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Do Personality Traits Influence Nomophobia? An Investigation of the Big Five Personality Traits and Nomophobia Levels in University Students

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Abstract

This study examines the relationship between nomophobia and the Big Five personality traits: extraversion, openness, neuroticism, agreeableness, and conscientiousness. Accordingly, the non-experimental correlational methodology was used in this study. In this context, 484 university students were reached using the convenience sampling method. The Nomophobia Scale and the Big Five Inventory were used as data collection instruments. Multiple regression analysis was conducted to determine whether university students' Big Five personality traits predict their level of nomophobia and subfactors of nomophobia. The results showed that the students were moderately nomophobic. In addition, there was a significant predictive positive correlation between extraversion, openness, neuroticism and nomophobia. According to the results, nomophobia, the fear of losing connectedness, and the fear of being unable to communicate are more common in those with neuroticism. Individuals with high levels of openness and neuroticism are more likely to be afraid of giving up convenience. In addition, more open individuals are more likely to be afraid about not being able to access information. On the other hand, no correlation was found between agreeableness and conscientiousness characteristics and nomophobia. Finally, some recommendations for researchers and practitioners are suggested.

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INTRODUCTION

Today, smartphones that enable people to make voice calls, play games, watch videos, and perform many more activities simultaneously have become indispensable in daily life. Although smartphones are valuable tools with life-facilitating features, excessive use of smartphones by individuals has turned this into captivity instead of an advantage. Studies focusing on the consequences of smartphone addiction and its problematic use are common in the literature (Kim & Koh, 2018; Mahapatra, 2019; Yıldız-Durak, 2019). Smartphone addiction is expressed as a behavioural type in the literature due to its symptoms (Arpaci & Kocadag Unver, 2020). Previous studies stated that smartphones might cause unfavourable conditions like compulsive checking habits (Oulasvirta et al., 2012), addiction (Augner & Hacker, 2012), low academic achievement (Kibona & Mgaya, 2015), lower social interaction (Dwyer et al., 2018) and wrist and neck pain (Han et al., 2017). Indeed, although the addiction developed against smartphones is similar to other technological addictions, it can be asserted that smartphones may be a much more dangerous type of addiction because they are mobile and provide internet connection anywhere, anytime (Demirci et al., 2014).

Another problem concerning the problematic use of smartphones, nomophobia, has recently attracted the attention of researchers (Gezgin et al., 2018; Han et al., 2017; Mendoza et al., 2018; Yıldırım & Correia, 2015). Nomophobia is an abbreviation for “No mobile phone phobia”. Nomophobia is an uncontrollable fear that arises when someone cannot use or access a cellphone (Yıldırım & Correia, 2015). Although this concept is not included in the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), the researchers indicate that it should be included in the DSM-V as a psychological disorder because it shows similarities with clinical features encountered in other disorders like anxiety, addiction and obsessive-compulsive disorder (Bragazzi & Del Puente, 2014; King et al., 2013). When the studies in the literature are examined, it is seen that smartphones are widely used especially among university students and are in the first place in adapting to these devices (Notara et al., 2021). In the study conducted by Qutishat et al. (2020), it was found that nomophobia was found in 99.33% of university students in Oman.

It can be said that nomophobia can cause significant problems in students' academic lives as well as in their social lives. For instance; Nomophobic students may encounter problems such as low motivation, focusing problems, decrease in academic success and anxiety when they cannot reach their mobile phones (Tuco et al., 2023). It can be said that it is important to reveal the variables and predictors associated with nomophobia in order to overcome all these problems and to enable students to cope with these problems. Various studies in the literature have reported a relationship between personal traits and addictive behaviours (Shenassa et al., 2012; Walther et al., 2012). Thus, to avoid nomophobia and to overcome related problems, it is essential to reveal its connection with personality traits. However, there is a relatively limited number of studies investigating the excessive use of smartphones at the addiction level or personality traits concerning nomophobia. In this context, in the study conducted by Oz and Tortop (2018) with university students, it was found that there was a positive relationship between extraversion, agreeableness, openness and conscientiousness personality traits and nomophobia, and a weak negative relationship with neuroticism. As a result of the study conducted by Amiri and Thaghinejad (2022) with university students, it was found that there was a negative relationship between extroversion, openness, agreeableness, self-esteem and conscientiousness personality traits and nomophobia, while there was a positive relationship between neuroticism and nomophobia.

