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Nomophobia Levels of University Students: A Comparative Study

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Abstract

There is growing concern about the influence of nomophobia among the majority of young people, attributed to excessive mobile phone use. This study aims to investigate the nomophobia levels of Azerbaijani and Kyrgyz university students. The Nomophobia Questionnaire (NMP-Q) was employed as the data collection tool. Data were collected from participants during the spring term of the 2021-2022 academic year. A total of 478 students participated: 238 from Azerbaijan and 240 from Kyrgyzstan. Results indicated that Azerbaijani and Kyrgyz students exhibit different nomophobia behaviors. While 36.1% of Azeri students experience a severe level of nomophobia, 23.3% of Kyrgyz students do. Female students in both countries are more affected than their male counterparts. Younger students are also more susceptible to nomophobia. Moreover, smartphone ownership significantly influences students' nomophobia behavior in both Azerbaijan and Kyrgyzstan.

Introduction

Mobile phones have become indispensable in our daily lives. It is hard to imagine a day without them, given that the majority of our communications rely on these devices to connect with family, friends, and colleagues. Mobile phones have primarily been used for making calls, sending text messages, and accessing the Internet, including social media applications. Additionally, they offer a range of functions, such as instant messaging, downloadable applications, and the use of information services like Wi-Fi and Global Positioning System (GPS) (Samsudin et al., 2021). Students often use mobile phones to play games, surf the internet, and engage in social networking (Sumuer, 2021).

The proliferation of mobile phone features has resulted in a substantial increase in mobile phone ownership and usage (El Keshky et al., 2022). Recent statistics indicate that there were approximately 6.5 million mobile phone users worldwide in 2022, with this number expected to rise in the coming years (Statistica, 2023). With the increasing popularity of mobile phones, their excessive use has become a serious concern (Bayanova et al., 2022). For instance, Pang et al. (2023) revealed that the excessive use of mobile phones is closely associated with suicide plans of Malaysian university students. Additionally, smartphone addiction has emerged as a distinct form of technology addiction. Smartphone addiction is characterized as 'the problematic and excessive use of smartphones that disrupts the daily lives of users' (Barzegari et al., 2021, p.1). This addiction may result in academic, physical, and mental issues, including depression and anxiety (Zhang & Wu, 2020).

In the face of rising mobile phone usage, a new term has emerged: nomophobia. Derived from "no mobile phone phobia," (Yildirim & Correia, 2015), nomophobia is representing the fear, anxiety, and discomfort of not having a mobile device readily available or lacking access when needed (Rodríguez-García et al., 2020). Nomophobia can lead to psychological disorders such as anxiety, depression, stress, and loneliness, as well as physical issues like musculoskeletal pains, eye strain, sleep disturbances, headaches, and fatigue (Notara et al., 2021). According to Lee et al. (2017), nomophobia can negatively affect the happiness levels of younger populations. Moreover, it can affect interpersonal relationships, creating a disconnect from the real world (Al-Balhan et al., 2018). That is, individuals are anxious about losing the connection to others that smartphones provide (Lai et al., 2023). Notara et al. (2021) conducted a comprehensive systematic literature review, analyzing 40 distinct studies. Their research indicated that nomophobia contributes to a range of psychological, emotional, social, and physical problems among those who excessively use mobile phones.

According to Yildirim and Correia (2015), nomophobia can be understood through four distinct dimensions. The first dimension, "not being able to communicate," is characterized by feelings of losing instant communication capabilities and the inability to use services facilitating this form of communication (Yildirim & Correia, 2015, p. 133). The second dimension, "losing connectedness," encompasses feelings associated with losing the continuous connectivity smartphones offer, especially the connection to one's online identity on social media platforms (Yildirim & Correia, 2015, p. 133). The third dimension, "not being able to access information," describes the discomfort arising from the inability to access, retrieve, or search for information via smartphones (Yildirim & Correia, 2015, p. 134). The fourth dimension, "giving up convenience," pertains to the emotional implications of forgoing the conveniences provided by smartphones and the desire to maintain those conveniences (Yildirim & Correia, 2015, p. 134). Based on these dimensions, Yildirim and Correia (2015) introduced the Nomophobia Scale (NMP-Q) to assess nomophobia.

