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# Can Nomophobia be a Contemporary and Novel Cluster of Symptoms of Adult Separation Anxiety Disorder?

## ABSTRACT

**Objective:** The connection between adult separation anxiety disorder (ASAD) and nomophobia has been poorly investigated. The aim of this study is to evaluate whether there is a relationship between ASAD and nomophobia.

**Method:** The sample consisted of 68 university students diagnosed with ASAD and 77 university students without ASAD. All participants were evaluated by a structured clinical interview, Adult Separation Anxiety Questionnaire (ASA), Separation Anxiety Symptom Inventory (SASI), Nomophobia Questionnaire (NMP-Q), and Smartphone Addiction Scale-Short Version (SAS-SV).

**Results:** Participants with ASAD had longer daily phone usage times and had a higher frequency of checking the phone during the day and the rates of carrying a charger than controls. Compared to the control group, participants with ASAD had significantly higher ASA, SASI, NMP-Q, and SAS-SV scores and more severe nomophobia levels. The ASA scores were significantly positively correlated with SASI, NMP-Q, and SAS-SV. Regarding predictors of nomophobia, ASA, SASI, and SAS-SV scores had a positive and significant effect on nomophobia, and predicted nomophobia.

**Conclusion:** Our research adds to the body of knowledge on nomophobia by demonstrating that people with ASAD are susceptible to developing nomophobia. Clinicians should be aware of the association between ASAD and nomophobia, and nomophobia may be an important concept that should be considered in the therapy approach to patients with ASAD.

**Keywords:** Adult Separation Anxiety Disorder, Nomophobia, Separation Anxiety, Smartphone, Smartphone Addiction.

# Nomofobi, Yetişkin Ayrılık Anksiyetesi Bozukluğunun Çağdaş Ve Yeni Bir Semptom Kümesi Olabilir Mi?

## ÖZET

**Amaç:** Yetişkin ayrılma anksiyetesi bozukluğu (YAAB) ile nomofobi arasındaki bağlantı yeterince araştırılmamıştır. Bu çalışmanın amacı, YAAB ile nomofobi arasında bir ilişki olup olmadığını değerlendirmektir.

**Yöntem:** Örneklem, YAAB tanısı konmuş 68 üniversite öğrencisi ve YAAB olmayan 77 üniversite öğrencisinden oluşmaktadır. Tüm katılımcılar yapılandırılmış klinik görüşme, Yetişkin Ayrılık Anksiyetesi Anketi (YAAA), Ayrılık Anksiyetesi Belirti Envanteri (AABE), Nomofobi Anketi (NMP-Q) ve Akıllı Telefon Bağımlılığı Ölçeği-Kısa Versiyonu (ATBÖ-KF) ile değerlendirilmiştir.

**Bulgular:** YAAB olan katılımcıların günlük telefon kullanım süreleri daha uzundu ve gün içinde telefonlarını kontrol etme sıklıkları ve şarj aleti taşıma oranları kontrol grubuna göre daha yüksekti. Kontrol grubuyla karşılaştırıldığında, YAAB olan katılımcıların YAAA, AABE, NMP-Q ve ATBÖ-KF puanları anlamlı derecede yüksek ve nomofobi düzeyleri daha şiddetliydi. YAAA puanları AABE, NMP-Q ve ATBÖ-KF ile anlamlı derecede pozitif korelasyon göstermiştir. Nomofobinin öngörücüleri açısından YAAA, AABE ve S ATBÖ-KF skorları nomofobi üzerinde pozitif ve anlamlı bir etkiye sahipti ve nomofobiyi öngörüyordu.

**Sonuç:** Araştırmamız, YAAB olan kişilerin nomofobi geliştirmeye yatkın olduğunu göstererek nomofobi hakkındaki bilgi birikimine katkıda bulunmaktadır. Klinisyenler, YAAB ve nomofobi arasındaki ilişkinin farkında olmalıdır ve nomofobi, YAAB hastalarına terapi yaklaşımında dikkate alınması gereken önemli bir kavram olabilir.

