The effects of nomophobic behavior of university students on their intellectual thinking tendency

Münir Şahin[1]* and Semra Bulbuloglu[2]

[1]Department of Communication and Design, Faculty of Social and Humanities, Tokat Gaziosmanpasa University, Turkey.
[2]Department of Surgical Nursing, Health Sciences Faculty, Tokat Gaziosmanpasa University, Tokat, Turkey.

ABSTRACT

This study aimed to examine the effects of nomophobic behaviors of university students on their intellectual thinking tendency in their daily lives. This study used a descriptive and cross-sectional study design. The study was conducted between May and June 2020 with the online participation of 448 university students in Turkey. The study sample consisted of 448 students who met the inclusion criteria. A statistically significant relationship was found between the sub-dimensions of the Nomophobia Scale and intellectual thinking disposition ($p < .05$). The stepwise regression analysis conducted to examine the effects of independent variables on the sub-dimensions of the scales showed statistically significant correlations. Nomophobia prevents students from communicating effectively with their friends and intimate surroundings, leads to misunderstandings, prevents intellectual development and negatively affects their overall lives. The Intellectual thinking tendency in university students is affected by nomophobia. There is a significant relationship between nomophobia, which is felt when there is no mobile phone, and the tendency to think intellectually. It has long been known that nomophobia is an extremely harmful condition. With this study, it has been proven that it causes high intellectual harm to young people.

Keywords: Intellectual thinking, nomophobic behavior, student, tendency.

*Corresponding author. Email: munir.sahin@gop.edu.tr. Tel: (+90) 5423304409.

INTRODUCTION

Nomophobia has various descriptions. Cherry (2020) describes nomophobia as "the fear of being without your phone." Some others researchers define as useless and harmful behavioral problems (Bülbüloğlu et al., 2020). The concept of nomophobia, which means excessive and problematic use of smartphones, is basically the fear experienced when the individual cannot access or communicate with a mobile phone (Gezgin and Çakır, 2016; King et al., 2013; Yildirim and Correia, 2015). Individuals are in constant interaction not only with information but also with social media and other applications on the internet via their smartphones. When these applications are not accessible, individuals start to feel anxious and nervous. As a result, their concentration on daily activities is negatively affected (Yildirim and Correia, 2015).

Cherry (2020:2) says that "Mobile phones become a ubiquitous part of modern life. Not only do they serve as a way to communicate, but they also act as a social network tool, personal organizer, online shopping tool, calendar, alarm clock, and mobile bank. While they are without a doubt beneficial device, some suggest that overreliance on digital devices may be a form of behavioral addiction." According to Alavi et al. (2012: 290) substance addiction and behavioral addiction both have similar symptoms. They usually put pressure on their families and partners "to cover up and make up for difficulties" which are the results of addiction.

Alavi et al. (2012: 292-293) defines seven signals of behavioral addiction:

1. Spending too much time doing, thinking about the behavior.
2. Being dependent to the behavior to handle the "emotions" and "feel normal".
3. Going on with the behavior although it has "physical

and mental harm".

4. Although they want to quit the behavior, they have problems.

5. Not engaging with family members, friends, school or work to do the addictive behavior more often.

6. When they try to stop, they exhibit depressive, irritable behaviors.

7. They try to minimize and hide the problem existing due to addictive behavior.

The seven signals defined by Alavi et al. (2012) could be also observed in nomophobia. People usually feel depressed when they forgot their mobile phones at their offices even when they go out for lunch for a short time. Moreover, it is not unusual to see people and friends checking their mobile phones very often and looking at their mobile screens, being more busy with it but not the friends and events around.

When people are away from their mobile phones, they usually feel anxious. Anxiety is also described as emotional imbalance, aggression, concentration disorder, distancing from social environments and emotional disconnection begin in individuals who feel nomophobia (Arpaci, 2019; King et al., 2013). Şahin and Üstüner (2018: 97-98) quotes from their interviews with parents that "Social media is a time loss and it harms the cultural values. Our children are given many things that we do not want to give in anyway." They also state that students spend too much time on social media as if they are addicted to it.

Intellectual thinking is considered as one of the standards of critical thinking, one of forward-thinking skills (Yoldaş and Merç, 2018). Intellectual thinking can be defined as using the mental ability to manage daily activities as directed by the individual, including understanding and solving problems and difficulties (Groves et al., 2008). In its clearest form, intellectual thinking is a specific logic and problem-solving strategy to explain why individuals respond differently to problems to be solved (Murphy and Janeke, 2009; Nappi, 2017).