However, as is seen in these studies, the results obtained in the relevant literature needed to be more consistent. Accordingly, there is a need for more studies to get consistent results concerning the correlation of personality traits with nomophobia. In addition, as seen in the studies above, the studies on nomophobia have mainly examined the correlation of specific or narrow aspects of an individual’s personality and how they make them inclined to nomophobia. Additionally, a limited number of

studies in literature examine nomophobia in terms of broader traits like the Five-Factor Model of personality. Therefore, a comprehensive examination of personality traits will facilitate catching the matters that may be unnoticed due to examining the personality from a narrow perspective. Based on this problem in the study, it can be said that it is essential to reveal the possible relationships and predictors of nomophobia. Accordingly, in this study, the correlations between nomophobia and personality traits were analysed based on the Five-Factor Model of personality, which is used commonly and handles the personality in five broad dimensions (extraversion, openness, neuroticism, agreeableness and conscientiousness).

The Five-Factor Model of personality traits is also usually used as the "Big Five" (John et al., 2008). Therefore, the concept of "Big Five Personality Traits" was used in this study. These five personality traits can briefly be defined as follows: extraversion indicates establishing interpersonal interactions intensely and frequently and being energetic and optimistic; openness indicates being tolerant to thought flexibility and new opinions; neuroticism indicates being inclined to experience a variety of emotional distresses, constrained urges and unrealistic opinions; agreeableness indicates being sympathetic, cooperative and empathetic; and conscientiousness indicates having self-control, order and endeavour (McCrae & Sutin, 2007). It can be helpful to understand how personality qualities, especially the Big Five, relate to nomophobia to better understand how susceptible individuals are to the disorder and its possible psychological effects. More precisely, there has been consistent evidence linking greater levels of nomophobia to neuroticism, which is characterised by inclinations toward anxiety, concern, and emotional instability (Kaplan Serin & Derya Ister, 2022; Uguz & Bacaksiz, 2022). Strong neurotic people depend on their phones for comfort and emotional regulation; thus, being without them increases their risk of experiencing dread and anxiety. More studies are needed on the connection between agreeableness and nomophobia. However, agreeable people who empathise, collaborate, and desire social harmony may use phones to maintain connections and social bonds. More research is required to fully comprehend agreeableness's role in predicting nomophobia and how it could interact with other personality qualities.

Personality traits are critical factors affecting problematic behaviours (Gao et al., 2022). Studies on excessive technology use substantially examined how individuals' personalities make them inclined to display specific behaviours. However, the number of studies investigating personality traits concerning problematic smartphone use or nomophobia is still relatively limited (Olivencia-Carrión et al., 2018). Furthermore, although nomophobia is common among university students, studies on this matter are inadequate. Although research on the correlation between the Big Five personality traits and nomophobia is still ongoing, the evidence that does exist suggests that some traits, most notably Neuroticism and Conscientiousness, may be important indicators of nomophobia (Amiri & Taghinejad, 2022; Lee et al., 2014). A further study using standardised personality traits and tests of nomophobia is needed to fully understand the complex relationship between personality factors and smartphone-related concerns and behaviours, and smartphone-related concerns and behaviours. Also, revealing the possible correlation of nomophobia with the personality traits of university students will facilitate intervening in problematic behaviours. Therefore, it can be asserted that the study is essential due to its contributions to both researchers and implementers in the struggle against nomophobia by extending the findings in the literature. Accordingly, the research questions examined in the study were as follows:

- What are the levels of nomophobia and the Big Five personality traits among university students?
- Is there a significant correlation between nomophobia and the Big Five personality traits in university students?

• Do university students' big five personality traits predict their level of nomophobia, fear of loss of connectedness, inability to communicate, loss of comfort, and inability to access information?