**Anahtar Kelimeler:** Yetişkin Ayrılma Anksiyetesi Bozukluğu, Nomofobi, Ayrılma Anksiyetesi, Akıllı Telefon, Akıllı Telefon Bağımlılığı.

## INTRODUCTION

Separation anxiety disorder is a state of overwhelming anxiety that arises in case of actual or anticipation of separation from specific attachment figures. It is reported that the main symptoms of separation anxiety can continue and/or appear in adulthood, and this is defined as adult separation anxiety disorder (ASAD) (1,2). ASAD may be triggered or initiated by leaving home, having a child, or having an emotional relationship (2).

When separated from their important attachment figures, individuals with ASAD worry excessively that they won't be able to reunite with them or that they will be hurt, and they feel the need to be constantly close to them (3-5). This excessive anxiety can lead to them feeling the need to constantly check and hear from the attachment figures (3-5), and in turn, they could feel compelled to keep in touch over the phone (6). Therefore, individuals with ASAD may be more inclined to use the mobile phone (MP) frequently and regularly and spend a lot of time on the MP, due to their desire to avoid disconnection and to be in constant contact with their attachment figures when they are separated. Further, under the influence of separation anxiety, the patterns of using MP that will enable individuals with ASAD to communicate with their attachment figures may include: frequently checking the MP for calls or messages, keeping it close while sleeping, and keeping the phone on throughout the day, carrying a charger, avoiding places where phone use is prohibited, worrying over thoughts such as losing the MP, being outside of the coverage area, running out of battery, and the right to call. Such MP usage patterns, which we assume may be likely to be seen in individuals with ASAD, are also symptoms of nomophobia (7-10). In addition to using their phones as a safety tool to lessen their symptoms, some ASAD sufferers might also excessively use phones with the motivation to relieve stress related to worries and real-life problems. In conclusion, it can be inferred that when separation occurs, the demands for individuals with ASAD to maintain closeness and communication with their attachment figures may result in problematic phone use and nomophobia symptoms, and, thus, we can anticipate the nomophobia levels of these individuals to be above the average. In this case, nomophobia may be a cluster of symptoms of ASAD as well as a compensatory mechanism in alleviating separation anxiety or one of the strategies for coping with separation anxiety.

Nomophobia (No Mobile Phone Phobia), which is not currently included in the current psychiatric classification system (1), refers to the anxiety and discomfort experienced when the MP cannot be accessed and/or communicated on the MP (7-9). According to the level of nomophobia, symptoms include spending a lot of time by using the MP frequently, owning one or more MPs, always carrying the charger with them, and avoiding places where mobile device use is not allowed as much as possible. Other characteristics of nomophobia are worrying intensely with thoughts such as losing the phone, not being nearby, not being connected to the internet, running out of battery and calling rights, checking the phone's screen for messages or calls, keeping the phone next to oneself while sleeping, and not turning it off all-day (7-9).

Despite growing interest in nomophobia, few studies on the psychological characteristics and determinants that can predict it have been conducted. Several studies have demonstrated that depression, stress and anxiety, loneliness, low self-esteem and self-efficacy, and impulsivity can predict nomophobia symptoms (11-15). Studies on the relationship between anxiety disorders and nomophobia mostly focused on panic disorder and agoraphobia, and it has been discovered that these individuals have high rates of phone abuse and nomophobia levels due to their desire to escape from anxiety (13,14). Although it is not directly related to nomophobia, a study of individuals with generalized anxiety disorder has found that those with comorbid ASAD called their families more frequently than those without comorbid ASAD (6). Some researchers have revealed that there is a link between adult attachment anxiety and smartphone addiction and that loneliness and depression mediate this relationship (12). However, there is currently very little research on the relationship between nomophobia and ASAD. We are aware of only one study in this field, and it demonstrated a positive and significant correlation between ASAD and nomophobia scores (10). Therefore, the relationship between ASAD and nomophobia is still poorly understood, and whether nomophobia is associated with ASAD remains a question. This study aims to examine the relationship between ASAD and nomophobia. It is hypothesized that individuals with ASAD will have higher levels of nomophobia compared to those without ASAD. Additionally, as the severity of separation anxiety symptoms increases, mobile phone usage is expected to increase as well. It is also suggested that ASAD may lead individuals to use their mobile phones as a way to cope with separation anxiety, which in turn could intensify nomophobia symptoms.

