82, SD = 1.39) and the group who uses mobile internet less than one year (M = 3.50, SD = 1.40). It was determined that this difference was in favor of the group who used mobile Internet for more than four years. Therefore, it could be said that the longer the duration of mobile Internet usage, the higher the risk of exhibiting nomophobic behaviors.

Relationship between Prevalence of Nomophobia and Internet Addiction

Pearson correlation analysis technique was employed to examine whether or not there is a relationship between Internet addiction and the prevalence of nomophobia among high school students, as discussed within the scope of this study. Based on the findings obtained, a positive significant relationship at a moderate level was found between Internet addiction and the prevalence of nomophobia (r=.402, p<0.01). There were also positive significant correlations with the sub-dimensions of nomophobia (see Table 8). Having a significant value of .01 for correlation level backs up the moderate level relationship between the pair. In light of these findings, it could be said that the higher the Internet addiction level, the more nomophobic behaviors tend to be exhibited.

Table 8. Correlation analysis: Relationship between prevalence of nomophobia and internet addiction

Variables	M	SD	I	II	III	IV	V
Internet Addiction	2.17	.79	.323**	.378**	.298**	.409**	.402**
<i>Sub-dimensions of The Nomophobia</i>							
I. Not being able to access information	3.75	1.76					
II. Losing connectedness	3.72	1.65					
III. Not being able to communicate	3.99	1.78					
IV. Giving up convenience	2.94	1.77					
V. Nomophobia Total Score	3.61	1.38					

**Correlation is significant at the 0.01 level (2-tailed).

Conclusions and Discussion

In this study, the relationship between Internet addiction and the prevalence of nomophobia among high school students was examined. The results indicated that nomophobia levels of participant students were above the mean score. These results indicate high school students value the factors of “not being able to communicate” and “not being able to access information”. The findings of this research are parallel with the findings of recent studies found in the literature, which report levels of nomophobia of between 35% and 73% on different levels of students around the world (Gezgin & Çakır, 2016; Nikhita, Jadhav, & Ajinkya, 2015; Sharma et al., 2015; Tavolacci et al., 2015; Yildirim et al., 2016). When the results of the study were analyzed in terms of gender, findings on nomophobia levels of high school students indicate that female students showed more nomophobic behaviors compared to male students. In the literature, it is also shown several times that females have a higher tendency to exhibit nomophobia and are affected by it much more than males (Gezgin & Çakır, 2016; Hwang, Yoo, & Cho, 2012; SecurEnvoy, 2012; Tavolacci et al., 2015; Yildirim et al., 2016). To present a contrary work, a study carried out by Dixit et al. (2010) in India found no difference in terms of gender between the nomophobia levels of students.

Considering the high score taken from the sub-factor “not being able to communicate”, it may be said that the difference resulting from gender is due to another fact pointed out by Karaaslan and Budak (2012). According to their study, female students have more tendencies to use smartphones for communication purposes compared to their male peers. Moreover, it is stated that males’ social stress levels are lower than females, and that they use their smartphones less for social purposes than females do (Van Deursen et al., 2015). Females use their smartphones more for planning their social relations and for gossiping (Jenaro et al., 2007). Females’ social anxieties usually include speaking in public, expressing themselves, speaking within a group and speaking with strangers (Jenaro et al., 2007), which justifies the findings that females use smartphones more for social reasons, whilst males use them for purposes of business and technology (Bianchi & Phillips, 2005). As an addition to this, in a statistical ratio study, it was stated that mobile devices are largely preferred for leisure time by 48% of females and by 36% of males (MobiRoller, 2014).

There was no significant relationship found between the prevalence of nomophobia levels of high school students in terms of their grade levels. Similarly, in a study conducted among university students, no significant difference could be found in terms of class levels (Adnan & Gezgin, 2016). However, some other studies do have contrary findings. In a study conducted by SecurEnvoy (2012), it was found that nomophobia levels of individuals who are between the ages of 18-24 (77%) are higher than those who are between the ages of 25-34 (68%). Similar to class level, in the study of Yildirim et al. (2016), it is reported that a significant difference could not be found between the students who are younger than 20 years and those who are older than 20 years in terms of nomophobia levels. Having closer ages in class levels indicates a similar feature for the sample; therefore, it would be better to compare and contrast high school students and university students to determine the impact of class level and age on the prevalence of nomophobia so as to reveal more clearly whether or not the prevalence of nomophobia differs according to class level and age.

In terms of the duration of smartphone usage, the duration was found to have an effect on the nomophobia levels of high school students. Based on the findings, students who have smartphones for more than four years exhibited more nomophobic behaviors than the students who have smartphones for less than one year or between one and four years. In another study conducted by Kalaskar (2015), 90% of the students who participated in the study stated that they had been using smartphones for more than two years, and those who spend between five and six hours on their smartphones per day are more prone to psychological problems such

as anxiety, sleeplessness, stress, loss of motivation and interest towards classes etc., which might therefore be related to nomophobia. Another study conducted by Bivin et al. (2013) with 547 students, the authors stated that a significant relationship was found between the style of smartphone use such as the duration of smartphone use, frequency of daily smartphone use, mobile Internet use on a smartphone, and the prevalence of nomophobia. Nikhita et al. (2015) demonstrated that a significant relationship was found between dependence syndrome and the frequency and the duration of smartphone usage.