METHOD

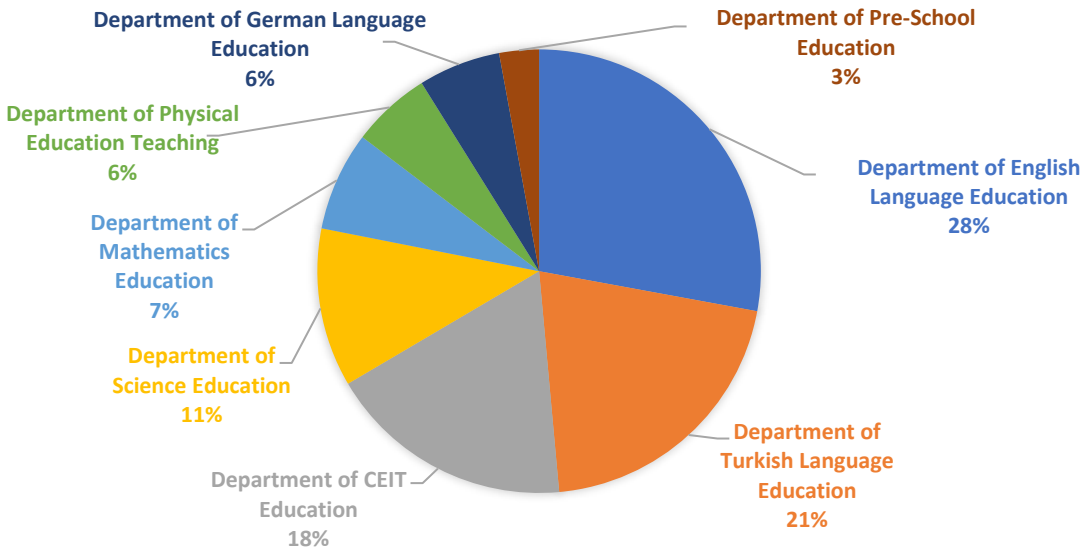
RESEARCH DESIGN

This study used a non-experimental correlational methodology. A non-experimental research design was chosen since no variables were manipulated and there were no comparison groups. Correlational design was selected because the study aimed to explore the relationships between nomophobia levels of university students and the Big Five Personality Traits, which is also the aim of correlational research. The correlational method reveals correlations between variables (McMillan & Schumacher, 2010) without intervening (Fraenkel & Wallen, 2000). Correlational research examines how variables relate by examining simple relationships or more complex predictive models (Johnson, 2001). Accordingly, this method was explicitly used to explore the correlations between levels of nomophobia and the Big Five personality traits of university students.

RESEARCH SAMPLE

The study population consists of students studying at education faculties in Turkey. By using the convenience sampling method in selecting the sample from the population, the education faculty students studying at a university in the Eastern Region of Turkey were reached in 2020. The convenience sampling method was used since the researchers conducted the study in their faculty. A total of 484 university students from different departments participated in the study. 38% of the participants in the study were male, and 62% were female. Detailed information about the sample is given in Figure 1.

Figure 1. *Distribution of the Study Sample by Branches*



According to Figure 1, 28% of the students are studying in the Department of English Language Education, 21% in the Department of Turkish Language Education and 18% in the Department of CEIT Education. Compared to other departments, the percentage of students in the Department of Pre-school Education is the lowest in the sample distribution.

In terms of sample characteristics, information about students' daily mobile device usage time, daily searches, frequency of checking Facebook, Twitter, Instagram, and email accounts, importance of mobile devices in their lives, and number of social media accounts is presented in Table 1.

39% of the students use their cell phones for 3-5 hours, and 29.8% use their cell phones for 5-8 hours. The percentage of students who check their phones for calls every hour is 25.8%, 2-4 times a day is 24%, and 5-10 times a day is 22.8%. Analysing the active social media accounts, 44.6% have 1-2 and 34.3% have 3-4 social media accounts. It is revealed that while students check their Facebook and Twitter accounts once a day, they check their Instagram accounts once an hour or at least ten times. In addition, 66.9% of students check their email accounts once a day. In addition, 65.9% of students believe that their mobile device is "important" or "very important" in their lives.

