

A growing fear: Prevalence of nomophobia among Turkish college students

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Abstract

The purpose of the present study was to investigate the prevalence of nomophobia (the fear of being out of mobile phone contact) among young adults in Turkey. The Nomophobia Questionnaire (NMP-Q) was administered to 537 Turkish college students. The results revealed 42.6% of young adults had nomophobia, and their greatest fears were related to communication and information access. The study also found that gender and the duration of smartphone ownership had an effect on young adults' nomophobic behaviors, whereas age and the duration of mobile phone ownership had no effect. Based on these results, implications, limitations, and further studies were discussed.

Keywords

nomophobia, smartphones, young adults, Turkey

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Possession of smartphones leads to higher levels of nomophobia.

Introduction

Over the last decade, mobile phones have become the most pervasive mobile devices, which have morphed into smartphones with advanced features (Cheever et al., 2014). GSMA Intelligence (2015) reports that today, the number of active mobile subscriptions exceeds the total world population with more than 7.5 billion subscriptions compared to a total population of around 7.2 billion. Considering that an average mobile device user may have more than one active subscriptions, the number of active unique mobile subscribers are reported to be above 3.7 billion. Both numbers indicate the growing importance of mobile devices in people's lives.

Just as their functionality and capabilities are incessantly increasing, so are the problems associated with mobile phones and their negative effects on individuals (Hong et al., 2012). Consequently, researchers have examined various problems emanating from mobile phone use, including excessive use of mobile phones (Pourrazavi et al., 2014), mobile phone dependence (Toda et al., 2006), mobile phone addiction (Ehrenberg et al., 2008; Hong et al., 2012) and so on.

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Recently, another problem, nomophobia, has garnered some attention from researchers (King et al., 2010; King et al., 2013; King et al., 2014; Yildirim and Correia, 2015).

Literature review

Initially coined during a study conducted in 2008 by the UK Post Office to explore anxieties that mobile phone users suffer from (SecurEnvoy, 2012), nomophobia is considered a modern age phobia recently presented as a byproduct of our interactions with mobile phones (Yildirim and Correia, 2015). The term is an acronym for **no mobile phone phobia**, it is the fear of being unable to use one's mobile phone or being unreachable through one's mobile phone, and refers to 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 (King et al., 2013; Yildirim and Correia, 2015). An adjective, the term nomophobic is used to describe the characteristics of behaviors related to nomophobia.

The case report by King et al. (2010), considered one of the first research studies on nomophobia, describes nomophobia as a 21st century disorder connected with new technologies. The researchers define nomophobia as a condition denoting "discomfort or anxiety when out of mobile phone (MP) or computer contact. It is the fear of becoming technologically incommunicable, distant from the MP or not connected to the Web" (King et al., 2010: 52). King et al. (2014: 28), in their recent study, define nomophobia as "modern fear of being unable to communicate through a mobile phone (MP) or the Internet" and a "situational phobia related to agoraphobia and includes the fear of becoming ill and not receiving immediate assistance". International Business Times' definition (2013), on the other hand, lists some of the situations in which people get anxious: "Nomophobia ... is an anxiety which people face when they feel they could not get signal from a mobile tower, run out of battery, forget to take the phone with them or simply do not receive calls, texts or email notifications for a certain period of time. In short, it is a psychological fear of losing mobile or cell phone contact" (para. 2).

Nomophobia has received a great deal of attention by media, yet research into nomophobia has been scant. A review of literature includes the aforementioned case study of King et al. (2010) examining the relationship between nomophobia and panic disorder,

and another case by King et al. (2013) examining nomophobia as a manifest behavior.

In an attempt to investigate the prevalence of nomophobia in the UK, a previous study revealed that 53% of mobile phone users in the UK suffered from nomophobia (Mail Online, 2008). Another study reported that the percentage of individuals with nomophobic behaviors increased to 66%, and that young adults aged 18 to 24 were most prone to nomophobia (SecurEnvoy, 2012). Along the same lines, previous studies have shown that problems associated with mobile phone use are particularly common among young adults (Cheever et al., 2014), who are early adopters of mobile technologies (Guzeller and Cosguner, 2012).