## MATERIALS AND METHODS

*Participants:* This study included 68 university students diagnosed with ASAD (45 females [66.2%], mean age 21.65±1.29 years, range: 18-24 years) and 77 university students without ASAD (53 females [68.8%], mean age 21.39±1.07 years, range: 18-24 years), matched for age and sex with the ASAD group. Participants were recruited voluntarily from the general

university population. All participants underwent a psychiatric evaluation using the Structured Clinical Interview for DSM-5® Disorders-Clinician Version (SCID-5-CV) to determine diagnoses. The ASAD group was identified based on SCID-5-CV interviews. These interviews were conducted face-to-face by trained clinical psychologists, with the same interviewer conducting assessments for all participants to ensure consistency.

Inclusion and exclusion criteria were carefully established. Participants with any chronic medical condition, acute mania, psychosis, autism spectrum disorders, or alcohol and substance abuse were excluded from the study. The data collection process was carried out in a controlled laboratory setting. Before participation, all individuals were informed about the study procedures and potential consequences, and they provided written informed consent. The study was conducted in accordance with the Declaration of Helsinki and Good Clinical Practice guidelines. The ethics committee approval for this study was obtained from the Sivas Cumhuriyet University Faculty of Medicine Non-Interventional Ethics Committee (2021-11/29).

### Data Collection Tools

**Personal Information Form:** This form was developed by the researchers based on literature knowledge. It is designed to collect participants' sociodemographic information and mobile phone usage patterns. The sociodemographic data include details such as age, sex, and family characteristics. Mobile phone usage patterns cover aspects such as daily usage time, purposes of use, and general usage behaviors.

**Adult Separation Anxiety Questionnaire (ASA):** It is a 27-item self-report scale that measures separation anxiety symptoms over age 18 (18). In this 4-point Likert questionnaire, items are evaluated between 0 (never felt) and 3 (very often felt). Turkish validity and reliability studies were performed by Diriöz et al., and the cutoff score is 25. The internal consistency reliability coefficient (Cronbach's alpha) for the ASA was found to be 0.93, indicating excellent internal consistency and high reliability. When examining the correlations of the items with the total score, it was observed that the correlation values for all items were above 0.20, which is an indicator of consistency. The item-total score correlations for all items, except item 17, ranged between 0.40 and 0.76. The test-retest reliability of the YAA scale was assessed by the correlation of total scores from the test and retest, and it was found to be r=0.93 (19).

**Separation Anxiety Symptom Inventory (SASI):** SASI measures childhood separation anxiety symptoms in adults, retrospectively, based on experiences prior to 18 years of age (20). It consists of 15 items that measure four-point Likert-type scales, and the items are rated from 0 (never) to 3 (very often). The validity and reliability of the Turkish version of the scale was conducted by

Diriöz et al. and the cut-off point was calculated as 12 (19). The Cronbach's alpha value for the SASI was found to be 0.89. In the item analysis, the item-total score correlation method was used. It was determined that the item-total correlations ranged between 0.43 and 0.65. For test-retest reliability, the scale was administered a second time to 80 patients 7-21 days after the initial assessment. The average score from the first evaluation was 2.91 (SD=1.37), and the average score from the test-retest was 2.92 (SD=1.43). No significant difference was observed between the evaluations (t=-1.15, df=79, p=0.91).