Several studies from different parts of the world have investigated the nomophobia levels of people (Gonçalez et al., 2021). For instance, Gezgin and Çakır (2016) used the Nomophobia Scale (NMP-Q) to examine the nomophobia levels of Turkish adolescents. Their findings revealed that high school students exhibited nomophobia behaviors above average, with female students showing higher levels of nomophobia than male students do. Yildirim et al. (2016) studied nomophobia among Turkish university students and found that 42.6% of them experienced nomophobia, with most of their fears centered on communication and information access.

Lee et al. (2018) examined the relationship between nomophobia and existing personality disorders, finding a significant correlation between obsessiveness and nomophobia tendencies. Sharma et al. (2019) studied nomophobia among Indian adolescent students, identifying strong links with depression, anxiety, and a reduced quality of life. Sevim-Cirak and İslim (2021) analyzed the prevalence of nomophobia among Turkish pre-service teachers. Their findings indicated that certain variables, such as gender, age, class, and the availability of a data plan, affected their nomophobia tendencies. However, the duration of mobile phone ownership and the availability of a Wi-Fi connection were not influential factors

In the 21st century, it is hard to escape the effects of technology (Bhattacharya et al., 2019). There is also significant concern about the influence of nomophobia on most children and youths due to excessive mobile phone

use (Anshari et al., 2019). Despite the high prevalence of studies on excessive mobile phone use and the topic of nomophobia (Essel et al., 2022), no prior research has been conducted in Kyrgyzstan to investigate nomophobia among university students. Furthermore, there is a lack of prior research that has examined nomophobia levels among Azerbaijani students. In this regard, this study aims to investigate nomophobia levels among students in both countries. Additionally, there has been no previous examination of differences in nomophobia among Azerbaijani and Kyrgyz university students. Given this gap, the purpose of this study is to shed light on the prevalence of nomophobia and its predictors among university students in Azerbaijan and Kyrgyzstan. In this respect, this study will be the initial one with the purpose of comparing Azeri and Kyrgyz students' nomophobia levels.

The literature review revealed that researchers commonly preferred using the NMP-Q to assess individuals' nomophobia levels (Samsudin et al., 2021). Building on previous research experiences, this study also employed the NMP-Q to investigate the nomophobia levels of Azerbaijani and Kyrgyz students. The study targeted a group of active mobile phone users, resulting in a sample of 478 university students. The study utilized a quantitative approach, collecting data from participants' responses to online surveys. The data analysis aims to demonstrate participants' nomophobia levels while considering the impact of demographic variables on these levels and making cross-country comparisons.

Several studies carried out in different countries suggest that nomophobia is a widespread issue globally, but significant geographic variations emphasize the necessity for localized investigations (Copaja-Corzo et al., 2022). Therefore, it is important to investigate nomophobia level in Azerbaijan and Kyrgyzstan. In this sense, this study addresses the following research questions:

(1) What is the level of nomophobia among Azerbaijani and Kyrgyz university students?
(2) Does gender significantly affect the nomophobia of Azerbaijani and Kyrgyz university students?
(3) Does the duration of smartphone ownership significantly affect the nomophobia of Azerbaijani and Kyrgyz university students?
(4) Does class level significantly affect the nomophobia of Azerbaijani and Kyrgyz university students?
(5) Does daily mobile phone use significantly affect the nomophobia of Azerbaijani and Kyrgyz university students?
(6) Is there a significant difference between Azerbaijani and Kyrgyz university students regarding nomophobia levels?

Method

Research Design

The study was structured to have a quantitative approach. In this respect, online surveys were created to gather data on university students' behaviors related to nomophobia. That is, the data collected from the online surveys, consisting of responses to multiple-choice and scale-type questions, was quantitative, aligning with the study's design.