Table 1. *Descriptive Findings of the Study*

	f	%		*f*	%
Mobile Device Duration of Daily Use			*Number of Social Media Accounts*		
Less than 1 hour	17	3.5	0	10	2.1
1 to 2 hours	66	13.6	1-2	216	44.6
3 to 5 hours	189	39.0	3-4	166	34.3
5 to 8 hours	144	29.8	5-6	72	14.9
More than 9 hours	68	14.0	More than 7	20	4.1
Frequency of Checking Instagram Account Daily			*Frequency of Checking Twitter Account Daily*		
No account	48	9.9	No account	180	37.2
Once a day	38	7.9	Once a day	186	38.4
2-4 times a day	75	15.5	2-4 times a day	59	12.2
5-10 times a day	111	22.9	5-10 times a day	33	6.8
At least 10 times a day	109	22.5	At least 10 times a day	10	2.1
Every hour	103	21.3	Every hour	16	3.3
Frequency of Checking Facebook Account Daily			*The Importance of Mobile Devices in Their Life*		
No account	101	20.9	Strongly not important	19	3.9
Once a day	188	38.8	Not important	39	8.1
2-4 times a day	124	25.6	Undecided	107	22.1
5-10 times a day	43	8.9	Important	151	31.2
At least 10 times a day	15	3.1	Strongly important	168	34.7
Every hour	13	2.7			
Frequency of Checking Calls Daily			*Frequency of Checking E-Mail Accounts Daily*		
Once a day	52	10.7	Once a day	324	66.9
2-4 times a day	116	24.0	2-4 times a day	91	18.8
5-10 times a day	63	22.8	5-10 times a day	40	8.3
At least 10 times a day	74	15.3	At least 10 times a day	12	2.5
Every hour	125	25.8	Every hour	17	3.5

DATA COLLECTION TOOLS AND PROCEDURE

Two data collection instruments were used for the aim of the research. The first instrument tested the students' nomophobia level. The Nomophobia Scale was developed by Yıldırım and Correira (2015), and Erdem et al. (2017) adapted the Turkish scale from a 7-point Likert type to a 5-point Likert type. This study used the Erdem et al. (2017) scale as a 5-point Likert type. The Nomophobia scale has four dimensions: (1) not being able to communicate (6 items), (2) losing connectedness (5 items), (3) not being able to access information (4 items), and (4) giving up convenience (5 items). Cronbach's alpha values of factors were .939, .874, .827, and .814, respectively. Overall Cronbach's alpha value is .945 (Yıldırım & Correira, 2015). In this study, overall, Cronbach's alpha value is .918.

The second instrument assesses students' big five personality traits. Big Five Inventory was developed by John et al. (1991) and adapted in Turkish by Alkan (2006). It has five personality dimensions (1) extraversion, (2) openness, (3) neuroticism, (4) agreeableness and (5) conscientiousness, and it consists of 44 items on a 5-point scale. Its overall Cronbach's alpha value is

.87. In this study, the overall Cronbach's alpha value is .741. The ethics committee document of the study was obtained. Data collection tools do not include questions that may pose any ethical problems. In addition, data were collected from students voluntarily.

DATA ANALYSIS

First, descriptive analysis used frequencies and percentages to examine students' habits and mobile application usage information. Then, a multiple regression analysis is conducted to reveal whether the big five personality traits of university students predict their level of nomophobia and sub-factors of nomophobia. The assumptions were first checked to perform multiple regression; the data had a normal and homogeneous distribution. In addition, it was determined that a low-level correlation was found between the independent variables. Field (2009) indicates that correlation values between 0.80-0.90 are high. None of the variables' correlation values in the study are in this range. Examining the correlation between independent variables is one of many ways (Can, 2018). Tolerance (1/VIF) and VIF values are essential to determining multiple correlations. It is known that there is no numerous correlations when the VIF value is smaller than ten, and the tolerance value is larger than 0.2. Our VIF and tolerance values are in the specified range. In addition, autocorrelation values are an appropriate value range in all regression models (Durbin-Watson=1700). After normality and regression analysis assumptions were verified, a multiple regression analysis was conducted using the "enter" method.

FINDINGS

WHAT ARE THE LEVELS OF NOMOPHOBIA AND THE BIG FIVE PERSONALITY TRAITS AMONG UNIVERSITY STUDENTS?

When university students' levels of nomophobia and Big Five personality traits are analyzed, they are not so high (M=3.09, SD=.764). They are most afraid of being unable to access information (M=3.34, SD=.982) and least afraid of losing connectedness (M=2.63, SD=.927). Detailed information regarding the level of nomophobia and the Big Five personality traits of university students is presented in Table 2.

Table 2. *Level of Nomophobia and Big Five Personality Traits of University Students*

	Mean	*SD*
Level of nomophobia	3.09	.764
Losing connectedness	2.63	.927
Not being able to communicate	3.33	.994
Giving up convenience	3.07	.859
Not being able to access information	3.34	.982
Personality traits		
Openness	3.58	.638
Conscientiousness	3.42	.685
Extraversion	3.05	.627
Agreeableness	3.67	.609
Neuroticism	3.08	.727

IS THERE A SIGNIFICANT CORRELATION BETWEEN NOMOPHOBIA AND THE BIG FIVE PERSONALITY TRAITS IN UNIVERSITY STUDENTS?