**Nomophobia Questionnaire (NMP-Q):** It has 20 items, and the items are graded from 1 (strongly disagree) to 7 (strongly agree) and the total score varies between 20-140 points (8). Although NMP-Q includes four sub-dimensions (not being able to communicate; losing connectedness; not being able to access information; and giving up convenience), the total score was utilized in this study. The higher the score, the greater the severity of nomophobia. According to the total score, individuals are classified as follows: $\leq 20$ points correspond to the absence of nomophobia, 21-59 points to mild nomophobia, 60-99 points to moderate nomophobia, and 100-140 points to severe nomophobia level. It was adapted into Turkish by Yildirim and colleagues. The reliability value of the scale (Cronbach's Alpha) was calculated to be 0.92, with subscale values of 0.90, 0.74, 0.94, and 0.91, respectively. In the adaptation study, Confirmatory Factor Analysis (CFA) was conducted to determine the structural validity of the scale, and the $\chi2$ value was found to be 2.86. It was determined that the fit indices were within acceptable limits (9).

**Smartphone Addiction Scale-Short Version (SAS-SV):** SAS-SV is a 10-item scale that measures the risk of smartphone addiction and is evaluated with a six-point Likert scale (21). Items are scored from 1 (strongly disagree) to 6 (strongly agree), and the total score varies between 10-60 points. The higher the total score, the higher the risk for addiction. The scale has one factor and no subscales. The validity and reliability study of the Turkish version of the SAS-SV among university students was conducted by Noyan and colleagues. The internal consistency coefficient of the scale was found to be 0.91, and the reliability coefficient was 0.92 (22).

**Statistical Analysis:** All statistical analyses were performed with IBM SPSS Statistics version 23. The one-sample Kolmogorov-Smirnov test was used to determine whether the data had a normal distribution. The numerical and categorical data were shown as mean ± standard deviation (SD), number (n), and percentage (%) as appropriate. Comparisons of the groups were performed using the chi-square test for categorical variables, and the independent-samples t-test for continuous variables.

Correlations were evaluated using Pearson correlation analysis. To evaluate the predictor value of some main clinical variables (i.e., age, sex, and scores of ASA, SASI, and SAS-SV) on nomophobia, the linear regression models were performed. Statistical significance was considered as $p<0.05$.

**RESULTS**

**Socio-Demographic and Familial Characteristics of Participants:** The ASAD and control groups were similar in terms of age, gender, family structure, and family income level (all p-values>0.05). The sociodemographic characteristics of the participants are presented in Table 1.

**Table 1.** Socio-demographic and familial characteristics of participants.

| | ASAD group (N=68) | Control group (N=77) | p-value[*] |
|---|---|---|---|
| Age (mean-years±SD) | 21.65±1.29 | 21.39±1.07 | 0.191 |
| Sex (n,%) | | | 0.733 |
| Male | 23 (33.8) | 24 (31.2) | |
| Female | 45 (66.2) | 53 (68.8) | |
| Family type (n,%) | | | 0.693 |
| Nuclear | 46 (67.6) | 48 (62.3) | |
| Single-parent | 12 (17.6) | 18 (23.4) | |
| Extended | 10 (14.8) | 11 (14.3) | |
| Family income level (n, %) | | | 0.950 |
| Income more than expenses | 12 (17.6) | 15 (19.5) | |
| Income equal to the expenses | 44 (64.8) | 48 (62.3) | |
| Income less than the expenses | 12 (17.6) | 14 (18.2) | |

*Notes:* [*]The chi-square test for categorical variables and the Independent-samples t-test for continuous variables were used to test group differences. **Bold font** indicates statistical significance: P < 0.05. *Abbreviations:* ASAD: Adult Separation Anxiety Disorder, SD: Standard Deviation.

**Mobile Phone Usage Patterns of The Participants:** The mobile phone usage characteristics of the participants are given in Table 2. Age at first phone use, number of years of phone use, checking the phone at night when going to bed and waking up, and turning off the phone at night were similar between the two groups (all p-values>0.05). However, the daily phone usage time of the participants in the ASAD group was significantly longer than the control group

(4.54±1.65 hours vs. 3.32±1.51 hours, respectively, p<0.001). Again, a charger was carried by 67.6% (n=46) of participants in the ASAD group, compared to 45.5% (n=35) in the control group, and this difference was statistically significant (p=0.007). In addition, the frequency of checking phones during the day was significantly higher in the ASAD group compared to the control group (p<0.001).