Sharma et al.'s (2015) recent cross-sectional study examining nomophobic behaviors of Indian medical students has reported that almost 75% of the participant students are nomophobes (i.e., a noun referring to a person with nomophobia), and 83% experience panic attacks when they cannot access their mobile phones.

Yildirim and Correia (2015) argue that smartphones increase the severity of nomophobia due to their numerous capabilities (e.g. Internet access, social media and other applications, instant notifications), leading to an increase in users' involvement with their smartphones and more intense feelings of anxiety and distress when they are unable to use these capabilities. Considering the proliferation of smartphones in Turkey, as evidenced by the increase in the smartphone penetration rate from 14% in 2012 to 39% in 2014 (Consumer Barometer, n.d.) and the adoption of smartphones mainly by young adults (Nielsen, 2013), investigating the prevalence of nomophobia among Turkish young adults will contribute to the understanding of how mobile technologies are impacting young adults in Turkey. Therefore, the purpose of the current study was to investigate the prevalence of nomophobia among Turkish young adults and demographic factors affecting their nomophobic behaviors.

Methodology

The present study employed a causal-comparative research design, which focuses on the causes and consequences of differences that are already present among participants (Fraenkel et al., 2012). Accordingly, this study attempted to determine the causes for and consequences of differences between participants regarding their nomophobic behaviors.

Participants' nomophobic behaviors were measured using an online questionnaire. It was administered to college students who voluntarily consented to participate in the study during class time. The questionnaire did not include any questions that could be used to identify the respondents, and the students were ensured that their responses would remain confidential and anonymous.

Instrumentation

In the literature, there are few studies focused on nomophobia as a theoretical construct. Although King et al. (2014) developed a questionnaire to measure nomophobia, the questionnaire lacks sound psychometric justification regarding its content validity and reliability. The questionnaire was developed by two clinicians and was devised as a mobile phone use questionnaire (King et al., 2014). However, the questionnaire was not examined for its underlying structure with factor analysis, nor was it tested for internal consistency (King et al., 2014). Thus, the mobile phone use questionnaire by King et al. (2014) needs to be further investigated for its psychometric properties.

In a recent study, Yildirim and Correia (2015) devised a self-reported questionnaire to measure college students' nomophobic behaviors. The NMP-Q was developed using a mixed-methods research design, in which the researchers initially qualitatively explored the dimensions of nomophobia through interviews with college students and devised the questionnaire based on these dimensions (Yildirim and Correia, 2015). To determine whether the items in the NMP-Q belonged to their dimensions, the authors examined the underlying factor structure of the questionnaire through exploratory factor analysis and corroborated that the items fell under their respective dimensions (Yildirim and Correia, 2015). Moreover, using Cronbach's alpha, the authors investigated the internal consistency of the questionnaire to examine whether it was a reliable measure of college students' nomophobic behaviors. Given the fact that a Cronbach's alpha value above .8 indicates evidence for good reliability of a scale (Field, 2005), the reliability of the NMP-Q was high (Cronbach's alpha = .95). In addition, the Cronbach's alpha values for the four dimensions of the NMP-Q were .94, .87, .83, and .81, respectively. Therefore, due to being a valid and reliable self-reported questionnaire specifically developed to measure the nomophobic behaviors of college students, the NMP-Q was adopted in the present study.

The NMP-Q consists of 20 items addressing the four dimensions of nomophobia: (1) not being able to communicate, (2) losing connectedness, (3) not being able to access information, and (4) giving up convenience. All items are rated using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). For the context of the present study, the NMP-Q was translated from the source language (i.e., English) to the target language (i.e., Turkish) by a bilingual expert. After the revisions made to the translated items by three experts in the field of instructional technology, the authors of the present study and the developer of the NMP-Q checked the items and minor corrections were made to some of them. Moreover, the questionnaire contained a section including questions related to demographics such as gender, age, mobile phone ownership, and smartphone ownership.

