Gitikhmayeva L, Mambetalina A, Karibayeva G, Sultaniyazova N, Mandykayeva A. Personality predictors of nomophobia among youth. *Health Psychology Research.* 2025;13(2):e81240009.
https://doi.org/10.14440/hpr.2590262

Research Article

Personality Predictors of Nomophobia among Youth

Lyudmila Gitikhmayeva[1], Aliya Mambetalina[1], Gulnaz Karibayeva[1], Nassiya Sultaniyazova[2], Almagul Mandykayeva[1]*

[1]Department of Psychology, Faculty of Journalism and Social Sciences, L.N. Gumilyov Eurasian National University, Astana 010000, Kazakhstan

[2]Department of Pedagogy and Psychology, Institute of Education and Management, West Kazakhstan Innovation and Technological University, Uralsk, West Kazakhstan 090000, Kazakhstan

Keywords: Big five, Digitalization, Gadgets, Nomophobia, Personality traits

Health Psychology Research

Vol. 13, 2025

Background

Nomophobia, the fear of being without a mobile device, is becoming an increasing problem among youth.

Objective

This study aims to examine the relationship between nomophobia and personality traits and to explore their connection to anxiety levels.

Methods

This study involved 200 university students from Kazakhstan. The participants were divided into an experimental group (EG) and a control group (CG), each consisting of 100 individuals. Of the 200 participants, 48% were male and 52% were female, with an average age of 21 years. The methods used included observation and questionnaires: The no-mobile-phone phobia questionnaire to assess nomophobia, the Big Five Inventory to evaluate personality traits, and correlation analysis to explore the relationship between anxiety and nomophobia.

Results

The study revealed significant differences in levels of nomophobia and personality traits between the EG and CG. Results showed that participants in the EG exhibited significantly higher levels of nomophobia than those in the CG (overall score for EG: 31.5, CG: 17.8; $p<0.01$). Furthermore, participants in the EG scored lower on extraversion, agreeableness, and conscientiousness scales but higher on neuroticism, indicating a tendency toward anxiety.

Conclusion

The significance of this study lies in its potential to assist psychologists, educators, and student support specialists in developing intervention programs aimed at reducing anxiety and mobile device dependency. Such programs could contribute to improving adolescents' mental health through offering strategies and resources to manage their relationship with technology.

1. INTRODUCTION

The recent integration of information and communication technologies into education has transformed the process of teaching and learning.[1,2] The widespread adoption of the technologies has led to social, political, and financial changes. Technological advancements have made our lives more comfortable while also giving rise to certain dependencies.[3]

Nomophobia (short for no-mobile-phone phobia) is an irrational, intense fear or anxiety that occurs when there is no access to a mobile phone, disconnected from the mobile network, or inability to charge the device or communicate through it.[4] This can happen if the phone is dead, there is no network coverage, or it has been left at home. A person may

***Corresponding author:**
Almagul Mandykayeva
Department of Psychology, Faculty of Journalism and Social Sciences, L.N. Gumilyov Eurasian National University, Astana, Kazakhstan
Email: mandykayeva_ar@enu.kz

experience panic, anxiety, irritability, and even difficulty concentrating due to the absence of a phone. The term was first introduced in 2008 and is considered a contemporary form of phobia.[5] The prevalence of problematic smartphone use (PSU) has increased over the years.[6] A study conducted by Turkish researchers found that 8.5% of young people suffer from severe nomophobia, 71.5% have moderate nomophobia, and 20.0% experience mild nomophobia.[7] Likewise, a literature review identified the presence of nomophobia in 15.2 – 99.7% of participants.[5] Research has shown that excessive smartphone use exacerbates psychological, emotional, social, and physical effects. From a clinical psychology perspective, nomophobia is consistently associated with depression and anxiety.[8]

Nomophobia occurs when a person experiences anxiety due to the fear of being without access to their mobile phone.[9] The "hyperconnectivity syndrome" arises when a person's social and family interactions are significantly disrupted due to reduced face-to-face interaction caused by mobile phone use. Excessive smartphone use can heighten anxiety and depression due to the pressure of constant connectivity to social networks. It can also deprive individuals of privacy and eliminate opportunities for daily stress relief, which is considered a key component of well-being.[9]

Research worldwide indicates that nomophobia can both be a symptom and a cause of broader psychological and social issues. For example, studies have shown that attachment to digital devices can contribute to social anxiety, reinforce avoidance behaviors, and interfere with meaningful interpersonal communication.[10,11] Furthermore, dependence on mobile devices is often linked to poor sleep quality, difficulties with concentration, and increased levels of anxiety and stress.[12,13] The easy access to smartphones among young people leads to emotional and behavioral dependencies that negatively impact physical and mental health. This dependency has long-term consequences. Excessive use of mobile devices can hinder the development of social skills and cause anxiety in children when they are unable to use their phones.

Personality traits, such as neuroticism, extraversion, and conscientiousness, can influence the level of nomophobia through several mechanisms. Extraversion is the tendency to be sociable, active and seek stimulation through interactions with others. Friendliness is characterized by trust, compassion, and a desire to maintain harmonious relationships. Conscientiousness means responsibility, organization, and self-discipline. Neuroticism is emotional instability, increased anxiety, and a tendency toward negative emotions. Openness to experience means curiosity, creativity, and willingness to accept new ideas and experiences. In the context of nomophobia, a high level of neuroticism may contribute to a greater fear of being without a phone. Neurotic individuals tend to experience increased emotional instability and anxiety, which can lead to a constant fear of losing contact or not having access to information, triggering panic in the absence of a smartphone. Their heightened sensitivity to negative emotions makes them more vulnerable to the stress of not having access to technology.