**Table 2.** Mobile phone usage patterns of the participants

| | ASAD group (N=68) | Control group (N=77) | p-value[*] |
|---|---|---|---|
| Age of first mobile phone use (mean-years±SD) | 14.71±1.42 | 14.91±1.51 | 0.407 |
| Year of mobile phone use (mean-years±SD) | 6.94±1.38 | 6.61±1.62 | 0.192 |
| Daily mobile phone usage time (mean-hours±SD) | 4.54±1.65 | 3.32±1.51 | **<0.001** |
| Carrying a charger (n,%) | 46 (67.6) | 35 (45.5) | **0.007** |
| Checking the phone as soon as he/she wakes up (n,%) | 54 (79.4) | 56 (72.7) | 0.348 |
| Checking his/her phone before going to bed (n,%) | 54 (79.4) | 56 (72.7) | 0.348 |
| Turning off the mobile phone at night (n,%) | 4 (5.9) | 6 (7.8) | 0.651 |
| Frequency of checking phone during the day (n,%) | | | **<0.001** |
| Every 5-10 minutes | 24 (35.3) | 7 (9.1) | |
| Every 10-20 minutes | 30 (44.1) | 33 (42.9) | |
| Every 20 minutes or more | 14 (20.6) | 37 (48.1) | |

*Notes:* [*]The chi-square test for categorical variables and the Independent-samples t-test for continuous variables were used to test group differences. **Bold font** indicates statistical significance: P < 0.05. *Abbreviations:* ASAD: Adult Separation Anxiety Disorder, SD: Standard Deviation.

**Comparison of the Mean Scores ASA, SASI, SAS-SV, and NMP-Q and the Nomophobia Levels between the ASAD and Control Groups:** As expected, the ASA mean scores of the participants in the ASAD group were significantly higher than the control group

(p<0.001). Similarly, the mean scores of the SASI, which screened for childhood separation anxiety symptoms, and the SAS-SV mean scores were also significantly higher in the ASAD group compared to the control group (both p values<0.001). As for nomophobia, both the frequency of severe

nomophobia levels and the mean scores of NMP-Q were significantly higher in the ASAD group than in the control group (both p-values <0.001). Regarding the nomophobia levels, 20.6% (n=20.6) of the participants in the ASAD group exhibited mild, 26.5% (n=18) moderate, and 52.9% (n=36)

severe nomophobia. On the other hand, of the participants in the control group, 53.2% (n=41) had mild, 26% (n=20) had moderate and 20.8% (n=16) had severe nomophobia. The mean scores of the scales used and nomophobia levels in both groups are shown in Table 3.

**Table 3.** Comparison of the mean scores ASA, SASI, SAS-SV, and NMP-Q and the nomophobia levels

|  | ASAD group (N=68) (mean±SD) | Control group (N=77) (mean±SD) | p-value[*] |
|---|---|---|---|
| Adult Separation Anxiety Questionnaire (ASA) scores | 40.12±10.18 | 15.01±4.59 | **<0.001** |
| Separation Anxiety Symptom Inventory (SASI) scores | 35.44±5.96 | 11.73±5.18 | **<0.001** |
| Smartphone Addiction Scale-Short Version (SAS-SV) | 40.71±13.81 | 30.09±12.27 | **<0.001** |
| Nomophobia Questionnaire (NMP-Q) scores | 106.53±33.48 | 56.18±33.75 | **<0.001** |
| Degree of nomophobia (n,%) |  |  | **<0.001** |
| Mild nomophobia | 14 (20.6) | 41 (53.2) |  |
| Moderate nomophobia | 18 (26.5) | 20 (26.0) |  |
| Severe nomophobia | 36 (52.9) | 16 (20.8) |  |

*Notes:* [*]The chi-square test for categorical variables and the Independent-samples t-test for continuous variables were used to test group differences. **Bold font** indicates statistical significance: P < 0.05. *Abbreviations:* ASA: Adult Separation Anxiety Questionnaire, ASAD: Adult Separation Anxiety Disorder, NMP-Q: Nomophobia Questionnaire, SASI: Separation Anxiety Symptom Inventory, SAS-SV: Smartphone Addiction Scale-Short Version, SD: Standard Deviation.