Participants

This study was conducted during the spring term of 2021–2022. The study employed purposive sampling, a technique used to deliberately select specific individuals or events, as it is well-suited for gathering data from distinct and targeted sources (Taherdoost, 2016). In this study, students from two specific universities were considered. In total, 478 university students participated. These participants are enrolled in state universities: one in Kyrgyzstan and another in Azerbaijan. Demographic details of participants from each country can be found in Table 1. Researchers introduced the study to the students and shared the online survey link. Consequently, students who volunteered accessed the survey and provided their responses.

Table 1. Demographic Information of Students

		Kyrgyzstan		Azerbaijan	
Variables		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Gender	Male	54	22.5	110	46.2
	Female	168	70.0	91	38.2
	Engineering	98	40.8	132	55.5
Faculty	Natural Science	72	30.0	90	37.8
	Other	70	29.2	16	6.7
	16-18	58	24.2	57	23.9
Age	19-21	144	60.0	140	58.8
	>21	38	15.8	41	17.2
	1-2 years	2	.8	10	4.2
Duration of	2 years	4	1.7	12	5.0
Technology	3 years	14	5.8	37	15.5
Use	4 years	32	13.3	37	15.5
	5 years or more	188	78.3	142	59.7
Total		240	100	238	100.0

The participants are undergraduate students from two universities. Demographic analysis revealed that the majority of Kyrgyz and Azeri students are enrolled in two main faculties: Natural Sciences and Engineering. The ages of the participating students range from 16 to 21+, and the majority have been using mobile technology for more than 5 years.

Data Collection Instruments

Data were collected from participating students through an online survey comprising two main sections. The first section contains demographic questions, including country, gender, age, faculty, duration of smartphone ownership, class level, and daily mobile phone use.

The second section of the survey includes the nomophobia questionnaire (NMP-Q), originally developed by

Yildirim and Correia (2015). This questionnaire consists of 20 items, each rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). It comprises four factors: the first factor (i.e., not being able to communicate) comprises four items, the second factor (i.e., losing connectedness) comprises five items, the third factor (i.e., not being able to access information) comprises six items, and the fourth factor (i.e., giving up convenience) comprises five items. In the original form of the NMP-Q, reliability values (i.e. alpha coefficients) were found as .939, .874, .827, and .814 for the four factors consecutively (Yildirim & Correia, 2015). In addition, construct validity was confirmed in the original NMP-Q with the r value as .710 (Yildirim & Correia, 2015).

The original form of the questionnaire was translated into Russian and administered online to gather responses from the participants. To ensure that the survey items were appropriate for assessing the intended content, a content validity assessment was conducted. This involved soliciting judgments from two distinct experts who reviewed and made necessary revisions to all the survey items. To assess reliability, the Cronbach's alpha level of the questionnaire was also calculated. In this study, the alpha levels for the four factors were found as .80, .82, .86, and .85, respectively. With an overall Cronbach's alpha of 0.93 for the instrument, it was found reliable for this study. Every factor exhibits a strong level of reliability, as indicated by their Cronbach's Alpha values exceeding .80. This level of reliability meets the criteria established by Kline (1999) for high reliability.

Data Collection and Analysis

Data for this study were collected from two public universities: one in Kyrgyzstan and another in Azerbaijan. The researcher liaised with advisors at these universities, seeking permission to administer online questionnaires and to brief students on the study's objectives. Before beginning the online survey, students were informed about purposes of the study. Participation was entirely voluntary, and students were notified that the results would be used exclusively for scientific purposes. Before starting to the online surveys, all individual participants provided an online informed consent for the study.

Data were collected using online forms and saved securely in digital formats. Initially, 490 responses were received, but all incomplete responses were removed, leaving a final dataset of 478 complete responses suitable for analysis. These responses were saved in a spreadsheet format and converted into a suitable format for use in the SPSS 22 software package, which was employed for data analysis.

The nomophobia level was calculated by summing each participant's responses to all items of the NMP-Q. The resulted score ranges from 20 to 140. A score between 0 and 20 indicates no nomophobia, 21 to 60 indicates a mild level of nomophobia, 61 to 100 represents a moderate level, and 101 to 140 signifies a severe level of nomophobia.