Extroverts, on the other hand, may experience nomophobia due to their need to maintain constant communication and social connections. For them, the absence of a phone can signify isolation and the loss of social support, as they actively use smartphones to communicate. Conscientiousness may exert a dual effect: people with high levels of this trait may try to control their smartphone use to avoid distractions, whereas being overly organized can lead to anxiety when technical issues prevent access to information or interfere with planned tasks. These personality traits interact to determine individual levels of anxiety and dependence on mobile technologies, contributing to the manifestation of nomophobia.

Current research has identified several psychological predictors of nomophobia. Scholars suggest that individuals with high levels of neuroticism or introversion are more likely to use their phones as a way of coping with stress or discomfort.[14,15] Furthermore, people may use smartphones as a shield against negative emotions and anxiety, compensating for low self-esteem and lack of social connections while simultaneously managing their growing dependence on the device.[16] These findings indicate that nomophobia is a widespread global phenomenon and highlight its impact on the well-being of young people, making it a significant public health concern.

Despite the growing body of research on nomophobia, gaps remain, particularly regarding the personality predictors of nomophobia in different cultural contexts. Most studies focused on broader trends or various behavioral aspects do not examine how cultural and social factors influence nomophobic tendencies. This article addresses this gap by investigating the personality predictors of nomophobia among youth in Kazakhstan, a country undergoing rapid digitalization processes. It introduces an approach that analyzes the personality predictors of nomophobia among Kazakhstani students, a relatively underexplored area compared to other symptoms. The research provides an overview of the factors that may drive nomophobia among young people in Kazakhstan. This is particularly significant given the rapid technological adoption in the region, which is creating new dynamics for youth with potentially long-term consequences.

The findings of this study have practical implications for the development of targeted intervention strategies. By identifying specific psychological predictors of nomophobia, this research can assist educational institutions, mental health professionals, and policymakers in designing preventive programs aimed at reducing the prevalence of youth violence. These conclusions contribute to the global discourse on nomophobia, offering new perspectives from Kazakhstan and enriching international understanding of how nomophobia manifests and affects youth in various cultural contexts.

1.1. LITERATURE REVIEW

In recent years, interest in nomophobia has significantly increased, with active discussions, including international literature, surrounding its causes, consequences, and risk factors. It is widely recognized that nomophobia is not merely a phenomenon of digital addiction but a complex condition arising from the interaction of psychological, social, and cultural factors. Research has confirmed that nomophobia is particularly prevalent among young people whose lives and educational activities are closely linked to the use of digital devices.[17] Experts in mental health estimate that approximately 7 – 10% of people worldwide could be diagnosed with internet addiction, 40% are susceptible to this disorder, 25% of young people experience symptoms of nomophobia, and 40% are at risk.

Mobile phones enable us to stay connected with others and feel secure.[16] However, excessive use of smartphones presents an increasing threat to social, mental, and physical health.[5,18] Individuals who experience a significant loss of

control over their smartphone use may suffer from "technostress," "anxious anxiety," phantom vibration syndrome, nomophobia, and other related issues.[4,18] A study conducted in India found that the majority of participants aged 16 – 23 reported feelings of isolation, loneliness, and disconnection when they were not using their smartphones.[11]

Psychological and behavioral factors are often considered key contributors to the development of nomophobia. A study conducted in Turkey revealed significant differences in nomophobia levels among students based on gender, duration of use, and frequency of checking their smartphones. However, no differences were found in the overall duration of device use.[15] In addition, social media addiction was a significant factor influencing the level of nomophobia. In contrast, gaming addiction, interference with daily life, social relationships, and life satisfaction did not significantly affect the level of nomophobia.[14,15] Nomophobia negatively impacts an individual's self-worth, anxiety, stress, academic performance, and other aspects of physical and mental health.[19] As a result, individuals suffering from nomophobia experience health issues related to physical, behavioral, and psychological changes.

Although a consensus has been reached regarding certain psychological factors, significant theoretical and methodological contradictions remain. For example, some studies highlight gender differences in nomophobia, suggesting that women are more likely than men to become dependent on mobile devices. In contrast, other studies dispute these findings, claiming that there are few or no differences at all.[3,15,20] These discrepancies can be partially explained by methodological variations. Some studies are based on samples of high school students, while others encompass a broader age range and include participants with different levels of digital literacy and social status. These factors complicate the identification of trends and emphasize the need for better sampling management in future research.

Prolonged use of smartphones is associated with increased technostress.[21] However, the types of content consumed on smartphones vary, and little is known about which types of content used are most strongly related to technostress. A Chinese study found that the use of games, as well as websites and social networks, was positively associated with technostress.[21] However, Turkish researchers suggest that smartphone use for educational and recreational purposes does not contribute to the emergence of technostress.[8]

Research has shown that the risks associated with nomophobia include decreased productivity,[22,23] poor sleep quality,[12] and social isolation.[10,13] Sleep disturbances are a common issue among Peruvian students and are associated with symptoms of anxiety, depression, or nomophobia.[12] Studies conducted by Kazakh researchers confirm the view that nomophobia is linked to lower academic performance.[24] The detrimental effect of nomophobia on school performance is related to anxiety rather than depression. Similarly, other researchers argue that lower nomophobia in college students is associated with higher academic performance, as expressed in the grade point average for the academic year.[25] However, some researchers have reported that students with the highest grade point average had the highest levels of nomophobia.[20]

Despite extensive research on nomophobia across different cultures and social groups, some aspects remain unexplored. Therefore, studies investigating personality-specific predictors of nomophobia within the context of cultural and social differences are limited. Several studies have examined nomophobia in post-Soviet countries, including Kazakhstan, where the processes of digitalization are rapidly advancing, and digital addiction may have its specific characteristics. Consequently, the lack of empirical data on nomophobia in these regions needs to be addressed, particularly considering these areas' cultural, social, and economic characteristics.