Pretest for the validity and reliability of the Turkish NMP-Q

A pretest was performed to test the validity and reliability of the Turkish NMP-Q as a measure of nomophobia among Turkish college students. In the pretest, data was collected from 306 students at two public universities in Turkey. Despite the fact that all of the participants reported having a mobile phone, 91.5% of them ($n = 280$) possessed a smartphone. On average, they were smartphone users for 2.68 years ($SD = 1.48$). Of the smartphone users, 52.2% ($n = 147$) were male and 47.5% ($n = 133$) were female.

A confirmatory factor analysis (CFA) was conducted to confirm the underlying structure of the items, using AMOS 22 statistical software. Given threshold values for the acceptable model fit (Hair et al., 2006), normed $\chi^2 \leq 3$, CFI $\geq .90$, and RMSEA $\leq .08$, the results of the CFA indicated that the relations between factors and their items were valid ($\chi^2(164) = 469.90$, normed $\chi^2 = 2.86$, CFI = .92, RMSEA = .08). In the pretest, the reliability of the NMP-Q was found to be satisfactorily high (Cronbach's alpha = .92). Moreover, the Cronbach's alpha values of the four factors were .90, .74, .94, and .91, respectively, indicating satisfactorily high reliability. In conclusion, the Turkish NMP-Q was a valid and reliable measure of nomophobia. The items of the questionnaire in Turkish are given in Appendix A.

Sampling

The participants consisted of 537 college students at a public university in Turkey, who were conveniently

Table 1. Item Analysis of the NMP-Q.

Items	M	SD
Factor 1: Not Being Able to Access Information	4.52	1.64
1. I would feel uncomfortable without constant access to information through my smartphone	4.43	1.92
2. I would be annoyed if I could not look information up on my smartphone when I wanted to do so.	4.52	1.92
3. Being unable to get the news (e.g., happenings, weather, etc.) on my smartphone would make me nervous.	4.38	1.96
4. I would be annoyed if I could not use my smartphone and/or its capabilities when I wanted to do so.	4.73	1.86
Factor 2: Losing Connectedness	4.02	1.38
5. Running out of battery in my smartphone would scare me.	5.07	1.93
6. If I were to run out of credits or hit my monthly data limit, I would panic.	3.66	2.02
7. If I did not have a data signal or could not connect to Wi-Fi, then I would constantly check to see if I had a signal or could find a Wi-Fi network.	4.52	1.87
8. If I could not use my smartphone, I would be afraid of getting stranded somewhere.	2.72	1.90
9. If I could not check my smartphone for a while, I would feel a desire to check it.	4.15	1.93
Factor 3: Not Being Able to Communicate	4.62	1.61
10. I would feel anxious because I could not instantly communicate with my family and/or friends.	4.46	1.94
11. I would be worried because my family and/or friends could not reach me.	4.82	1.82
12. I would feel nervous because I would not be able to receive text messages and calls.	4.63	1.85
13. I would be anxious because I could not keep in touch with my family and/or friends.	4.67	1.80
14. I would be nervous because I could not know if someone had tried to get a hold of me.	4.49	1.82
15. I would feel anxious because my constant connection to my family and friends would be broken.	4.64	1.80
Factor 4: Giving Up Convenience	3.06	1.64
16. I would be nervous because I would be disconnected from my online identity.	3.05	1.85
17. I would be uncomfortable because I could not stay up-to-date with social media and online networks.	3.05	1.92
18. I would feel awkward because I could not check my notifications for updates from my connections and online networks.	2.99	1.89
19. I would feel anxious because I could not check my email messages.	3.04	1.89
20. I would feel weird because I would not know what to do.	3.17	2.03

Note. $n = 484$.

available for the study. Although convenience samples limit the representativeness of the population, information on demographics and other characteristics of the participants is a means to increase the external validity of the study because it enables other researchers to judge the extent to which any findings apply to other settings (Fraenkel et al., 2012).