Additionally, the data analysis included descriptive statistics, reliability tests, and multivariate analysis of variance (MANOVA). Descriptive statistics were employed to reveal demographic information and nomophobia levels of the participant students. Reliability tests were conducted to confirm reliability of the survey used in the study. MANOVA tests were performed to investigate effects of various factors (i.e. gender, duration of smartphone

ownership, class level, daily mobile phone use, and country) on nomophobia related behaviors of participant students.

Findings

Research Question 1 - What is the Level of Nomophobia among Azerbaijani and Kyrgyz University Students?

Nomophobia Level in Azerbaijan

The results showed that 16.8% (n=40) of students in Azerbaijan indicated a mild level of nomophobia, 31.5% (n=75) indicated a moderate level, and 36.1% (n=86) indicated a severe level.

Nomophobia Level in Kyrgyzstan

According to the results, 14.2% (n=34) of students in Kyrgyzstan indicated a mild level of nomophobia, 55% (n=132) indicated a moderate level, and 23.3% (n=56) indicated a severe level.

Research Question 2 - Does Gender Significantly Affect the Nomophobia of Azerbaijani and Kyrgyz University Students?

Gender was used as one predictor of nomophobia among students in Azerbaijan and Kyrgyzstan. MANOVA analysis was conducted to investigate whether gender affects students' behaviors related to nomophobia.

Relationship between Nomophobia and Gender of Azerbaijani Students

Table 2 presents the results of the MANOVA analysis conducted to reveal the relationship between nomophobia and the gender of Azerbaijani students.

Table 2. Relation between Nomophobia and Gender in Azerbaijan

		Not being able to Access Information		Losing Connectedness		Not being able to Communicate		Giving up Convenience	
Group	N	M	SD	M	SD	M	SD	M	SD
Male	110	4.32	1.69	3.88	1.58	4.64	1.54	3.62	1.71
Female	91	5.24	1.50	4.67	1.41	5.27	1.50	4.29	1.72

Pillai's trace results indicated that gender has a significant effect on the nomophobia-related behaviors of Azerbaijani students ($F(2, 199) = 43.55$, $p < 0.05$; Pillai's Trace = .94, partial $\eta 2 = .89$), as shown in Table 2. Furthermore, the mean scores from Table 2 reveal that female students have significantly higher scores than their male counterparts, suggesting that Azerbaijani females exhibit greater nomophobia than Azerbaijani males. Specifically, females scored higher across all four factors of the NMP-Q.

Relationship between Nomophobia and Gender of Kyrgyz Students

Table 3 presents the results of the MANOVA analysis conducted to reveal the relationship between nomophobia and the gender of Kyrgyz students.

Table 3. Relation between Nomophobia and Gender in Kyrgyzstan

		Not being able to Access Information		Losing Connectedness		Not being able to Communicate		Giving up Convenience	
Group	N	M	SD	M	SD	M	SD	M	SD
Male	54	4.25	1.66	3.70	1.39	3.95	1.40	3.62	1.48
Female	168	4.48	1.60	3.84	1.38	4.73	1.38	3.69	1.51

Pillai's trace results indicated that gender significantly influenced the nomophobia-related behaviors of Kyrgyz students ($F(2,220) = 52.39$, $p < 0.05$; Pillai's Trace = .98, partial $\eta 2 = .88$), as evidenced in Table 3. Specifically, Kyrgyz females' scores were notably higher than those of Kyrgyz males, suggesting that females demonstrate more pronounced nomophobia. This trend was evident across all four factors of the NMP-Q.

Research Question 3 - Does the Duration of Smartphone Ownership Significantly Affect the Nomophobia of Azerbaijani and Kyrgyz University Students?

The duration of smartphone ownership was used as a predictor of differences in nomophobia among students in Azerbaijan and Kyrgyzstan. For the analysis, data were recoded into two groups: 2 years or less and more than 2 years. The MANOVA analysis was conducted to determine whether the duration of smartphone ownership influences nomophobia related behaviors.