Contrary to the findings of this current study and the previously mentioned literature, there are numerous other studies (e.g., Adnan & Gezgin, 2016; Gezgin & Çakır, 2016; Yildirim et al., 2016) which found no significance between the duration of mobile phone usage and nomophobia. Having contrary conclusions in the field can be a motivating factor for future researchers to investigate further dimensions of the problem such as socio-economic status of the school, the area where the students live, social facilities or social lives. When the findings of the current study were examined in terms of the duration of mobile Internet usage, a significant difference was found among the nomophobia levels of high school students. Based on the findings, students who use mobile Internet for more than four years are more nomophobic than students who use mobile Internet for less than one year. Similarly, Gezgin and Çakır (2016) conducted a study on adolescents and found that students who had used mobile Internet for more than four years have a higher tendency for nomophobic behaviors compared to those who used it for between one and four years. Findings indicate that as the duration of mobile Internet usage increases, the tendency to exhibit nomophobic behaviors also increases.

This current study revealed a moderate correlation between the nomophobia level of students and their Internet addiction ($r=.402$). In a similar study conducted in South Korea, results showed a high correlation between levels of smartphone usage and Internet addiction (Choi et al., 2015). Another South Korean study conducted with 1,420 adolescents showed that factors contributing to high level smartphone addiction also contribute to Internet addiction (Park, Hyun, & Ha, 2014). As a result, the study showed that nomophobia is not only related to the type of smartphone use, but also the problematic use of smartphones and the Internet. In a study conducted with 475 adolescents in Turkey, results revealed that those who spend more time with their smartphones also scored higher on the nomophobia scale (Gezgin & Çakır, 2016). A study conducted with 1,151 social network users provided similar results indicating that overuse of mobile Internet also yields higher nomophobia levels among the young population (Gezgin, Şahin, & Yıldırım, 2017). Likewise, a survey of 645 university students found that nomophobia was associated with Internet use intensity. In addition, the consumption of daily mobile Internet use could predict nomophobia (Gezgin, 2017).

Although this current study does not explicitly define nomophobia levels for adolescents, findings of this research implies an increase especially in adolescents' smartphone addiction in the future and the potential for psychological problems among mobile phone users (Singh, Gupta, & Garg, 2013). When the duration of smartphone and mobile Internet usage increase, nomophobia is more prevalent. It is a fact that adolescents tend to use mobile devices for the purposes of their social relations, due to social pressure and for convenience during the period when they develop their identity and personality. Because of this, frequent and extensive use of mobile devices can lead to addiction. Therefore, adolescents who become addicted can experience fear and anxiety when they do not have their smartphones available to them, and that these nomophobic behaviors can negatively affect their personal lives. It is thought they cannot concentrate on their school classes and they are not motivated to complete their assignments, and in not doing so their academic performance is negatively affected. This current study is significant in terms of raising awareness about nomophobia and the affect it can have on students' academic lives. Therefore, it is aimed to create awareness about nomophobia among teachers, families, and school administrators in order to take preventive measures to fight against nomophobia. Furthermore, it is thought that there are some risks of using m-learning practices in education or especially using the Internet for the purpose of education and research. Therefore, teachers should limit the amount of Internet usage time and families must control their children's Internet use because extensive use of smartphones, no matter for what purpose, carries inherent risks for adolescents (Spitzer, 2015). Likewise, teachers and families must pay attention to the excessive use of mobile Internet because, as confirmed by this current study, there is a significant relationship between nomophobia and Internet addiction. Therefore, it is necessary to tackle the factors that cause nomophobia in order to avoid its prevalence. If limited Internet packages were more commonplace, users might reduce or limit their use of mobile Internet compared to usage under an unlimited package. In this way, excessive use can be avoided. Otherwise, nomophobic individuals may go on, or continue, to suffer from sleeping problems as they check their smartphones at regular intervals during what should be their sleeping period. This situation can destroy a regular sleep schedule. After a sleepless night or irregular sleep, students might lose concentration and interest in their classes.

In conclusion, educational seminars must be given at schools and solutions need to be proposed with the contribution of all related parties in order to fight against the prevalence of nomophobia, which is considered as one of the key technology-related problems of the coming age. In general, survey studies are important to define the current characteristics and status of the study group. In educational settings, understanding the characteristics of students allows teachers and practitioners to develop interventions to improve student learning. Considering the current dissemination of mobile learning applications in education, students' smartphone use behaviors have become a considerable issue for educators. While educational institutions give more space for mobile applications in learning environments, they are also aware that students' Internet addiction stands as a major barrier for such applications to be used effectively. Thus, understanding factors that contribute to Internet addiction and nomophobia among students will yield better use of mobile applications in an educational context in the future.

Limitations

Since the study is based on convenience sampling, although the sample of the study is taken from three regions and three samples (Afyon, Ankara, and Mardin) of Turkey, no generalization can be made. In addition, factors such as the use of smartphones, internet and social media which is the one of purposes of using smartphones should be examined at further researches. Besides quantitative studies, it is thought that it is more important the mixed type or qualitative studies which are interviewed with students in terms of understanding nomophobia factors and its negative effects to students.

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