Except for three participants, all (99.4%) college students reported having a mobile phone. Of the mobile phone users, 90.6% ($n = 484$) indicated having a smartphone. Almost three quarters (74.6%, $n = 361$) of the smartphone users were female. The mean age of the smartphone users was 20.02 years ($SD = 1.65$) with ages ranging from 17 to 34. More than half of them (55.8%, $n = 270$) were freshmen, while sophomores accounted for 38.2% ($n = 185$). Despite using a mobile phone for an average of 7.04 years ($SD = 1.99$), the college students had a smartphone for an average of 2.48 years ($SD = 1.56$).

Analyses

In the data analysis, the average scores of items loading to the factors of NMP-Q were computed to construct factor scores for each college student. The responses of the college students were summarized with means and standard deviations to explore their nomophobic behaviors (See Table 1). Then, a two-stage cluster analysis was performed to identify groups of college students which were homogenous within themselves, but heterogeneous with each other, regarding their nomophobic behaviors. Before the cluster analysis, the presence of outliers, collinearity among variables, and the adequacy of sample size were examined. Individual variables of the NMP-Q were used in the cluster analysis, as the use of factor scores causes a poor representation of underlying groups (Hair et al., 2006). The default distance measure, log-likelihood, was used to identify clusters of college students.

Table 2. Means and Standard Deviations of Nomophobia Scores by Gender.

Group	N	Nomophobia							
		Not Being Able to Access Information		Losing Connectedness		Not Being Able to Communicate		Giving Up Convenience	
		M	SD	M	SD	M	SD	M	SD
Male	361	4.03	1.71	3.62	1.31	4.06	1.52	3.04	1.60
Female	123	4.68	1.59	4.16	1.38	4.81	1.59	3.06	1.65

One-way between-groups multivariate analysis of variance (MANOVA) tests were performed in order to investigate whether college students' nomophobic behaviors differed in terms of gender, age, duration of having a mobile phone, and duration of having a smartphone. Four factors of the NMP-Q were used as dependent variables. Before the MANOVA tests, by using median split, the variables of age, duration of having a mobile phone, and duration of having a smartphone were collapsed into categories. Preliminary analyses were conducted to test the assumptions of MANOVA, including independence of observation, equality of covariance matrices, correlation and normality of dependent variables, and outliers (Hair et al., 2006). Due to its robustness (Field, 2005), Pillai's trace was preferred to assess statistical significance between groups on the dimensions of the dependent variable. In order to detect group differences, a significant MANOVA test was followed up with discriminant analysis because the relationships among the dependent variables had an effect. Rather than univariate ANOVAs, this approach was a useful way to take into account the nature of the relationship among dependent variables (Field, 2005). In all the analyses, significance level was set as .05 and IBM Statistical Package for the Social Sciences (SPSS) 22 was used.

Results

Nomophobic behaviors of young adults

Table 1 summarizes young adults' responses to the items in the NMP-Q. As compared to the other factors, the college students reported greater fear levels for two factors, "not being able to access information" ($M = 4.52$, $SD = 1.64$) and "not being able to communicate" ($M = 4.62$, $SD = 1.61$). They had the highest mean score on the item regarding the fear of running out of smartphone battery ($M = 5.07$, $SD = 1.93$). On the other hand, they had the lowest mean score on the item

with respect to the feeling of getting stranded somewhere where a smartphone could not be used ($M = 2.72$, $SD = 1.90$).

In addition, a two-stage cluster analysis was conducted to identify groups of young adults with respect to their nomophobic behaviors. Preliminary analyses showed that there was no violation of assumptions which might cause a poor representation of the clusters. Using log-likelihood distance measure, a two cluster solution was retained. The clusters were labelled as "nomophobic" ($n = 206$) and "non-nomophobic" ($n = 278$). College students with nomophobic behaviors had a greater fear of not having their mobile phone than those without nomophobic behaviors. The most important predictors of the clusters were the variables mainly related to "not being able to communicate" (i.e. item 12, item 13, item 14, and item 10). The quality of cluster solution was fair (average silhouette = .04).