Intellectual standards are very important to "live a rational life." Many languages have their own presuppositions about intellectual standards, and they are necessary for reasoning and thinking well (Paul and Elder, 2013:32). These intellectual standards are briefly explained in Paul and Elder (2013) as clarity, accuracy, precision, relevance, depth, breadth, logic, significance, and fairness. When university students are thought, these standards carry more importance than anything else as their self-confidence and self-esteem develops as the traits of their identity.

Critical thinking is an important talent that all people, especially the ones' in academic arena must possess. Socrates defines critical thinking as the evaluation of good and bad sides of anything and it is known as a way of questioning (Ruppel, 2005). Questions about critical thinking comprise an important part of the discussions in conferences with education professionals, psychologists, behaviorists, philosophers and the concept "critical thinking" became one of the most misleading term (Beyer, 1987), so most of the definitions seem controversial and rarely applicable (Guilbert, 1990). There are so many studies (Boisvert, 2004; Ferret, 1997; Huitt, 1998; Ming-Lee Wen, 1999; O'Hare and McGuinness, 2009; Paul et al., 1989; Willingham, 2007) in the literature which are in depth search and analysis to draw a line for critical thinking. The common idea behind critical thinking is that it fosters success (Akbıyık and Seferoğlu, 2006; Fisher, 1995; Ferret, 1997).

If there is no intellectual common sense, humility and patience in the mindset, resistance decreases in the face of unexpected problems and cannot be won. All these abilities are generally accepted as an indicator of having universal intellectual characteristics (Aybek, 2006; Paul and Elder, 2005).

Intellectual traits are the combination of structures such as empathy, integrity, courage, humility and patience (Aybek, 2006). Ignoring other thoughts, insisting on our own mindset and putting pressure on those around us to think like us are indications of being unable to think in intellectual integrity (Yoldaş and Merç, 2018). When in modern digital world students share items about themselves on social media and not inspired and favored by others, they are more likely to lose their intellectual integrity.

There are not so many works on the relation of monophobic behavior and intellectual thinking tendency in the literature. This study aimed to define the effects of monophonic behaviors of university students on their intellectual thinking tendency. The results of the study is thought to be helpful to see how intellectual thinking could be affected by monophobic behavior and what measurements can be taken to reduce these negative effects.

METHODS

Design and participations

This research was planned as descriptive, cross-sectional and correlational. In our study, the effects of the nomophobia levels of university students on their intellectual thinking dispositions were examined. Data collection took place in May and June 2020 at Gaziosmanpaşa university branch campus located in the Black Sea region of Turkey, with the participation of the students.

The features of the departments on the branch campus are as follows:

i. At the Faculty of Social and Human Sciences, the Department of Communication Design and Media provides 4-year education to its students.

ii. The Faculty of Health Sciences provides 4-year education to the students of the Department of Health Management.
iii. At the Vocational School of Health Services, students of the Departments of First and Emergency Aid, Medical Documentation and Secretariat are provided 2-year education.
iv. At the Vocational School, students of the Departments of Banking and Insurance, Printing and Publishing Technologies, Computer Programming, Office Management and Executive Assistance, Graphic Design, Public Relations and Publicity, Fashion Design, Business Management, Accounting and Tax Applications are provided 2-year education.

The sampling method was not used in this study, and voluntary students who were eligible for the inclusion criteria participated. The characteristics of the participants were determined in accordance with the criteria sampling method and according to the following criteria.
Inclusion criteria in the study:

i. School attendance,
ii. Having a smartphone,
iii. Ability to provide internet access by phone,
iv. Volunteer to participate in research and give online consent.

Data collection

In Turkey, due to the pandemic, university education has been online since March 23, 2020. Therefore, data collection was done by the online survey method. Ethics committee approval and informed consent from the participants were obtained before applying the questionnaire. In the study, "Personal Information Form" was used to determine socio-demographic data, "Nomophobia Scale" to define the nomophobia levels of university students, and "Intellectual Thinking Tendency Scale" to determine intellectual thinking skills. Information about the scales is given below:

Nomophobia scale

Within the scope of the research, 20-item Nomophobia Questionnaire (NMP-Q), developed by Yildirim and Correira and prepared in 7-point likert, was used to measure individuals' smartphone addiction (Yildirim and Correia, 2015). In the study by Yildirim and Correira, it was stated that there are four sub-dimensions regarding the nomophobic status of individuals (Yildirim and Correia, 2015). These dimensions are: (i) not being able to communicate, (ii) losing connectedness, (iii) not being able to access information, (iv) giving up convenience.