1.2. PROBLEM STATEMENT

This study is driven by the rapid increase in nomophobia among young people due to the widespread adoption of smartphones and digital technologies. This research aims to analyze the relationship between personality determinants and the degree of nomophobia in young people, as well as to examine the influence of anxiety on the tendency toward nomophobia. The hypothesis is that a high level of anxiety will lead to an exacerbation of nomophobia symptoms. The research objectives are:

(i) To assess the level of nomophobia among young people in Kazakhstan
(ii) To analyze the personality traits of participants to identify those that may serve as predictors of nomophobia
(iii) To analyze the relationship between anxiety and nomophobia.

2. METHODS

2.1. STUDY DESIGN

A quantitative analysis of the relationship between personality traits and the level of nomophobia was chosen for this study. A cross-sectional approach in the form of a questionnaire was employed to obtain information on the current level of nomophobia among participants. The use of this cross-sectional method allowed for an immediate response regarding the status of nomophobia among participants, facilitating the identification of existing relationships and the dependence of nomophobia on personality traits. The primary data collection method was surveying, where participants completed two standard questionnaires: The Nomophobia Questionnaire Scale (NMP-Q)[26] and the Big Five Inventory (BFI).[27]

In addition, this study employed methods of observation, analysis, and experimentation. Observation methods were used to study participants' behavior in real-life situations with mobile devices, allowing for the examination of nomophobia manifestations in daily life. Descriptive analysis was conducted to identify correlates and correlations between anxiety characteristics and nomophobia levels. The experimentation method involved unrestricted use of mobile devices by the experimental group (EG) and limited use by the control group (CG) to observe changes in stress and anxiety levels and determine the influence of personality traits on these changes.

2.2. PARTICIPANTS

The sample consisted of students from the following Kazakhstani universities: Miras University, Kazakhstan Institute of International Business, and L.N. Gumilyov Eurasian National University. A total of 200 participants were included in the study (48% male and 52% female), selected based on their regular use of smartphones. Before

being included in the sample, participants were asked to respond to a series of questions regarding the frequency and purpose of their smartphone use. For example, they were asked how many hours per day they use their smartphones, which apps they use most frequently, and for what purposes (education, social life, or entertainment) they use their smartphones. The participants' ages ranged from 18 to 25 years. The sample was purposefully composed of students, as young people are most commonly affected by nomophobia. The average age of the respondents was 21.3 years. Exclusion criteria included not using a smartphone for a full day (or only using it for 1 – 2 h per day) and being older than 25 years. The sample was recruited through advertisements in the corresponding universities and their social media channels. The sample was selected randomly from the universities to ensure the relevance and generalizability of the results. Table 1 presents the detailed indicators of the participants.

2.3. PROCEDURE

The experiment lasted for 2 months, March – April 2024, and aimed at studying the impact of gadget use on the level of nomophobia among students. All participants were enrolled in a distance learning format, where the use of smartphones and other gadgets is an integral part of the educational process (Appendix 1). Participants were divided into two groups: a CG and an EG, with 100 participants in each.

The students in the CG used gadgets solely for accessing educational materials and completing assignments in the traditional format, limiting their use to academic tasks. During the training sessions, they were not granted additional access to social media or instant messaging. This restriction was introduced to reduce distractions and minimize non-academic use of devices. The CG students used Google Classroom and Zoom. Google Classroom was employed to manage the learning process, with teachers uploading educational materials, assignments, and tests. Students could easily track their progress and complete assignments. Google Classroom also facilitated messaging between students and instructors, promoting active interaction. Zoom was used for synchronous sessions, including lectures, practical classes, and group discussions, which took place in real time on the platform, allowing students to participate and ask questions actively.

The participants in the EG used their gadgets more intensively. In addition to academic assignments, they freely interacted with educational materials through social media and used their devices for communication with classmates and messaging. The education for this group was also conducted through Google Classroom and the Zoom platform. However, lecture materials, assignments, and tests were transmitted through mobile devices, and students frequently completed assignments in real time, leading to increased regular device usage. In addition, these students used WhatsApp to create group chats to discuss educational materials, ask questions, and share information. Telegram was also used for messaging and distributing educational resources: instructors sent resources and links to additional assignments through channels and groups. Furthermore, some educators used Instagram to create content aimed at engaging students with the course. This group's average device usage intensity was 4 – 5 h per day as part of the educational process. The device usage intensity was significantly higher in the EG, which helped assess the potential impact of frequent device use on the development of nomophobia. Gadgets became an important tool for educational purposes, facilitating access to information on the one hand while also increasing students' attachment to their devices on the other.