Gender effect

A one-way between-groups MANOVA was conducted to examine the effect of gender on nomophobic behaviors of young adults. Using Pillai's trace, there was a statistically significant effect of gender on young adults' nomophobic behaviors, $V = .07$, $F(4, 479) = 9.36$, $p < .05$; Pillai's trace = .07; partial $\eta^2 = .07$. Moreover, the comparison of mean nomophobia scores showed that females had higher nomophobia scores than did males (Table 2).

The MANOVA was followed up with discriminant analysis. There was only one discriminant function (canonical $R^2 = .27$), which significantly differentiated the young adults' gender, $J = .93$, $\chi^2(4) = 36.11$, $p < .05$. The relationship between nomophobic behaviors and the discriminant function indicated that "not being able to communicate" ($r = .75$), "not being able to access information" ($r = .63$), and "losing connectedness" ($r = .62$) loaded more highly onto the function as compared

Table 3. Means and Standard Deviations of Nomophobia Scores by the Duration of Smartphone Ownership.

Group	Nomophobia								
	N	Not Being Able to Access Information		Losing Connectedness		Not Being Able to Communicate		Giving Up Convenience	
		M	SD	M	SD	M	SD	M	SD
Smartphone user for 2 years or less	289	4.48	1.61	4.00	1.39	4.50	1.59	2.92	1.56
Smartphone user for more than 2 years	195	4.57	1.69	4.06	1.37	4.79	1.62	3.26	1.73

to “giving up convenience” ($r = .02$). These variables were more important in gender differences.

Age effect

A one-way between-groups MANOVA was performed to investigate the effect of age on young adults' nomophobic behaviors. Using Pillai's trace, there was no statistically significant difference between youngers (20 years or below) and elders (over 20 years) in their nomophobic behaviors, $V = .02$, $F(4, 479) = 2.02$, $p = .09$.

Effect of the duration of mobile phone ownership

A one-way between-groups MANOVA was conducted to explore the effect of duration of mobile phone ownership on young adults' nomophobic behaviors. Using Pillai's trace, there was no statistically significant difference between young adults having a mobile phone for 7 years or less and those having a mobile phone for more than 7 years in their nomophobic behaviors, $V = .01$; $F(4, 479) = 1.42$, $p = .23$.

Effect of the duration of smartphone ownership

As for the effect of the duration of smartphone ownership on nomophobic behaviors, results indicated a statistically significant difference in nomophobic behaviors between young adults having a smartphone for 2 years or less, and those owning a smartphone for more than 2 years, $V = .02$; $F(4, 479) = 2.43$, $p < .05$; partial $\eta^2 = .02$. Table 3 shows means and standard deviations of nomophobia scores by the duration of smartphone ownership.

Following the MANOVA, a discriminant function analysis was performed. There was only one discriminant function (canonical $R^2 = .14$), which significantly differentiated the duration of smartphone ownership, $J = .98$, $\chi^2(4) = 9.66$, $p < .05$. The relationship between

nomophobic behaviors and the discriminant function revealed that “giving up convenience” ($r = .73$) and “not being able to communicate” ($r = .61$) loaded more highly onto the function than “not being able to access information” ($r = .18$) and “losing connectedness” ($r = .13$). The former variables were more important in differentiating the college students with respect to the duration of smartphone ownership.

Discussion

Given the need to address the scarcity of research into nomophobia, “the fear of being out of mobile phone contact” (SecurEnvoy, 2012), this study shed light on the prevalence of nomophobia among young adults in Turkey. The results of the cluster analysis distinguished between college students with nomophobic behaviors and those without nomophobic behaviors. Of the Turkish young adults who indicated having a smartphone in the study, 42.6% ($n=206$) had nomophobic behaviors. The results of the study disclosed that the college students reported higher levels of fear for the two dimensions of nomophobia, namely “not being able to communicate” and “not being able to access information”, attesting to the importance of communication and information access for young adults. Of note, the young adults in the study reported having the highest level of fear about running out of smartphone battery, which is in line with a previous study revealing young individuals' tendency to having a charged battery all the time as a means of ensuring that they could use their phone anywhere, anytime (Walsh et al., 2008). Thus, it may be argued that, for young adults, running out of smartphone battery may lead to more intense levels of nomophobia.