In the study conducted by Yildirim and Correira, the reliability value of the scale (Cronbach Alpha) was calculated as 0.95, and the reliability values of its sub-dimensions were calculated as 0.94, 0.87, 0.83 and 0.81 (Yildirim and Correia, 2015). The scale was adapted to Turkish by Yildirim et al. (Yildirim et al., 2016). The reliability value (Cronbach's Alpha) in the Turkish scale was calculated as 0.92 and the value of the sub-dimensions as 0.90(i), 0.74(ii), 0.94(iii) and 0.91(iv) (Yildirim et al., 2016). In this study was obtained to 0.91 Cronbach's Alpha value.

Intellectual thinking tendency scale

The Intellectual Thinking Tendency Scale was created in order to evaluate the status of universal intellectual characteristics. The original of the scale consists of 53 items, and the scale items were formed from the acquisitions of intellectual thinking, taking into account the critical thinking standards determined by Paul and Elder (2005). Responses to these items were collected using 5-point Likert scale. Participants are asked to mark their views on the statements stated in the listed items in a way to mark one: (1) "Never", (2) "Rarely", (3) "Sometimes", (4) "Most of the time" and (5) "Always". There are two items in the trial form of the scale that are scored backwards.
The validity and reliability in Turkey were performed by Yoldaş and Merç (2018). Turkish scale consists of 30 items. In the study of Yoldaş and Merç, the three sub-dimensions of individuals' intellectual thinking tendency and the Cronbach's Alpha values of the dimensions are as follows: (i) Intellectual Empathy 0.84, (ii) Intellectual Awareness 0.83, (iii) Intellectual Determination 0.85. The Cronbach Alpha internal consistency coefficient of the scale was calculated as 0.91.

Statistical analysis

The data analysis was performed in IBM SPSS Statistics 25 (Statistical Package for the Social Sciences) after being coded by the researcher. Descriptive statistics were used in the analysis of the data. Correlation and regression analyzes were performed to determine the relationship between scales. Before the analysis, normal distribution of the data was examined with the Kolmogorov Smirnov test and it was found that there is a normal distribution. In the comparison of quantitative data, in case of two groups, for independent samples "t" test was used for comparing parameters between groups. In case of more than two groups, the one-way Anova test was used for the comparison of parameters between groups and Bonferroni test was used to determine the group that caused the difference. In addition Pearson Correlation Coefficient analysis was used to determine

whether there is a relationship between variables and to determine the strength and direction of the relationship. The reliability of the scale was determined by the Cronbach's Alpha coefficients. 95% confidence interval and $p < 0.05$ level of significance were taken into account in the evaluation of the obtained results.

Ethical considerations

Prior to the study, written consent was obtained from the Gaziosmanpasa University Faculty of Medicine Dean's Clinical Research Ethics Committee with Meeting No: 2020/05 and Protocol Number: 83116987-378.

RESULTS

Socio-demographic characteristics of students

Introductory information about university students involved in this study is included in Table 1. Accordingly, 69.2% of the participants were male, 47.8% were between the ages of 17 to 19, 95.5% were single, 37.9% were students in vocational high schools and 41.1% were first-year students. As the inclusion criteria all of the university students participated to the study had mobile phones, and 80.8% are using mobile phones for more than 4 years. In addition, 71.9% of them were found to have Internet access at all times.

Table 1. Introductory characteristics of university students (n = 448).

Introductory information	n	%
Gender		
Female	138	30.8
Male	310	69.2
Age		
17-19	214	47.8
20-22	184	41.1
23-25	50	11.2
Marital Status		
Single	428	95.5
Married	20	4.5
Faculty/College		
Faculty of Social Sciences and Humanities	94	21
Faculty of Health Science	86	19.2
Vocational School of Health Services	98	21.9
Vocational School of Higher Education	170	37.9
Academic Class		
Freshman	184	41.1
Sophomore	176	39.3
Junior	68	15.2
Senior	20	4.5
Have mobile phone		
Yes	448	100
Duration of mobile phone usage		
1-3 years	86	19.2
4-7 years	270	60.3
8-11 years	86	19.2
12-15 years	6	1.3
Internet access at all times		
Yes	322	71.9
No	126	28.1

Mean and standard deviation values of scales

Table 2 contains the scores obtained from the subgroups of the Nomophobia scale. Accordingly, the sub-dimensions were as follows: 14.65 ± 1.21 not being able to access information, 23.74 ± 1.25 for giving up convenience, 24.41 ± 1.05 for not being able to communicate and 13.07 ± 1.31 for losing connectedness. The median scores show that student in the study show high level of nomophobic behaviors.