Both student groups participated in synchronous and asynchronous learning. Synchronous learning took the form of video lectures and webinars, in which students participated using their mobile devices. Asynchronous activities included completing homework assignments, engaging in forum discussions, and listening to recorded lectures. Students were required to provide daily reports on stress and anxiety levels and the frequency of device usage, to track behavioral dynamics and changes in opinions. Before and after the experiment, all students filled out questionnaires to assess the level of nomophobia using the NMP-Q.[26] They were also tested weekly to track changes in their device dependency levels. The CG was assessed using the same parameters as the EG but with more limited device usage. Thus, our experiments allowed us to model two distinct behavioral patterns, enabling us to evaluate the role of devices in the development of nomophobia and identify individual predictors of increased mobile device dependency.

2.4. RESEARCH TOOLS

To measure the degree of nomophobia, the NMP-Q was used, consisting of 20 questions that assess four aspects of nomophobia: lack of communication, absence of immediate access to information, loss of communication lines, and the negative

Table 1. Detailed description of the participants

Indicator	Overall value	Mira University	Kazakhstan Institute of International Business	L.N. Gumilyov Eurasian National University
Number of participants	200	70	65	65
Gender (men/women)	96/104	34/36	30/35	32/33
Age range			18 – 25 years old	
Average age (years)	21.3	21.1	21.5	21.4
Frequency of smartphone usage (hours/day)				
1 – 3 h	22	8	6	8
4 – 6 h	78	26	26	26
7+ h	100	36	33	31
Primary purposes of smartphone usage				
Education	150	52	48	50
Social life	170	60	55	55
Entertainment	130	48	42	40

impact on daily life.[27] The scale was translated into Russian and adapted for use in Kazakhstan. The personality traits of the participants were assessed using the BFI, which consists of 44 statements evaluating five core personality traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience.[27] All of these questionnaires were administered through the Google Classroom platform. One hour was allocated to complete each questionnaire.

To ensure the reliability of the NMP-Q, an internal consistency test was conducted using Cronbach's alpha coefficient. The results indicated high reliability, with an alpha coefficient of 0.87, indicating good internal consistency. Similarly, the validity of the BFI was assessed using Cronbach's alpha coefficient, yielding a coefficient of 0.85, which also indicates high reliability.

2.5. STATISTICAL DATA ANALYSIS

The statistical data analysis was conducted using the Statistical Package for the Social Sciences (version 26; IBM, USA), ensuring the reliability and accuracy of the results. Descriptive statistical methods were used for the initial processing and summarization of the data. Student's *t*-test was used to compare the statistics between the two groups. To determine statistically significant relationships between the level of nomophobia and personality traits, correlation analysis (Pearson's method) was employed. To assess the significance of the obtained correlation model, *p*-values (significance levels) and 95% confidence interval for coefficients (unpublished data) were calculated, confirming the statistical significance of the identified relationships. The significance level was set at $p<0.05$, which is the widely accepted standard for demonstrating significant relationships in social sciences.

Potential variables that could have influenced the outcomes include the participants' stress levels, their social activity, access to alternative communication channels, and cultural nuances in the perception of technology. To control for these variables, all participants underwent preliminary screening regarding the frequency of smartphone usage and their primary purposes for employing the device. In addition, identical conditions were maintained for the survey administered through Google Classroom, thereby minimizing the influence of external factors. Moreover, the age range of participants was restricted to 18 – 25 years to avoid age-related differences in mobile device usage. Gender differences were analyzed separately to assess the potential impact of the gender factor. The use of standardized questionnaires with high-reliability indices (Cronbach's alpha > 0.85) further helped to mitigate the influence of extraneous variables on the study outcomes.

2.6. ETHICAL ISSUES

The study was conducted in compliance with all ethical standards. Before the survey, all participants were informed about the purpose of the research, and they provided their consent to participate. Participants were informed of their right to withdraw from the study at any time. All data were anonymized, ensuring the confidentiality of the participants.

2.7. RESEARCH LIMITATIONS

The methodological limitations of the study include the survey format, which may influence the quality of the participants' responses. In addition, the use of self-assessment methods (questionnaires) may lead to subjective bias, as responses could be influenced by the participant's mood and social preferences. The sample was limited to adolescents, which restricts the generalizability of the findings to other age groups. However, the sample is relevant, as young people are at a higher risk of developing nomophobia and constitute the primary target group of the study.

3. RESULTS

3.1. THE LEVEL OF NOMOPHOBIA

The level of nomophobia was assessed using the NMP-Q. Table 2 illustrates the differences between the EG and CG across four key aspects of nomophobia: lack of connection, inability to access information, loss of communication access, and the negative impact on daily life.

The average score for the "absence of connection" measure in the EG was 8.5, whereas in the CG, it was only 5.0. Scores in this category indicate significant anxiety among EG participants, particularly in relation to the loss of communication access. The anxiety level regarding the inability to access information was also higher in the EG (mean score = 7.2) than in the CG (mean score = 4.3). This result suggests that EG students placed greater importance on access to information, as they are more dependent on their devices. The EG scored an average of 6.8 on the "loss of communication access" measure, whereas the CG averaged 3.7. This again highlights a key difference: EG participants are more dependent on communication through their devices and are more vulnerable to anxiety related to the lack of communication access. The average score for the "negative impact on daily life" measure in the EG was 9.0, whereas in the CG, it was 4.8. This indicates a clear sign of nomophobia in the EG, where device usage significantly impacts participants' daily lives and other aspects of their routines.