The study also revealed that gender differences existed in Turkish young adults' college students' nomophobic behaviors. Based on their scores in the NMP-Q, female young adults demonstrated more

nomophobic behaviors than males. However, in relation to gender differences, previous studies reported mixed results (Guzeller and Cosguner, 2012; SecurEnvoy, 2012). Therefore, further studies investigating the effect of gender on individuals' proclivity to nomophobia are imperative.

As for the effect of age, the results indicated no significant differences between the nomophobia scores of the younger participants (20 years or below) and older participants (over 20 years). This finding is in congruence with a previous study disclosing that nomophobia was prevalent among all age groups (SecurEnvoy, 2012), and with another study that found no significant differences with respect to age in Turkish college students' mobile phone addiction level (Çağan et al., 2014). It should be noted, however, that the majority of the participants in the study (96.6%) were aged between 18 and 23. Thus, the limited age range may be a possible explanation for this finding, because previous studies investigating the relationship between age and problematic mobile phone use behaviors have provided substantial evidence for the effect of age on problematic mobile phone use behaviors, with young individuals being more likely to demonstrate such behaviors (Augner and Hacker, 2012; Buckner et al., 2012; Sanchez-Martinez and Otero, 2009; Smetaniuk, 2014; Walsh et al., 2011).

Consequently, the association between age and nomophobia is yet to be clarified by future studies using broader age groups.

Lastly, the results revealed that the duration of mobile phone ownership had no effect on young adults' nomophobic behaviors, whereas the duration of smartphone ownership did. This finding supports the argument that smartphones lead to higher levels of nomophobia (Yildirim and Correia, 2015).

When interpreting the results of the study, a few limitations should be taken into consideration. First, in the sample used to investigate the prevalence of nomophobia among Turkish college students, females were overrepresented (74.6%). Second, the age distribution of the sample was homogenous, as the sample consisted mainly of freshmen and sophomore college students. To make more generalizable statements about the nomophobic behaviors of young adults, future studies should solicit a broader sample heterogenous with respect to gender and age.

Overall, the present study provides some preliminary evidence for the prevalence of nomophobia among young adults in Turkey. It emphasizes the importance of investigating nomophobia and the need for future research in this area in order to identify the risk groups and establish protection strategies.

Appendix A - The items of the NMP-Q (English & Turkish)

Original English Items (Yildirim and Correia, 2015)	Turkish Items
Item # Please indicate how much you agree or disagree with each statement in relation to your smartphone.	Akıllı telefonun kullanımınızla ilgili olarak aşağıdaki ifadelere katılma derecenizi belirtiniz.
1. I would feel uncomfortable without constant access to information through my smartphone.	Akıllı telefonumdan sürekli olarak bilgiye erişemediğimde kendimi rahatsız hissedirim.
2. I would be annoyed if I could not look information up on my smartphone when I wanted to do so.	Akıllı telefonumdan istediğim her an bilgiye bakamadığımda canım sıkılır.
3. Being unable to get the news (e.g., happenings, weather, etc.) on my smartphone would make me nervous.	Haberlere (örneğin neler olup bittiğine, hava durumuna ve diğer haberlere) akıllı telefonumdan ulaşamamak beni huzursuz yapar.
4. I would be annoyed if I could not use my smartphone and/or its capabilities when I wanted to do so.	Akıllı telefonumu ve telefonumun özelliklerini istediğim her an kullanamadığımda rahatsız olurum.
5. Running out of battery in my smartphone would scare me.	Akıllı telefonumun şarjının bitmesinden korkarım.
6. If I were to run out of credits or hit my monthly data limit, I would panic.	Kontörüm (TL kredim) bittiğinde veya aylık kota sınırimi aştığımda paniğe kapılırım.