***Correlations between ASA and NMP-Q scores and SASI and SAS-SV Scores:*** Correlations between the scales used were analyzed separately in the ASAD group and control group and are presented in Table 4. The NMP-Q scores were significantly positively correlated with ASA, SASI, and SAS-SV in both the ASAD group and the control group (all p-values <0.001). Similarly, the

ASA scores of both groups were significantly positively correlated with SASI, NMP-Q, and SAS-SV (all p-values <0.001). However, while the correlations between ASA scores and NMP-Q and SAS-SV scores were strong in the ASAD group, there was a moderate correlation in the control group.

**Table 4.** Correlations between ASA and NMP-Q scores and SASI and SAS-SV scores

| Adult Separation Anxiety Disorder Group | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
|  | ASA | | SASI | | NMP-Q | | SAS-SV | |
|  | p[*] | r[*] | p[*] | r[*] | p[*] | r[*] | p[*] | r[*] |
| **NMP-Q scores** | **<0.001** | 0.883 | **<0.001** | 0.657 | — | — | **<0.001** | 0.941 |
| **ASA scores** | — | — | **<0.001** | 0.939 | **<0.001** | 0.883 | **<0.001** | 0.871 |
| Control Group | | | | | | | | |
|  | ASA | | SASI | | NMP-Q | | SAS-SV | |
|  | p[*] | r[*] | p[*] | r[*] | p[*] | r[*] | p[*] | r[*] |
| **NMP-Q scores** | **<0.001** | 0.621 | **<0.001** | 0.522 | — | — | **<0.001** | 0.917 |
| **ASA scores** | — | — | **<0.001** | 0.732 | **<0.001** | 0.621 | **<0.001** | 0.577 |

[*]Pearson correlation analysis. *Abbreviations:* ASA: Adult Separation Anxiety Questionnaire, NMP-Q: Nomophobia Questionnaire, SASI: Separation Anxiety Symptom Inventory, SAS-SV: Smartphone Addiction Scale-Short Version.

**Predictors of Nomophobia in the Linear Regression Model:** In the linear regression model we established, nomophobia was taken as the dependent variable, age, sex, ASA, SASI, and SAS-SV scores were taken as the independent variables, and it was determined that age and gender had no effect on nomophobia. On the other hand, ASA, SASI, and SAS-SV scores had a positive and significant effect on nomophobia, and predicted nomophobia (all p-values<0.001). In the model we established, 78.1% of nomophobia was determined

by adult separation anxiety score (β=0.883, p<0.001), 63.5% by childhood separation anxiety score (β=0.797, p<0.001), and 88.8% by smartphone addiction (β=0.942, p<0.001). In other words, a 1-unit increase in the ASA score led to an increase of 0.781 units in the nomophobia score, a 1-unit increase in the SASI score led to an increase of 0.635 units in the nomophobia score, and a 1-unit increase in the SAS-SV score led to an increase of 0.888 units in the nomophobia score. Regression analysis results are presented in Table 5.

**Table 5.** Predictors of nomophobia in the linear regression model

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | p | $R^2$ |
|---|---|---|---|---|---|---|---|
| NMP-Q | | B | Std. Error | Beta | | | |
| | Age | -4.782 | 3.140 | -0.184 | -1.523 | 0.133 | 0.034 |
| | Sex | -11.838 | 8.523 | -0.169 | -1.389 | 0.170 | 0.028 |
| | ASA | 2.906 | 0.190 | 0.883 | 15.314 | **<0.001**[*] | 0.781 |
| | SASI | 4.477 | 0.418 | 0.797 | 10.721 | **<0.001**[*] | 0.635 |
| | SAS-SV | 2.283 | 0.100 | 0.942 | 22.876 | **<0.001**[*] | 0.888 |

[*]$p<0.001$

## DISCUSSION

In this study, we examined whether there is a relationship between ASAD and nomophobia, and how ASAD affects nomophobia, and our results showed that ASAD has a positive significant effect on nomophobia. More specifically, we produced findings that ASAD diagnosis and childhood separation anxiety symptoms are predictors of nomophobia.