The overall score for the EG was 31.5, whereas the CG scored 17.8. The differences in the overall level of nomophobia between the groups were clear and significant, as evidenced by low *p*-values (<0.01), indicating significant differences between the groups. The standard deviation for the EG was 4.2, slightly higher than that for the CG (mean score = 3.1). The EG exhibited a greater spread

Table 2. Level of nomophobia according to the Nomophobia Scale

Group	Absence of connection	Inability to access information	Loss of communication access	Negative impact on daily life	Overall score	Standard deviation	*p*-value
EG	8.5	7.2	6.8	9.0	31.5	4.2	<0.01
CG	5.0	4.3	3.7	4.8	17.8	3.1	<0.01
p-value	<0.01	<0.01	<0.01	<0.01	<0.01		

Abbreviations: CG: Control group; EG: Experimental group.

of data, reflecting varying levels of nomophobia among participants. Low *p*-values (<0.01) for all aspects and the overall score indicate that the differences between the EG and CG are statistically significant. Participants in the EG experienced a higher overall level of nomophobia across all four categories. These results support the hypothesis that device usage in daily life may increase the level of nomophobia and that frequent contact with devices can make users more vulnerable to anxiety on losing or misplacing their devices.

3.2. PERSONALITY TRAITS OF THE PARTICIPANTS

To assess personality traits, the BFI was used, which evaluates five key personality traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. The results presented in Table 3 indicate that participants in the EG exhibited significantly lower levels of extraversion, agreeableness, conscientiousness, and openness to experience, as well as a higher level of neuroticism compared to the CG.

The mean extraversion score for the EG was 25.4, whereas the mean score for the CG was higher at 32.1. This indicates that participants in the EG are less extroverted, less inclined toward social interaction, and more likely to prefer solitude. The difference is statistically significant (p<0.01), confirming that the observed differences in extraversion traits are not random.

In the "agreeableness" category, the EG scored an average of 24.5, whereas the CG scored 30.5, indicating that participants in the EG were less altruistic and cooperative. Moreover, the p<0.01 indicates the statistical significance of the differences between the groups.

The mean conscientiousness score for the EG was 23.7, lower than the CG's mean score of 31.3. This suggests that participants in the EG are less organized and responsible. The differences in conscientiousness are not random (p<0.01).

The EG exhibited a higher level of neuroticism (mean score = 30.0) compared to the CG (mean score = 20.5), indicating greater emotional instability among the EG participants. The low p-value (<0.01) confirms the significance of the difference and highlights the link between a higher level of neuroticism and increased nomophobic tendencies.

The mean openness to experience score for the EG was 27.6, whereas the CG demonstrated a mean score of 34.2. The difference is statistically significant (p<0.01).

Table 3. Assessment of personality traits based on the Big Five Inventory

Personality traits	Group	Mean score	Standard deviation	*p*-value
Extraversion	EG	25.4	5.1	<0.01
	CG	32.1	4.7	
Agreeableness	EG	24.5	4.8	<0.01
	CG	30.5	3.9	
Conscientiousness	EG	23.7	5.2	<0.01
	CG	31.3	4.5	
Neuroticism	EG	30.0	4.0	<0.01
	CG	20.5	4.3	
Openness to experience	EG	27.6	4.9	<0.01
	CG	34.2	3.8	

Abbreviations: CG: Control group; EG: Experimental group.

These results indicate significant differences between the EG and CG across all five personality traits. The EG demonstrated low scores in extraversion, agreeableness, conscientiousness, and openness to experience, suggesting that participants in this group tend to exhibit introverted and emotionally unstable personality traits. At the same time, the high level of neuroticism in the EG indicates that these participants are more prone to anxiety, which amplifies the expression of nomophobia. These differences suggest that certain personality traits, such as high neuroticism and low conscientiousness, may serve as potential predictors of nomophobia.

3.3. THE RELATIONSHIP BETWEEN ANXIETY AND NOMOPHOBIA

The correlation analysis revealed a significant positive relationship between the level of anxiety and the manifestations of nomophobia (r = 0.65, p<0.01). This supports the hypothesis that a higher level of anxiety contributes to an increase in the level of nomophobia. The data presented in Figure 1 demonstrate that the higher the level of anxiety, the more likely a student will experience nomophobia.

The graph illustrates a positive correlation between anxiety and nomophobia, indicating that higher levels of anxiety are associated with higher levels of nomophobia. This suggests that individuals with higher anxiety levels are more likely to experience nomophobia, such as the fear of losing connection or access to mobile devices. This relationship may be attributed to the fact that anxious individuals may rely more on technology to maintain social connections, and their anxiety levels can increase when technology is inaccessible. Therefore, these results emphasize the significance of investigating the relationship between psychological factors and technology dependence, which is valuable for future research in the fields of youth psychology and societal adaptation.

4. DISCUSSION

When comparing the results of this study with previous research on nomophobia and PSU among students, several key aspects emerge that not only confirm preliminary conclusions but also highlight unique contextual characteristics.