Relationship between Nomophobia and Smartphone Ownership Duration among Azerbaijani Students

Table 4 presents the results of the MANOVA analysis conducted to determine the relationship between nomophobia and the duration of smartphone ownership among Azerbaijani students.

Table 4. Relation between Nomophobia and Duration of Smartphone Ownership in Azerbaijan

		Not being able to Access Information		Losing Connectedness		Not being able to Communicate		Giving up Convenience	
Duration	N	M	SD	M	SD	M	SD	M	SD
2 years or less	8	3.81	1.78	3.20	1.69	3.94	1.90	3.33	1.37
More than 2 years	83	4.86	1.62	4.33	1.51	5.02	1.48	3.97	1.77

Pillai's trace results indicated that the duration of smartphone ownership significantly influenced the nomophobia-related behaviors of Azerbaijani students ($F(2,199) = 43.03$, $p < 0.05$; Pillai's Trace = .93, partial $\eta 2 = .89$), as

evidenced in Table 4. Azerbaijani students who have used smartphones for more than 2 years showed higher nomophobia scores than those who have used them for 2 years or less. This suggests that prolonged smartphone use in Azerbaijani students correlates with increased nomophobia tendencies. Specifically, students using smartphones for over 2 years scored higher across all four factors of the NMP-Q.

Relationship between Nomophobia and Smartphone Ownership Duration among Kyrgyz Students

Table 5 presents the results of the MANOVA analysis conducted to determine the relationship between nomophobia and the duration of smartphone ownership among Kyrgyz students.

Table 5. Relation between Nomophobia and Duration of Smartphone Ownership in Kyrgyzstan

		Not being able to Access Information		Losing Connectedness		Not being able to Communicate		Giving up Convenience	
Duration	N	M	SD	M	SD	M	SD	M	SD
2 years or less	3	4.17	2.12	4.20	1.63	5.16	2.36	3.93	1.72
More than 2 years	108	4.43	1.61	3.80	1.37	4.52	1.39	3.66	1.50

Pillai's trace results indicated that the duration of smartphone ownership significantly influenced the nomophobia-related behaviors of Kyrgyz students ($F(2, 220) = 48.22$, $p < 0.05$; Pillai's Trace = .94, partial $\eta 2 = .88$), as presented in Table 5. Analyzing the mean scores from Table 5 reveals that Kyrgyz students who have used smartphones for 2 years or less scored higher in three factors: "Losing connectedness", "Not being able to communicate", and "Giving up convenience". In contrast, those who have used smartphones for more than 2 years scored higher only in the "Not being able to access information" factor.

Research Question 4 - Does Class Level Significantly Affect the Nomophobia of Azerbaijani and Kyrgyz University Students?

Class level was considered as one of the predictors of nomophobia. Data were recoded into four groups: freshmen, sophomores, juniors, and seniors. The MANOVA analysis was conducted to explore the impact of class level on nomophobia-related behaviors.

Relationship between Nomophobia and Class Level of Azerbaijani Students

Table 6 presents the results of the MANOVA analysis conducted to determine the relationship between nomophobia and the class level of Azerbaijani students. Pillai's trace results indicated that class level significantly influenced Azerbaijani students' nomophobia-related behaviors ($F(4,196) = 13.76$, $p < 0.05$; Pillai's Trace = 1.044, partial $\eta 2 = .89$), as demonstrated in Table 6. Put simply, class level has a significant impact on Azerbaijani students' nomophobia-related behaviors. Furthermore, mean scores in Table 6 reveal that Azerbaijani freshmen

students scored higher in the "Not being able to communicate" factor, junior students scored higher in two factors: "Losing connectedness" and "Giving up convenience", while senior students scored higher in only one factor: "Not being able to access information".