ASAD has high comorbidity rates with many psychiatric disorders in a wide spectrum (2,23). However, the link between ASAD and nomophobia has not been fully recognized. To our knowledge, there is only one study that specifically focuses on the relationship between separation anxiety and nomophobia, and researchers discovered a positive and significant correlation between adult separation anxiety scores and nomophobia scores (10). In addition, although it did not focus directly on separation anxiety disorder, another study examining the relationship between nomophobia and psychiatric symptoms also indicated that separation anxiety is positively related to nomophobia scores (15). Similarly, in our study, we determined that individuals with ASAD had higher nomophobia scale scores and more severe nomophobia compared to individuals in the control group and that high levels of adult and childhood separation anxiety symptoms predicted nomophobia. Our findings suggest that individuals with ASAD are at high risk for the development of nomophobia.

Some potential reasons could help explain why individuals with ASAD might acquire nomophobia. First, nomophobia symptoms may have arisen as a result of typical ASAD symptoms, in which case we can assume that ASAD may be a trigger or precursor of nomophobia or that nomophobia may be a new and modern cluster of symptoms or a complication of ASAD. As known, when an indispensable separation occurs, individuals with ASAD experience severe anxiety and feel vulnerable, which may lead them to constantly need to be close to their attachment objects and the urge to speak and communicate with them on the phone frequently (3-5,23). In this circumstance, an MP can be utilized as a protective shield to satisfy their communication, security, and closeness demands. Making more and more phone calls or texting can help someone with ASAD feel less alone and can also serve as a means of distraction from separation anxiety. Also, depending on the intense separation anxiety experienced, the following behavioral characteristics, which are also seen in nomophobia, may occur: keeping the phone on all the time, keeping the phone close even while sleeping, carrying the charger constantly, impulsively checking the phone's location and charging status, whether it is out of range, whether there are calls or messages, avoiding environments where the phone may be deprived or not allowed to be used. As a matter of fact, our findings that participants in the ASAD group use their phones for longer periods of time each day, have higher rates of carrying chargers, and check their phones more frequently throughout the day than the participants in the control group support this idea. Again, when these individuals are separated from their primary attachment figures, they may try to maintain intimacy with them through priceless virtual property such as digital photos, messages, and recordings which can lead to spending too much time with MP, which is also a symptom of nomophobia. Based on this possible speculation, it would be reasonable to infer that these individuals may exhibit higher levels of fear or discomfort and symptoms of nomophobia when they are deprived of access to their phones. Second, in addition to alleviating separation anxiety symptoms, some ASAD sufferers may more towards mobile activities such as videos, music, or online games that offer entertainment and relaxation on the phone to avoid anxiety, reduce stress from worries about the unpredictable future and real-life problems, or minimize their negative emotions, and so on they may then display excessive phone usage (14,24,25). Based on these possible explanations, it can be mentioned that as the severity of separation anxiety symptoms increases, the levels of nomophobia are likely to increase.

Both of the plausible reasons we offered above for why individuals with ASAD are more likely to develop nomophobia can also be explained by the compensatory internet use model. According to this model, the underlying motivations for turning to phone use and online activities are to move away from experienced anxiety, escape from present moments, get rid of loneliness, relieve certain negative feelings, and/or improve psychosocial well-being (25-27). In addition to this

model, the behavioral approach can also help to explain why individuals with ASAD are more likely to experience nomophobia. According to the behavioral approach, after engaging in a behavior, if a pleasant outcome is gained (positive reinforcement) or if an unpleasant situation is eliminated (negative reinforcement), the probability of performing that behavior by the individual increases (28,29). From this point of view, the tendency of individuals with ASAD to use phones more frequently, for whatever reason, may contribute to the development of nomophobia symptoms by making it easier for them to escape anxiety-inducing situations (negative reinforcement) and to receive a sense of pleasure (positive reinforcement).