Table 2. Item line and scores of subgroups of nomophobia scale (n = 448).

Subgroup	Item	Items	Range	Min. - Max.	Mean ± SD
Not being able to access information	4	1, 2, 3, 4	5.5	4.00 - 20.00	14.65 ± 1.21
Giving up convenience	5	5, 6, 7, 8, 9	5.2	5.00 - 25.00	23.74 ± 1.25
Not being able to communicate	6	10, 11, 12, 13, 14, 15	5.83	6.00 - 30.00	24.41 ± 1.05
Losing connectedness	5	16, 17, 18, 19, 20	5.6	5.00 - 25.00	13.07 ± 1.31
Total	20	1-20	22.13	20.00 - 100.00	75.87 ± 1.22

Table 3 contains the scores obtained from the subgroups of the Intellectual thinking tendency scale. Accordingly, the scores of the sub-dimensions are as follows: Intellectual empathy 24.37 ± 0.54, Intellectual awareness 14.15 ± 0.58, Intellectual determination 13.87 ± 0.69. When minimum and maximum marks are taken into consideration, Table 3 shows that there is low level of intellectual thinking tendency among the participators of the study.

Correlation and regression analysis

When Table 4 is examined, it is observed that there is a positive correlation between intellectual empathy, not being able to communicate and losing connectedness (p < 0.05). There is a positive correlation between intellectual awareness and not being able to access information, giving up convenience, and losing connectedness (p < 0.05). There is a positive correlation between intellectual determination and not being able to access information, giving up convenience, and losing connectedness, and a negative correlation between intellectual determination and not being able to communicate (p < 0.05). Except for intellectual determination and not being able to communicate (p < 0.05), it is clearly seen in Table 4 that there is a positive relationship between the sub-dimensions of Nomophobia and Intellectual Thinking Tendency Scales.

In Table 5, the regression analysis between Intellectual Thinking Tendency Scale and Nomophobia Scale was examined. Accordingly, a significant relationship was found between nomophobia and intellectual thinking tendency (r = 2.23, r2 = 0.5, Adj = .047, p = 0.000). Nomophobia affects intellectual thinking disposition by 50%.

Table 3. Item line and scores of the subgroups of the intellectual thinking tendency scale (n = 448).

Subgroup	Item	Items	Range	Min.-Max.	Mean ± SD
Intellectual Empathy	12	2, 3, 4, 5, 6, 7, 8, 9, 10, 23, 25, 27	2.75	12.00 - 60.00	24.37 ± 0.54
Intellectual Awareness	11	11, 12, 13, 14, 15, 22, 24, 26, 28, 29, 30	3.09	11.00 - 55.99	14.15 ± 0.58
Intellectual Determination	7	1, 16, 17, 18, 19, 20, 21	3	7.00 - 35.00	13.87 ± 0.69
Total	30	1-20	8.84	30.00 - 150	52.40 ± 1.83

Table 4. The relationship between intellectual thinking tendency scale and nomophobia scale sub-dimensions (n = 448).

Subgroups	Not being able to access information		Giving up convenience		Not being able to communicate		Losing connectedness	
	r	p	r	p	r	p	r	p
Intellectual Empathy	0.053	0.25	0.073	0.12	0.123	**0.009***	0.110	**0.02***
Intellectual Awareness	0.097	**0.04***	0.109	**0.02***	0.069	0.14	0.121	**0.01***
Intellectual Determination	1	**0.008***	0.201	**0.000***	-0.06	**0.002***	0.058	**0.001***

*p < 0.05.

Table 5. Regression analysis between nomophobia scale and intellectual thinking tendency scale sub-dimensions (n = 448).

Model	Sum of squares	df	Mean square	f	p
Regression	10.310	1	10.310	23.249	**0.000***
Residual	197.790	446	4.97		
Total	208.101	447			

	B	Std. Error	β	t	p
Constant	2,776	.250		11,094	**0.000***
Intellectual Thinking Tendency Scale	.289	.06	2.23	4,822	**0.000***

*p < 0.05.

DISCUSSION AND CONCLUSION

In this study, which was conducted with the participation of 448 university students, it is noteworthy that most of them were male students (69.2%) and between the ages of 17 to 19 (47.8%). In addition, 37.9% of the participants were students in vocational school of higher education and 41.1% were freshman. In another study conducted in Turkey, most participants were found to be between the ages of 30 to 35 (41%) and it was stated that 43% of the participants used their mobile phone for 8 years and above (Bulbuloglu et al., 2020)

In our study, it was determined that 60.3% of university students had a mobile phone for 4 to 7 years and 71.9% of them had Internet access at all times. It has been reported that the number of individuals using the internet and social media on their mobile phones reached 5.15 billion (67% of the world population) across the world in 2019 ("Global Digital Report 2019- We Are Social," n.d.). It has been also reported that mobile phone use in Turkey is 98%, smartphone use is 77%, and people who use the internet spend an average of 7 hours and 15 minutes on the internet during the day ("Global Digital Report 2019 - We Are Social," n.d.).