(continued)

Appendix A (continued)

	Original English Items (Yildirim and Correia, 2015)	Turkish Items
7.	If I did not have a data signal or could not connect to Wi-Fi, then I would constantly check to see if I had a signal or could find a Wi-Fi network.	Telefonum çekmediğinde veya kablosuz Internet bağlantısına erişemediğimde sürekli olarak sinyal olup olmadığını veya kablosuz erişim bağlantısı bulup bulamayacağımı kontrol ederim.
8.	If I could not use my smartphone, I would be afraid of getting stranded somewhere	Akıllı telefonumu kullanamadığımda, bir yerlerde mahsur kalacağımdan korkarım.
9.	If I could not check my smartphone for a while, I would feel a desire to check it.	Akıllı telefonuma bir süre bakamadıysam, bakmak için güçlü bir istek hissederim.
10.	If I didn't have my smartphone with me, I would feel anxious because I could not instantly communicate with my family and/or friends.	Eğer akıllı telefonum yanımda değilse, Ailemle ve/veya arkadaşlarımla hemen iletişim kuramayacağım için kaygı duyarım.
11.	I would be worried because my family and/or friends could not reach me	Ailem ve/veya arkadaşlarım bana ulaşamayacakları için endişelenirim.
12.	I would feel nervous because I would not be able to receive text messages and calls.	Gelen aramaları ve mesajları alamayacağım için kendimi huzursuz hissederim.
13.	I would be anxious because I could not keep in touch with my family and/or friends	Ailemle ve/veya arkadaşlarımla iletişim halinde olmadığım için endişelenirim.
14.	I would be nervous because I could not know if someone had tried to get a hold of me.	Birinin bana ulaşmaya çalışıp çalışmadığını bilemediğim için gerilirim.
15.	I would feel anxious because my constant connection to my family and friends would be broken.	Ailem ve arkadaşlarımla olan bağlantım kesileceği için kendimi huzursuz hissederim.
16.	I would be nervous because I would be disconnected from my online identity.	Çevrimiçi kimliğinden kopacağı için gergin olurum.
17.	I would be uncomfortable because I could not stay up-to-date with social media and online networks.	Sosyal medya ve diğer çevrimiçi ağlarda güncel kalamadığım için rahatsızlık duyarım.
18.	I would feel awkward because I could not check my notifications for updates from my connections and online networks.	Bağlantılarımdan ve çevrimiçi ağlardan gelen güncelleme bildirimlerini takip edemediğim için kendimi tuhaf hissederim.
19.	I would feel anxious because I could not check my email messages.	Elektronik postalarımı kontrol edemediğim için kendimi huzursuz hissederim.
20.	I would feel weird because I would not know what to do.	Ne yapacağımı bilemiyor olacağımdan kendimi tuhaf hissederim.

References

- Augner C and Hacker GW (2012) Associations between problematic mobile phone use and psychological parameters in young adults. *International Journal of Public Health* 57(2): 437–441.
- Buckner V, John E, Castille CM, et al. (2012) The Five Factor Model of personality and employees' excessive use of technology. *Computers in Human Behavior* 28(5): 1947–1953.
- Çağan Ö, Ünsal A and Çelik N (2014) Evaluation of college students' the level of addiction to cellular phone and investigation on the relationship between the addiction and the level of depression. *Procedia - Social and Behavioral Sciences* 114: 831–839.
- Cheever NA, Rosen LD, Carrier LM, et al. (2014) Out of sight is not out of mind: The impact of restricting wireless mobile device use on anxiety levels among low, moderate and high users. *Computers in Human Behavior* 37: 290–297.
- Consumer Barometer (n.d.) Insights from Google for Turkey. Available at: <https://www.consumerbarometer.com/en/insights/?countryCode=TR> (accessed 15 April 2015).
- Ehrenberg A, Juckes S, White KM, et al. (2008) Personality and self-esteem as predictors of young people's technology use. *Cyberpsychology & Behavior* 11(6): 739–741.
- Field A (2005) *Discovering Statistics Using SPSS*. London: Sage.