First, these results align with the findings of a Spanish study, which found that personality traits such as neuroticism and aggression were associated with higher levels of PSU and accounted for 24% of the variance in PSU scores.[6] These traits, also identified in the participants of

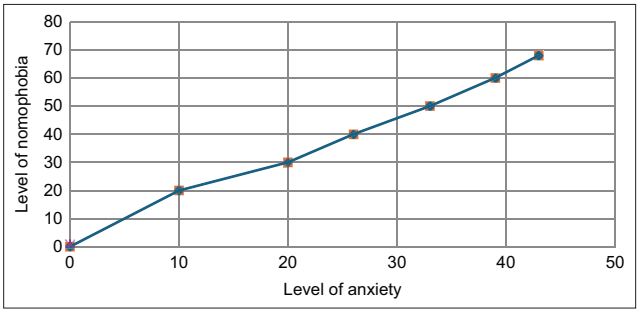

Figure 1. Correlation between the levels of anxiety and nomophobia levels

this study, contribute to the development of smartphone dependence and emphasize the importance of psychological factors in assessing the risk of nomophobia. The EG had higher levels of neuroticism (mean score = 30.0) compared to the CG (mean score = 20.5), indicating greater emotional instability among the EG participants. These results are also consistent with a Turkish study that reported a significant relationship between personality traits and nomophobia.[28]

Second, the results of this study resonate with a study conducted in India, which found that frequent gadget use negatively impacted life satisfaction and self-esteem and was associated with lower mean scores and a higher level of anxiety.[9] In line with these findings, the present research discovered that participants in the EG exhibited significantly higher anxiety levels than those in the CG, particularly anxiety related to lack of communication, which was statistically significant across all four nomophobia dimensions. This conclusion is further supported by research conducted in Kazakhstan, which reported that agoraphobic anxiety significantly worsened students' academic performance.[24] Based on the findings of the Kazakh study, correlation analysis suggests that nomophobia plays a crucial role in the causal relationship leading to reduced academic performance among university students compared to their less anxious peers.[24]

According to the findings of a Turkish study, the level of nomophobia among high school students was slightly above average.[18] In addition, considering the duration of smartphone ownership, it was shown that the risk of nomophobic behavior increases with the length of time a person has been using a smartphone.[28] In the present study, participants in the EG demonstrated generally high levels of nomophobia across all four categories, confirming the widespread nature of nomophobic issues among adolescents, particularly concerning the absence of connections and the negative impact on daily life. Another study yielded similar results, where the prevalence of nomophobia among college students was found to be 99.33%, with the majority exhibiting moderate levels of nomophobia.[4] Likewise, a study conducted in Saudi Arabia revealed that the prevalence of nomophobia was 97.3%, further emphasizing the significance of this issue across various cultures.[20] In contrast, the level of nomophobia in the present study was 62%. However, given the differences in cultural and socioeconomic backgrounds, this can be explained by the more moderate use of technology within the study sample.

Furthermore, studies conducted in Turkey and Saudi Arabia have identified correlations between nomophobia and levels of depression, anxiety, and stress.[3,29] A significant relationship has also been identified between personality traits and nomophobia ($p<0.05$), suggesting that as personality strength increases, the level of nomophobia decreases.[30] These findings complement the conclusion of this experiment, which indicates that anxiety and nomophobia are closely related to excessive smartphone use among college students. Specifically, correlation analysis in the current study revealed a significant positive relationship between anxiety levels and the severity of nomophobia ($r = 0.65$, $p<0.01$), supporting the hypothesis that a higher level of anxiety leads to a higher level of nomophobia. These results are consistent with psychological concepts, such as the theory of behavioral addiction,[31] which explains that nomophobia and PSU are exacerbated by the interaction of personality, external stressors, and excessive emotional attachment to smartphones for stress and anxiety relief. Thus, these findings confirm the high prevalence of nomophobia among students and its impact on psychological well-being.

5. CONCLUSION

This study revealed significant differences in the levels of nomophobia and personality traits between the EG and CG. Participants in the EG demonstrated higher levels of nomophobia across all four dimensions, as well as higher overall nomophobia scores (31.5 in the EG versus 17.8 in the CG), with statistical significance confirmed at a $p<0.01$. These findings indicate that the participants in the EG not only exhibited higher levels of fear related to the absence of communication, lack of access to information, and loss of connectivity but also that nomophobia had a significant impact on their daily lives.

The study also considered the personality traits of participants in both groups. The increased level of neuroticism observed in the EG (mean score = 30.0 compared to 20.5 in the CG) indicates emotional instability, a factor that appears to affect the development of nomophobia. These results suggest that a high level of neuroticism and low conscientiousness serve as predictors of nomophobia.

The findings of this research have practical implications. They can be used to develop prevention and correctional programs aimed at reducing nomophobia, particularly among youth and students. Educational institutions may integrate training modules that promote self-regulation and reduce dependence on mobile devices. In addition, psychologists and counselors can apply these results to design individual and group-based interventions aimed at enhancing emotional resilience, reducing anxiety, and developing healthy digital habits. Furthermore, the data can support the formulation of institutional policies that encourage the responsible use of mobile technologies in educational institutions and work environments.

In the context of higher education, the findings could assist in evaluating and transforming educational institutions, especially those where students exhibit a strong dependence on digital technologies. Future research could also explore the impact of dissatisfaction on academic performance and emotional well-being. In addition, emphasis may be placed on assessing factors such as levels of social support and coping mechanisms, as well as developing more precise measures for assessing and predicting nomophobia based on demographic characteristics. Furthermore, future research could focus on the long-term effects of nomophobia on mental health and social adaptation, as well as the impact of personality traits on the effectiveness of various strategies to overcome mobile technology addiction. A promising area is the development and testing of interventions aimed at reducing nomophobia, particularly among youth and students. Moreover, additional attention should be paid to the role of the social environment, the level of support from family and friends, and cultural differences in the perception of nomophobia. It is also important to enhance assessment methods for nomophobia to gain a better understanding of its prevalence and associated risk factors.