Table 6. Relation between Nomophobia and Class Level in Azerbaijan

		Not being able to Access Information		Losing Connectedness		Not being able to Communicate		Giving up Convenience	
Duration	N	M	SD	M	SD	M	SD	M	SD
Freshmen	47	4.75	1.63	4.18	1.59	4.92	1.63	3.94	1.79
Sophomore	22	4.93	1.56	4.15	1.27	4.92	1.13	3.77	1.537
Junior	17	4.27	1.92	4.38	1.66	4.91	1.80	4.18	1.66
Senior	4	5.06	1.36	3.60	2.36	4.62	2.32	2.75	2.87

Relationship between Nomophobia and Class Level of Kyrgyz Students

The results of MANOVA analysis for Kyrgyzstan were provided in Table 7.

Table 7. Relation between Nomophobia and Class Level in Kyrgyzstan

		Not being able to Access Information		Losing Connectedness		Not being able to Communicate		Giving up Convenience	
Duration	N	M	SD	M	SD	M	SD	M	SD
Freshmen	71	4.46	1.65	3.91	1.35	4.70	1.36	3.77	1.47
Sophomore	15	4.68	1.85	3.64	1.72	4.60	1.48	3.81	1.89
Junior	20	4.29	1.32	3.86	.97	4.16	1.40	3.57	1.15
Senior	3	3.33	1.44	2.67	1.75	4.11	1.64	2.13	1.33

Pillai's trace results revealed that class level significantly influenced the nomophobia-related behaviors of Kyrgyz students ($F(4,217) = 14.61$, $p < 0.05$; Pillai's Trace = 1.008, partial $\eta 2 = .88$). These results indicated that class level has a significant effect on students' nomophobia-related behaviors in Kyrgyzstan, as shown in Table 7. Furthermore, mean scores presented in Table 7 demonstrated that Kyrgyz freshmen students scored higher in the "Losing connectedness" and the "Not being able to communicate" factors, while sophomore students scored higher in two factors: "Not being able to access information" and "Giving up convenience".

Research Question 5 - Does Daily Mobile Phone Use Significantly Affect the Nomophobia of Azerbaijani and Kyrgyz University Students?

Daily mobile phone use was employed as a predictor of nomophobia among students in Azerbaijan and Kyrgyzstan. For analysis purposes, the data were recoded into three groups: 1-3 hours, 3-5 hours, and more than 5 hours. A MANOVA analysis was conducted to explore the impact of daily mobile phone use on nomophobia-related behaviors.

Relationship between Nomophobia and Daily Mobile Phone Use of Azerbaijani Students

The results of MANOVA analysis for Azerbaijan were provided in Table 8.

Table 8. Relation between Nomophobia and Daily Mobile Phone Use in Azerbaijan

		Not being able to Access Information		Losing Connectedness		Not being able to Communicate		Giving up Convenience	
Duration	N	M	SD	M	SD	M	SD	M	SD
1-3	13	4.50	1.66	3.58	1.52	4.59	1.20	2.75	1.69
3-5	23	4.25	1.79	4.11	1.35	4.63	1.46	3.37	1.50
>5	55	5.07	1.54	4.48	1.57	5.14	1.65	4.44	1.65

Pillai's trace results revealed that the duration of daily mobile phone use significantly influenced the nomophobia-related behaviors of Azerbaijani students ($F(3,197) = 18.59$, $p < 0.05$; Pillai's Trace = 1.11, partial $\eta 2 = .89$) as shown in Table 8. Furthermore, the mean scores in Table 8 indicated that Azerbaijani students who use their mobile phones for more than five hours per day scored higher in all four factors of the NMP-Q. On the other hand, students who use their mobile phones for 1-3 hours daily scored lower.

Relationship between Nomophobia and Daily Mobile Phone Use of Kyrgyz Students

The results of MANOVA analysis for Kyrgyzstan were provided in Table 9.