This study examines the correlation between nomophobia and university students' Big Five personality traits. The results show low levels and significant positive correlations between some variables (p<.05). Detailed information about the correlations is presented in Table 3.

According to Table 3, there is a statistically significant relationship between "Openness", "Extraversion", "Neuroticism", and "Nomophobia" (p<.01). While there is a weak-positive correlation between “Losing connectedness” and Neuroticism, there is a weak-negative correlation between “Losing connectedness” and Agreeableness. In addition, it is seen that “Not being able to communicate” has a weak-positive relationship with Openness, Extraversion, Agreeableness, and Neuroticism traits. Furthermore, there is a weak positive correlation between “Giving up convenience”, Openness and Neuroticism. Lastly, it is determined that “Not being able to access information” has a weak-positive relationship with Openness and Extraversion (p<.01).

Table 3. *Correlation Between the Level of Nomophobia and Big Five Personality Traits of University Students*

	Openness	*Conscientiousness*	*Extraversion*	*Agreeableness*	*Neuroticism*
Nomophobia	**.132****	-.013	**.122****	-.064	**.135****
Losing connectedness	.013	-.089	.074	**-.251****	**.156****
Not being able to communicate	**.149****	.053	**.129****	**.092****	**.145****
Giving up convenience	**.115***	-.011	.086	-.075	**.128****
Not being able to access information	**.146****	-.017	**.098***	-.009	-.022

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

**. Correlation is significant at the 0.05 level (2-tailed).*

DO UNIVERSITY STUDENTS' BIG FIVE PERSONALITY TRAITS PREDICT THEIR LEVEL OF NOMOPHOBIA, FEAR OF LOSS OF CONNECTEDNESS, INABILITY TO COMMUNICATE, LOSS OF COMFORT, AND INABILITY TO ACCESS INFORMATION?

In this study, multiple regression analysis is conducted to reveal whether university students' big five personality traits predict their level of nomophobia. Firstly, a model has been developed to explain university students’ nomophobia. Due to the significant correlation between “Openness”, “Extraversion”, “Neuroticism”, and “Nomophobia”, only these variables have been included in the model. According to the findings, the developed model is found to be significant ($F_{(3,480)}$=10.258, p<.05, R^2=.054) and related information regarding the model is shown in Table 4.

Table 4. *Model for Prediction of University Students’ Nomophobia by Personality Traits*

Model	*B*	*t*	*p*	*F*	*p*	*Adjusted R Square*
(Constant)	1.384	4.444	.000	10.258	.000	.054
Openness	.167	2.990	.003			
Extraversion	.158	2.783	.006			
Neuroticism	.204	4.210	.000			

According to findings in Table 4, the model for nomophobia is established as stated below:

Nomophobia = 1.384 **+** ((.16 * Openness) + (.15 * Extraversion) + (.20* Neuroticism))

As a result, university students’ nomophobia has been predicted by openness, extraversion and neuroticism. This model explains 5% of their nomophobia.

Secondly, a model was developed to explain students' fear of losing connectedness through multiple regression analysis. Due to the significant correlation between “Agreeableness”, “Neuroticism”, and “Losing connectedness”, only these variables have been included in the model. According to the findings, the developed model is found to be significant ($F_{(2,481)}$=20.917, p<.05, R^2=.076) and related information regarding the model is shown in Table 5.

Table 5. *Model for Prediction of University Students' Fear of Losing Connectedness by Personality Traits*

Model	*B*	*t*	*p*	*F*	*p*	*Adjusted R Square*
(Constant)	3.439	10.835	.000			
Neuroticism	.167	2.981	.003	20.917	.000	.076
Agreeableness	-.361	-5.396	.000			

According to the findings in Table 5, the model for losing connectedness is established as stated below:

Fear of losing connectedness= 3.439 + ((.16 * Neuroticism) + (-.36 * Agreeableness))

As a result, university students' fear of losing connectedness has been predicted by neuroticism and agreeableness. This model explains 8% of their fear of losing connectedness.

Thirdly, a model was developed to explain students' fear of being unable to communicate through multiple regression analysis. Due to the significant correlation between "Openness", "Extraversion", "Agreeableness", "Neuroticism", and "Not being able to communicate", only these variables have been included in the model. According to the findings, the developed model is found to be significant ($F_{(4,479)}$=9.514, p<.05, R^2=.066) and related information regarding the model is shown in Table 6.