ACKNOWLEDGMENTS

None.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

AUTHOR CONTRIBUTIONS

Conceptualization: Almagul Mandykayeva
Data curation: Lyudmila Gitikhmayeva, Gulnaz Karibayeva
Formal analysis: Aliya Mambetalina, Gulnaz Karibayeva
Investigation: Lyudmila Gitikhmayeva, Aliya Mambetalina
Methodology: Nassiya Sultaniyazova, Almagul Mandykayeva
Resources: Gulnaz Karibayeva
Software: Aliya Mambetalina
Supervision: Almagul Mandykayeva
Writing – original draft: Lyudmila Gitikhmayeva, Aliya Mambetalina, Gulnaz Karibayeva
Writing – review & editing: Almagul Mandykayeva

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was conducted in compliance with all ethical standards. Before the survey, all participants were informed about the purpose of the research and provided their consent to participate. Participants were informed of their right to withdraw from the study at any time. All data were anonymized, ensuring the confidentiality of the participants.

CONSENT FOR PUBLICATION

Not applicable.

DATA AVAILABILITY STATEMENT

All data generated or analyzed during this study are included in this published article.

Submitted: 10 February 2025; Accepted: 06 March 2025;
Published: 25 June 2025

REFERENCES

1. Kapetanaki A, Krouska A, Troussas C, Sgouropoulou C. Exploiting augmented reality technology in special education: A systematic review. *Computers*. 2022;11(10):143. doi: 10.3390/computers11100143

2. Raes A. Exploring student and teacher experiences in hybrid learning environments: Does presence matter? *Postdigital Sci Educ*. 2022;4(1):138-159. doi: 10.1007/s42438-021-00274-0

3. Dalbudak I, Yilmaz T, Yigit S. Nomophobia levels and personalities of university students. *J Educ Learn*. 2020;9(2):166-177. doi: 10.5539/jel.v9n2p166

4. Qutishat M, Lazarus ER, Razmy AM, *et al*. University students' nomophobia prevalence, sociodemographic factors and relationship with academic performance at a University in Oman. *Int J Afr Nurs Sci*. 2020;13:100206. doi: 10.1016/j.ijans.2020.100206

5. Notara V, Vagka E, Gnardellis C, Lagiou A. The emerging phenomenon of nomophobia in young adults: A systematic review study. *Addict Health*. 2021;13(2):120-136. doi: 10.22122/ahj.v13i2.309

6. Urieta P, Sorrel MA, Aluja A, Balada F, Lacomba E, García LF. Exploring the relationship between personality, decision-making styles, and problematic smartphone use. *Curr Psychol*. 2023;42(17):14250-14267. doi: 10.1007/s12144-022-02731-w

7. Gurbuz IB, Ozkan G. What is your level of nomophobia? An investigation of prevalence and level of nomophobia among young people in Turkey. *Community Ment Health J*. 2020;56(5):814-822. doi: 10.1007/s10597-019-00541-2

8. Yılmaz T, Bekaroğlu E. Does interpersonal sensitivity and paranoid ideation predict nomophobia: An analysis with a young adult sample. *Curr Psychol*. 2022;41(2):1026-1032. doi: 10.1007/s12144-021-01501-4

9. Sagar K. Smartphone addiction: Nomophobia. *Asian J Nurs Educ Res*. 2019;9(4):583-587. doi: 10.5958/2349-2996.2019.00128.9

10. Hussien RM. The association between nomophobia and loneliness among the general population in the Kingdom of Saudi Arabia. *Middle East Curr Psychiatry*. 2022;29(1):68. doi: 10.1186/s43045-022-00235-8

11. Yoğurtçu DD. *The Relationship between Five Factor Personality Traits and Nomophobia Levels among University Students*. Yeditepe University; 2018. https://www.academia.edu/37522282/the_relationship_between_five_factor_personality_traits_and_nomophobia_levels_among_university_students [Last accessed on 2025 Jan 15].

12. Copaja-Corzo C, Miranda-Chavez B, Vizcarra-Jiménez D, *et al*. Sleep disorders and their associated factors during the COVID-19 pandemic: Data from Peruvian medical students. *Medicina* (*Kaunas*). 2022;58(10):1325. doi: 10.3390/medicina58101325

13. Sui A, Sui W. Not getting the message: Critiquing current conceptualizations of nomophobia. *Technol Soc*. 2021;67:101719. doi: 10.1016/j.techsoc.2021.101719

14. Al Lily AE. On-the-Go sourcing: Rethinking education and technology. *Interact Learn Environ*. 2020;31(1):142-155. doi: 10.1080/10494820.2020.1764980

15. Çırak M, Tuzgöl Dost M. Nomophobia in university students: The roles of digital addiction, social connectedness, and life satisfaction. *Turk Psychol Couns Guid J*. 2022;12(64):35-52. doi: 10.17066/tpdrd.1095905

16. León-Mejía AC, Gutiérrez-Ortega M, Serrano-Pintado I, González-Cabrera J. A systematic review on nomophobia prevalence: Surfacing results and standard guidelines for future research. *PLoS One*. 2021;16(5):e0250509. doi: 10.1371/journal.pone.0250509

17. Gitikhmayeva LM, Mambetalina AS. Experimental studies of nomophobia (Russia, Ukraine, Belarus). *J Psychol Soc*. 2021;79(4):14-22. doi: 10.26577/JPsS.2021.v79.i4.02

18. Tolan ÖÇ, Karahan S. The relationship between nomophobia and depression, anxiety and stress levels of university students. *Int J Psychol Educ Stud*. 2021;9(1):115-129.