Table 9. Relation between Nomophobia and Daily Mobile Phone Use in Kyrgyzstan

		Not being able to Access Information		Losing Connectedness		Not being able to Communicate		Giving up Convenience	
Duration	N	M	SD	M	SD	M	SD	M	SD
1-3	26	4.00	1.46	3.48	1.18	3.91	1.32	3.14	1.50
3-5	44	4.38	1.47	3.73	1.38	4.69	1.39	3.73	1.40
>5	39	4.81	1.82	4.12	1.47	4.78	1.43	3.93	1.56

Pillai's trace results indicated that the duration of daily mobile phone use significantly influenced the nomophobia-related behaviors of Kyrgyz students ($F(3,218) = 17.87$, $p < 0.05$; Pillai's Trace = 0.98, partial $\eta 2 = .88$) as shown in Table 9. Furthermore, the mean scores in Table 9 revealed that Kyrgyz students who use their mobile phones for more than five hours per day scored higher in all four factors of the NMP-Q. Conversely, Kyrgyz students who use their mobile phones for 1-3 hours daily scored lower.

Research Question 6 – Is there a Significant Difference between Azerbaijani and Kyrgyz University Students regarding Nomophobia Levels?

Country was used as one predictor of nomophobia between students in Azerbaijan and Kyrgyzstan. MANOVA

analysis was conducted to investigate whether the country affects nomophobia related behaviors. The results of the analysis were provided in Table 10.

Table 10. Relation between Nomophobia and Country

		Not being able to Access Information		Losing Connectedness		Not being able to Communicate		Giving up Convenience	
Country	N	M	SD	M	SD	M	SD	M	SD
Azerbaijan	204	4.75	1.61	4.22	1.55	4.92	1.55	3.91	1.74
Kyrgyzstan	217	4.42	1.63	3.81	1.37	4.54	1.42	3.68	1.50

Pillai's trace results showed that the country of participant students significantly affected their nomophobia-related behaviors ($F(2,419)= 43.17$, $p<0.05$; Pillai's Trace = 0.93, partial $\eta 2 = .88$). Additionally, the mean scores in Table 10 indicated that students from Azerbaijan had higher scores in all four factors compared to students from Kyrgyzstan: "Not being able to Access Information" (M =4.75, SD = 1.61), "Losing connectedness" (M = 4.22, SD = 1.55), "Not being able to communicate" (M =4.92, SD = 1.55), and "Giving up convenience" (M = 3.91, SD = 1.74) factors. The highest mean score for both countries was in factor 3, "Not being able to communicate," for Azerbaijan (M =4.92, SD = 1.55) and for Kyrgyzstan (M =4.54, SD = 1.42). The lowest mean score for both countries was in factor 4, "Giving up convenience" (M = 3.91, SD = 1.74) in Azerbaijan, and (M = 3.68, SD = 1.50) in Kyrgyzstan.

Discussion

The findings indicate that students in Azerbaijan and Kyrgyzstan exhibit distinct behaviors related to nomophobia. In both nations, approximately one-third of the students face with severe nomophobia. In Azerbaijan, precisely 36.1% of students experience a severe level of nomophobia, whereas in Kyrgyzstan, this figure stands at 23.2%. Nonetheless, the overall percentage of students reporting nomophobia is higher in Kyrgyzstan, where 92.5% of students experience it, in contrast to 84.4% of Azerbaijani students. These outcomes align with existing research, which has reported nomophobia prevalence ranging from 15.2% to 99.7% among participants (Notara et al., 2021).

Gender significantly affects students' nomophobia behaviors in both countries. Results from Azerbaijan and Kyrgyzstan showed that females have higher mean scores in all four factors compared to males. This finding aligns with various studies (e.g. Gezgin & Çakır, 2016; Moreno-Guerrero et al., 2020; Özdemir et al., 2018; Sevim-Cirak & Islim, 2020; Sharma et al., 2019; Yavuz et al., 2019; Yildirim et al., 2016) where nomophobia levels were found to be higher among females than males. In a recent study, Arpaci (2022) also observed gender differences, revealing that women exhibited more problematic mobile phone use behaviors compared to men. However, Chen et al. (2017) found that Chinese male students demonstrated more problematic mobile phone use behaviors. The same study also found that male students primarily used mobile phones for gaming applications, while female students tended to use them for multimedia and social networking. Sagita and Santika (2020) revealed that females use mobile phones mostly for accessing the social media, so they have a higher level

nomophobia specifically according to the aspects of losing connection and being unable to communicate. It is essential to reveal purposes of mobile phone use by different genders. A further research could be conducted in Azerbaijan and Kyrgyzstan to explore the purposes of mobile phone use by gender and their relation to nomophobia levels.