Table 6. *Model for Prediction of University Students' Fear of Not Being Able to Communicate by Personality Traits*

Model	*B*	*t*	*p*	*F*	*p*	*Adjusted R Square*
(Constant)	.714	1.602	.110			
Neuroticism	.289	4.617	.000			
Agreeableness	.078	1.003	.316	9.514	.000	.066
Openness	.219	2.826	.005			
Extraversion	.216	2.930	.004			

According to the findings in Table 6, the constant term was zero since the coefficient of the fixed variable is not significant. In addition, the coefficient of agreeableness is set to zero since its coefficient is insignificant. The model for not being able to communicate is established as stated below:

Fear of not being able to communicate = ((.29 * Neuroticism) + (.22 * Openness) + (.22 * Extraversion))

As a result, university students' fear of being unable to communicate has been predicted by neuroticism, openness and extraversion. This model explains 7% of their fear of being unable to communicate.

Fourthly, a model was developed to explain students' fear of giving up convenience through multiple regression analysis. Due to the significant correlation between "Openness", "Neuroticism", and "Giving up convenience", only these variables have been included in the model. According to the findings, the developed model is found to be significant ($F_{(2,481)}$=9.440, p<.05, R^2=.034) and related information regarding the model is shown in Table 7.

Table 7. *Model for Prediction of University Students' Fear of Giving Up Convenience by Personality Traits*

Model	*B*	*t*	*p*	*F*	*p*	*Adjusted R Square*
(Constant)	1.764	5.766	.000			
Neuroticism	.189	3.500	.001	9.440	.000	.034
Openness	.201	3.261	.001			

According to findings in Table 7, the model for giving up convenience is established as stated below:

Fear of giving up convenience = 1.764 + ((.19 * Neuroticism) + (.20 * Openness))

As a result, university students' fear of giving up convenience has been predicted by neuroticism and openness. This model explains 3% of their fear of giving up convenience.

Finally, a model was developed to explain students' fear of being unable to access information through multiple regression analysis. Due to the significant correlation between "Openness", "Extraversion", and "Not being able to access information", only these variables have been included in the model. According to the findings, the developed model is found to be significant ($F_{(2,481)}$=6.179, p<.05, R^2=.021) and related information regarding the model is shown in Table 8.

Table 8. *Model for Prediction of University Students' Fear of Not Being Able to access information by Personality Traits*

Model	*B*	*t*	*p*	*F*	*p*	*Adjusted R Square*
(Constant)	2.322	7.838	.000	6.179	.002	.021
Openness	.198	2.758	.006			
Extraversion	.101	1.377	.169			

According to the findings in Table 8, the coefficient of extraversion is set as zero since its coefficient is insignificant. The model for not being able to access information is established as stated below:

Fear of not being able to access information = 2.322+ (.20 * Openness)

As a result, university students' fear of not being able to access information has been predicted by openness. This model explains 2% of their fear of giving up convenience.

DISCUSSION

This study examined the correlation between nomophobia and "Big Five Personality Traits" and focused on determining the personality traits that predict this correlation. The study results showed that students used their phones frequently during the day and most prioritized their phones in their lives. This finding is similar to the results of studies on the subject in the literature (Al-Mamun et al., 2023; Kanwal, 2023). However, although university students were moderately nomophobic, it was observed that most of them were afraid of losing connection and not being able to access information. As a matter of fact, the internet is important in their daily lives in a wide range of areas from education to entertainment due to their ability to easily connect to the internet through their smartphones (Lee et al., 2018). Eventually, it can be said that smartphones have an important place in the lives of university students. Indeed, excessive use of smartphones leads to nomophobia and may cause an increase in fear and anxiety (Apak & Yaman, 2019). This situation may have increased the predisposition of university students to nomophobia.

It was determined that there were significant relationships between personality traits and nomophobia levels of university students in this study. It was found that there was a significant predictive positive correlation between the personality traits of neuroticism and nomophobia. This finding is consistent with the results of the related studies in the literature (Amiri & Taghinejad, 2022; García-Masip et al., 2023; Kanwal et al., 2023; Kaplan Serin & Derya Ister, 2022; Mehmood et al., 2021; Sun et al., 2024; Uguz & Bacaksiz, 2022). Students can easily connect to the Internet through smartphones and benefit from virtual communication opportunities. As a matter of fact, although high level of neuroticism is an indicator of low level of emotional stability, it can be said that neurotic individuals are more prone to virtual communication such as social media rather than traditional communication (Hawi & Samaha, 2019). Another explanation for this finding is the neurotic individuals' behaviour of avoiding reality and sadness by being addicted to smarthone addiction (Deleuze et al., 2019). In this direction, it can be said that spending too much time with the smartphone leads to

nomophobia as an inevitable end (Kaviani et al., 2020). Therefore, according to this study, it can be said that neurotic individuals tend to have nomophobia.