In this study, students' levels of nomophobia were found to be high. The sub-dimension scores are as follows: 14.65 ± 1.21 for not being able to access information, 23.74 ± 1.25 for giving up convenience, 24.41 ± 1.05 for not being able to communicate, 13.07 ± 1.31 for losing connectedness. In addition, it was determined that 60.3% of university students had a mobile phone for 4 to 7 years and 71.9% of them had Internet access at all times.

Today, nomophobia emerges as a part of popular culture. Most importantly, smartphones provide "ready information" to individuals. This may cause the harmful effects of nomophobia to remain hidden and may create a feeling that individuals have gained the ability to adapt quickly to life. Although they know the harmful effects of nomophobia in the literature, it has been stated that there are students who do not abandon their nomophobic behaviors (Cho and Lee, 2015).

In this study, the sub-dimensions scores of the Intellectual Thinking Tendency Scale are as follows: Intellectual empathy 24.37 ± 0.54, Intellectual awareness 14.15 ± 0.58, Intellectual determination 13.87 ± 0.69. It is seen that there is a positive correlation between intellectual empathy, not being able to communicate and losing connectedness (p < 0.05). There is also a positive correlation between intellectual awareness and not being able to access information, giving up convenience, and losing connectedness (p < 0.05). There is a positive correlation between intellectual determination and not being able to access information, giving up convenience, and losing connectedness, and a negative correlation between intellectual determination and not being able to communicate (p < 0.05). In addition to all these results, it was found that nomophobia affected intellectual thinking disposition by 50% (r = 2.23, r2 = 0.5, Adj = .047, p = 0.000).

If the students lack the intellectual thinking skills that they need in the classroom, their chance to be successful decreases (Irfaner, 2006). Critical thinking helps students to clarify misunderstandings, misconceptions, discover the truths and scrutinize in unsatisfactory evidence (Edmonds et al., 2005; Firey, 1999). As the critical thinking has an important role in students' school success, the habits and addictions affecting critical thinking should be eliminated or some measurements to decrease negative effects should be taken.

In the literature, there are results of studies examining the effects of nomophobia on university students. Accordingly, it has been determined that nomophobia negatively affects/prevents/reduces academic development, decreases learning performance and distracts students (Cho and Lee, 2015; Cohen et al., 2018; Lee et al., 2017; Vanden Abeele et al., 2016). The results of our research support the results of other studies in the literature.

Young people see social media as an information sharing center. However, social media is not a platform for sharing scientific content. Therefore, it is possible to say that young people hinder their intellectual development when they are active a lot on social media.

The intellectual thinking tendency in university students is affected by nomophobia. There is a significant

relationship between nomophobia, which is felt when there is no mobile phone, and the tendency to think intellectually. It has long been known that nomophobia is an extremely harmful condition. With this study, it has been proven that it causes high intellectual harm to young people. During the college years, they have to struggle with the sad consequences of being under the influence of nomophobia while trying to improve themselves academically. Prevention of nomophobia is essential for developing awareness, solutions and strategies for intellectual development. The lack of developed policies, prevention initiatives and management poses a great risk for young people to overcome nomophobia. Solution oriented approaches include detailing the factors that lead young people to nomophobia, raising awareness on the issue and supporting self-management.

As for the limitations of study, we can clearly state that the use of mobile phones can vary culturally. So the cultural characteristics can affect the results of the study. Level of nomophobic behaviors and other socio-economic conditions may differently affect the people coming from different cultural and technological backgrounds. The future studies can focus on how culture and technological well-being of society may affect intellectual thinking. Whether any differences can be observed in different cultures or not about the effects of nomophobia to intellectual thinking is a question that limits this study and left unanswered.

Another important limitation of the study is that the data collected during Covid pandemic times on dependence on mobile phones so it cannot be interpreted for population at normal times, as it is special situation, where offline education activities and recreation activities are compromised. The students are dependent on mobile phones and internet to attend online courses as an obligation although various authorities are against too much use of mobile phones and internet for various health and psychological reasons. So the study can be repeated after Covid pandemic when the schools are open and the results can be compared to also see the effect of online education on nomophobia and intellectual thinking tendency.

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