19. Rodríguez-García AM, Moreno-Guerrero AJ, Lopez Belmonte J. Nomophobia: An individual's growing fear of being without a smartphone-A systematic literature review. *Int J Environ Res Public Health*. 2020;17(2):580. doi: 10.3390/ijerph17020580

20. Aldhahir AM, Bintalib HM, Siraj RA, *et al*. Prevalence of nomophobia and its impact on academic performance among respiratory therapy students in Saudi Arabia. *Psychol Res Behav Manag*. 2023;16:877-884. doi: 10.2147/PRBM.S404898

21. Wang Q, Zhong Y, Zhao G, Song R, Zeng C. Relationship among content type of smartphone use, technostress, and sleep difficulty: A study of university students in China. *Educ Inf Technol*. 2023;28(2):1697-1714. doi: 10.1007/s10639-022-11222-1

22. Al-Mamun F, Mamun MA, Prodhan MS, *et al*. Nomophobia among university students: Prevalence, correlates, and the mediating role of smartphone use between Facebook addiction and nomophobia. *Heliyon*. 2023;9(3):e14284. doi: 10.1016/j.heliyon.2023.e14284

23. Torpil B, Pekçetin S. The effectiveness of two different occupational therapy interventions on time management and on perceived occupational performance and satisfaction in university students with severe Nomophobia: A single-blind, randomized controlled trial. *Occup Ther Ment Health*. 2022;38(1):86-102. doi: 10.1080/0164212X.2021.1977758

24. Abukhanova A, Almukhambetova B, Mamekova A, Spatay A, Danikeyeva A. Association between nomophobia and learning performance among undergraduate students: The mediating role of depression and anxiety. *Front Educ*. 2024;9:1365220. doi: 10.3389/feduc.2024.1365220

25. Essel HB, Vlachopoulos D, Tachie-Menson A. The relationship between the nomophobic levels of higher education students in Ghana and academic achievement. *PLoS One*. 2021;16(6):e0252880. doi: 10.1371/journal.pone.0252880

26. Jahrami H, Saif Z, Trabelsi K, Bragazzi NL, Vitiello MV. Internal consistency and structural validity of the nomophobia questionnaire (NMP-Q) and its translations: A systematic review with meta-analysis. *Heliyon*. 2023;9(4):e15464. doi: 10.1016/j.heliyon.2023.e15464

27. Rammstedt B, Roemer L, Lechner CM, *et al*. Adapting the BFI-2 around the world-Coordinated translation and validation in five languages and cultural contexts. *Eur J Psychol Assess*. 2024:1-13. doi: 10.1027/1015-5759/a000844

28. Gezgin DM, Cakir O, Yildirim S. The relationship between levels of nomophobia prevalence and internet addiction among high school students: The factors influencing nomophobia. *Int J Res Educ Sci*. 2018;4(1):215-225. doi: 10.21890/ijres.383153

29. Aldhahir AM, Bintalib HM, Alhotye M, *et al*. Prevalence of nomophobia and its association with academic performance among physiotherapy students in Saudi Arabia: A cross-sectional survey. *J Multidiscip Healthc*. 2023;16:2091-2100. doi: 10.2147/JMDH.S415891

30. Abdallah AK, Al Kaabi AM, Ramadan RS. The critical role of principals in leading effective inclusive schools. In: *Inclusive Phygital Learning Approaches and Strategies for Students with Special Needs*. United States: IGI Global; 2023. p. 256-281. doi: 10.4018/978-1-6684-8504-0.ch012

31. Kulkarni KR, O'Brien M, Gu X. Longing to act: Bayesian inference as a framework for craving in behavioral addiction. *Addict Behav*. 2023;144:107752. doi: 10.1016/j.addbeh.2023.107752

APPENDIX FILE

Appendix 1. Training program

Title: The impact of gadget use on nomophobia levels among students

Objective: To educate students on the effective use of gadgets in the learning process and raise awareness of their impact on emotional well-being.

1. Training topics:
   (i) Understanding nomophobia
      • Definition of nomophobia
      • Causes and consequences of nomophobia
      • Impact on the learning process and daily life.
   (ii) Assessing stress and anxiety levels
      • Methods for tracking emotional well-being
      • Self-help tools and stress management techniques
      • Psychological strategies for coping with nomophobia.
   (iii) Managing gadget use time
      • Developing mindful technology usage habits
      • Strategies for managing screen time
      • Impact of gadget usage duration on nomophobia levels.
   (iv) Technologies to reduce nomophobia
      • Apps for monitoring and controlling smartphone usage
      • Mindfulness techniques and conscious technology use
      • Psychological methods for combating gadget dependency.
   (v) Group discussions: Student experiences with nomophobia
      • Sharing personal experiences with gadget use
      • Collaborative analysis of situations contributing to nomophobia
      • Building peer support for overcoming dependency.
2. Application tools:
   (i) Google Classroom: For course management, assignments, and materials
   (ii) Zoom: For synchronous learning and webinars
   (iii) WhatsApp: For communication and group information sharing
   (iv) Telegram: For distributing educational materials and automating processes
   (v) Instagram: For creating engaging content that involves students in the learning process.
3. Student assignments:
   (i) Conduct research on nomophobia: prepare a report or presentation addressing the causes, consequences, and coping strategies for this dependency.
   (ii) Psychological journal: maintain a journal to track stress and anxiety levels, as well as gadget usage frequency. Analyze the entries weekly and draw conclusions on how gadget use affects emotional well-being.
   (iii) Create an Instagram post sharing one of your study materials or interesting facts about nomophobia: Use relevant hashtags to reach a wider audience, and write a caption for your post.