If the results are explained in more detail, it is found that there is a significant positive correlation between university students' openness personality trait and nomophobia levels. This finding is in parallel with the findings of the studies on the subject in the literature (Gunay Molu et al., 2023; Oz & Tortop, 2018). This result can be explained by the fact that individuals with openness have a high tendency to use new technological developments and communicate more. Moreover, this finding can also be clarified considering that individuals with openness personal trait are more prone to adapt and tolerate new things (Amiri & Taghinejad, 2022). However, results contrary to this finding were also found in the literature. For example; Uguz and Bacaksiz (2022) did not find a relationship between openness personality trait and nomophobia. Accordingly, it can be said that it would be appropriate to conduct more studies on the subject in the future.

As a result of the research, a positive relationship was found between nomophobia and extraversion personal trait. This finding is in line with the literature (Argumosa-Villar et al., 2017). This result can be explained by extraverted individuals facilitating smartphone communication and socialization, even in the virtual environment. Indeed, Zhu et al., 2013, found that there is a positive relationship between extraversion personal trait and social network size of individuals. Accordingly, the possibility of having too many friends in the virtual environment through social networks may trigger smartphone addiction in extroverted students or their fear of losing or failing to connect (Çelik İnce, 2021). Moreover, social people try to build more relationships with people and therefore resort more to mobile devices. As a result, in line with the findings of this study, extroverts tend to be nomophobic.

It was also observed that there was no significant correlation between conscientious traits and nomophobia. This finding is consistent with the findings of Kaplan Serin and Derya Ister (2022) and Yoğurtçu (2018). Contrary to this finding, there are also studies in the literature that have obtained results indicating that there is a negative or positive relationship between nomophobia and conscientiousness (Amiri & Taghinejad, 2022; García-Masip et al., 2023; Uguz & Bacaksiz, 2022). Lastly, it was found that the trait of agreeableness was not significantly correlated with nomophobia as a result of the study, consistent with the results of studies in the literature (Kanwal et al., 2023; Kaplan Serin & Derya Ister, 2022; Yoğurtçu, 2018).

Consequently, the study results showed low but significant relationships between the students' specific personality traits and their nomophobia levels. Accordingly, students who are extroverted, open and neurotic tend to have nomophobia. In contrast, agreeableness and conscientiousness were not significantly associated with nomophobia.

LIMITATIONS

The study is limited to data collected from students who are easily accessible to researchers. Therefore, the inability to create a sample representing the country is a study limitation. In addition, the need for advanced analyses such as SEM can be considered a limitation due to the inability to provide goodness of fit.

SUGGESTIONS

Based on the research results, some suggestions were made within the framework of the study. The study showed that university students with open, extraverted and neurotic traits tend to be nomophobic. Therefore, these students can be identified, and individuals with these characteristics can be trained to be aware of nomophobia. Today, smartphones are widely used and forbidding them to avoid their adverse effects is impossible. The educational use of smartphones has come to the forefront since the COVID-19 pandemic, which has made online education an obligation or a necessity. In addition, smart phones have become one of the most important technological tools that students

are using to access information. Therefore, it is essential to raise awareness among students, academics, and university administrators that students' personality traits are effective in using smartphones and developing negative situations such as nomophobia. In addition, students can avoid the adverse effects of nomophobia by organizing information sessions on it and raising students' awareness of the issue in classes. The cultural characteristics of the sample group may have caused this difference. Nevertheless, it can be argued that the correlation between the conscientious trait and nomophobia must be examined in future studies to obtain consistent results. Finally, a similar analysis can be repeated using a stratified sampling method to represent all regions of the country.

AUTHOR CONTRIBUTIONS

The authors contributed to all sections of the manuscript together. Dr. Zeynep TURAN contributed mainly to the introduction and discussion sections, while Dr. Rabia Meryem YILMAZ prepared the method and findings sections.

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