Another argument regarding the relationship between ASAD and nomophobia might be the attachment theory, as the intersection point of the two, which may help to understand why individuals with ASAD experience more frequent and severe nomophobia symptoms. Both ASAD and nomophobia can be considered emotional and behavioral problems that arise as a result of the pathological attachment pattern (11,12,30-34). Previous studies have yielded strong correlations between insecure attachment styles, particularly anxious and ambivalent attachment styles, and separation anxiety disorder (30,33). Similarly, the possibility that attachment styles are one of the dispositional antecedents of nomophobia and problematic phone use was also underlined (11,31,32). A recent study has revealed that there is a relationship between nomophobia and attachment styles, and that anxious and avoidant attachment have positive direct and indirect significant effects on nomophobia (11). In conclusion, we can draw the conclusion that excessive MP use and nomophobia are manifestations of insecure attachment patterns, in individuals with ASAD.

Another reason for the association between ASAD and nomophobia could be that both may share some common clinical symptoms. Although we can evaluate nomophobia as a result of ASAD symptoms based on our findings, nomophobia may also be an expected consequence of increased cell phone use among young university students. That is, ASAD and nomophobia may be primary conditions that occur independently, but simultaneously, and may reinforce and mimic each other's symptoms. For example; the anxiety experienced when there is no mobile phone, constantly checking the phone, and never turning off the mobile phone seen in nomophobia can also be observed in individuals with ASAD who are separated from the people they are attached to and seek closeness to those people.

Another striking finding from our study was that nomophobia is impacted by childhood separation anxiety symptoms. This finding can be argued that childhood separation anxiety symptoms

may persist or emerge as adult separation anxiety symptoms and may have an indirect effect on nomophobia through adult separation anxiety symptoms. Still, prospective longitudinal studies are warranted in order to draw firm conclusions about the relationship between childhood separation anxiety symptoms and nomophobia.

Our study findings may have two general implications in practice. First, assessing individuals with ASAD in terms of risk for nomophobia may help identify individuals who are at risk early and, if detected, prompt early treatment, thereby reducing the possibility of long-term complications and adverse course for ASAD. For example, a psychoeducation program and a specific approach to nomophobia can be developed for those at risk. Second, if reversed, might involve screening people with nomophobia symptoms for ASAD symptoms, which may offer an opportunity for a multifaceted approach to remedy nomophobia.

Despite its novelty, this study has several limitations. This study's findings are based on a sample of university-aged students, which limits generalizability to other age groups and broader populations. The relatively small sample size and cross-sectional design further restrict the ability to infer causal relationships and may affect the statistical power of the results. Additionally, potential biases in self-reported data and unaccounted sources of bias could influence the findings.

Future research should focus on specific age groups and clinical conditions to provide a more comprehensive understanding of the ASAD-nomophobia relationship. Studies should examine how these dynamics play out in various populations, including children, adolescents, and older adults, as well as in individuals with other comorbid psychiatric conditions. Additionally, the implications of these findings for clinical practice should be explored. Research should address how the identified relationship between ASAD and nomophobia can be integrated into clinical settings and how it might impact current treatment approaches. For example, developing targeted interventions that address both ASAD and nomophobia simultaneously could improve patient outcomes. Further studies should also evaluate how these findings could inform and enhance existing therapeutic strategies and psychoeducational programs.

**CONCLUSIONS**

This study is the first attempt in the literature to investigate the relationship between ASAD on nomophobia, and adds a fresh perspective to the interaction of modern technology and ASAD. Our findings broaden the body of knowledge on nomophobia by demonstrating that individuals with ASAD are at risk for nomophobia. Our findings suggest that ASAD may predispose to nomophobia

that individuals with ASAD also need help for nomophobia, and that clinicians should consider nomophobia symptoms when treating ASAD patients.

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