In the context of this study, the duration of smartphone ownership was found to significantly impact students' nomophobia-related behavior. In Azerbaijan, students who have owned mobile phones for more than 2 years exhibit higher mean scores in all four factors compared to students who have owned mobile phones for less than 2 years. This indicates that students who have owned mobile phones for more than 2 years display higher nomophobia-related behaviors in Azerbaijan. However, the situation in Kyrgyzstan is quite different. Kyrgyz students using smartphones for 2 years or less have higher scores in three factors, while those who use smartphones for more than 2 years have a higher mean score only in one factor. In the literature, there are both consistent and disparate results. For instance, according to the study by Sevim-Cirak and Islim (2020), smartphone ownership duration did not significantly affect students' nomophobia-related behavior. Yet, in the study of Essel et al. (2022), it was found that smartphone ownership duration has significant influence on nomophobic behavior. This result might be explained by the integration of smartphone usage into people's everyday routines.

It was also found that there is a significant difference in students' nomophobia related behaviors with respect to class level. In Azerbaijan, senior students have the lowest scores in three factors, and junior students have the lowest score only in the factor of 'Not being able to access information.' This means that more experienced students are less affected by nomophobia, while younger students tend to be more affected by it. In Kyrgyzstan, the situation was found to be somewhat different. Senior students have the lowest scores in all factors. This might be explained by the fact that as students' age and experience increase, they become more aware of nomophobia, and as a result, they are less influenced by its negative effects. These findings are also supported by previous studies, such as the one conducted by Sevim-Cirak and Islim (2020), which found similar results – the higher the year of study, the lower the nomophobia score. Similarly, Farchakh et al. (2021) found the significant relation between higher age and low-level nomophobia and suggested performing nomophobia studies covering more age groups.

Results for both Azerbaijan and Kyrgyzstan showed that the frequency of mobile phone use increased students' nomophobia related behaviors. In other words, if students spend more time on mobile phones, then they become more susceptible to dangers of nomophobia. Similar results were also observed in the literature. For instance, Daei et al. (2019) revealed that there exists positive and significant correlation between nomophobia and the frequency of using smartphones. Similarly, Kara et al. (2021) revealed that as teenagers use smartphones more frequently in their daily lives, they experience increased feelings of loneliness and anxiety, which in turn lead to a higher display of nomophobic tendencies.

Conclusion and Recommendations

In this study, the main objective is to assess the levels of nomophobia among Azerbaijani and Kyrgyz university students. The NMP-Q was used as the data collection instrument. Online surveys were employed to gather data

from participating students in spring 2022. The total number of participants is 478, including 238 students from Azerbaijan and 240 students from Kyrgyzstan. The results of the study demonstrated that students in Azerbaijan and Kyrgyzstan have high level nomophobia related behaviors. Further investigation could be conducted to understand the factors contributing to the elevated levels of nomophobia in these countries.

This study considered effects of various variables (i.e. gender, duration of smartphone ownership, class level, daily mobile phone use, and country) on nomophobia related behaviors of participant students. A further research can be conducted with the inclusion of additional factors such as age, department, academic achievement, economic situation of the students. In this way, the further results can be obtained about the effects of various variables on the existence of nomophobia.

One limitation of the study is related to the sample size. Since the study was performed in two universities, the sample was limited. The future research can be conducted with the participation of more students from more universities.

The study can shed light on cultural differences in nomophobia related behaviors between Azerbaijan and Kyrgyzstan. While these countries share similarities in terms of language and culture, this research also highlights differences in their nomophobia related behaviors. Overall, the results of this study can provide valuable insights for future research on this topic.

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