- Fraenkel JR, Wallen NE and Hyun HH (2012) *How to Design and Evaluate Research in Education*. New York, N.Y.; London: McGraw-Hill Higher Education.
- GSMA Intelligence (2015) Global Data. Available at: <https://gsmaintelligence.com/> (accessed 10 June 2015).
- Guzeller CO and Cosguner T (2012) Development of a problematic mobile phone use scale for Turkish adolescents. *Cyberpsychology & Behavior* 15(6): 205–211.
- Hair JF, Black WC, Babin BJ, et al. (2006) *Multivariate Data Analysis*. New Jersey: Pearson Prentice Hall.
- Hong F-Y, Chiu S-I and Huang D-H (2012) A model of the relationship between psychological characteristics, mobile phone addiction and use of mobile phones by Taiwanese university female students. *Computers in Human Behavior* 28(6): 2152–2159.
- International Business Times (2013) Nomophobia: 9 out of 10 Mobile Phone Users Fear Losing Contact, Says Survey. Available at: <http://www.ibtimes.co.in/nomophobia-9-out-of-10-mobile-phone-users-fear-losing-contact-says-survey-473914> (accessed 10 April 2015).
- King AL, Valença AM, Silva AC, et al. (2014) “Nomophobia”: Impact of cell phone use interfering with symptoms and emotions of individuals with panic disorder compared with a control group. *Clinical Practice and Epidemiology in Mental Health* 10: 28–35.
- King ALS, Valença AM and Nardi AE (2010) Nomophobia: The mobile phone in panic disorder with agoraphobia reducing phobias or worsening of dependence? *Cognitive and Behavioral Neurology* 23(1): 52–54.
- King ALS, Valença AM, Silva ACO, et al. (2013) Nomophobia: Dependency on virtual environments or social phobia? *Computers in Human Behavior* 29(1): 140–144.
- Mail Online (2008) Nomophobia is the fear of being out of mobile phone contact - and it's the plague of our 24/7 age. Available at: <http://www.dailymail.co.uk/news/article-550610/Nomophobia-fear-mobile-phone-contact-plague-24-7-age.html> (accessed 15 April 2015).
- Nielsen (2013) *The Mobile Consumer: A Global Snapshot*. Available at: <http://www.nielsen.com/content/dam/corporate/uk/en/documents/Mobile-Consumer-Report-2013.pdf> (accessed 15 April 2015).
- Pourrazavi S, Allahverdipour H, Jafarabadi MA, et al. (2014) A socio-cognitive inquiry of excessive mobile phone use. *Asian Journal of Psychiatry* 10: 84–89.
- Sanchez-Martinez M and Otero A (2009) Factors associated with cell phone use in adolescents in the community of Madrid (Spain). *Cyberpsychology & Behavior* 12(2): 131–137.
- SecurEnvoy (2012) 66% of the population suffer from Nomophobia the fear of being without their phone. Available at: <http://www.securenvoy.com/blog/2012/02/16/66-of-the-population-suffer-from-nomophobia-the-fear-of-being-without-their-phone/> (accessed 15 April 2015).
- Sharma N, Sharma P, Sharma N, et al. (2015) Rising concern of nomophobia amongst Indian medical students. *International Journal of Research in Medical Sciences* 3(3):705–707.
- Smetaniuk P (2014) A preliminary investigation into the prevalence and prediction of problematic cell phone use. *Journal of Behavioral Addictions* 3(1): 41–53.
- Toda M, Monden K, Kubo K, et al. (2006) Mobile phone dependence and health-related lifestyle of university students. *Social Behavior and Personality* 34(10): 1277–1284.
- Walsh SP, White KM, Cox S, et al. (2011) Keeping in constant touch: The predictors of young Australians' mobile phone involvement. *Computers in Human Behavior* 27(1): 333–342.
- Walsh SP, White KM and Young RM (2008) Over-connected? A qualitative exploration of the relationship between Australian youth and their mobile phones. *Journal of Adolescence* 31(1): 77–92.
- Yildirim C and Correia A-P (2015) Exploring the dimensions of nomophobia: Development and validation of a self-reported questionnaire. *Computers in Human Behavior* 49: 130–137.

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