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Socioemotional Characteristics of Cell Phone Addiction: The Case of Nomophobia

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Nomophobia, the fear of not having access to one's cell/mobile phone, has attracted attention in relation to cell phone addiction. Addictions are characterized by a complex mixture of emotional experiences; however, research has not focused on whether emotions experienced while using cellphones follow this same pattern. The current study examines positive and negative emotions experienced when using cell phones and attachment anxiety as predictors of nomophobia. Participants (n=102) completed the NMP-Q assessing nomophobia, an emotion scale assessing positive and negative emotions experienced when using a cellphone (CP) and in general (GEN), and the ECR-R assessing attachment styles. Negative and positive emotions including security while using, negative emotions in general, and attachment-related anxiety predicted nomophobia. Our findings support the idea that nomophobia is maintained by complex emotional states experienced when using cell phone technology. Future research could employ methodologies that focus on minute-by-minute emotional reporting while using cell phones to better understand the motivational states underlying cell phone addiction.

Keywords: nomophobia, cell phone addiction, emotions, security, attachment anxiety

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Cell phone technologies have become integrated into activities of daily life, providing connectivity to information, entertainment, people and social networks (Kardos et al., 2018, Lepp et al., 2015). Over the last 20 years, in the United States, internet use has risen from 64% to 93% with only 3% of adults not owning a smartphone/mobile phone (Pew Research Center, 2022). In addition, 68% of users report using their cell phones between 3-6 hours each day outside of work. Overuse of cell phones has been referred to as smartphone addiction, problematic smartphone use (Busch & McCarthy, 2021; Darcin et al., 2016), mobile/cell phone addiction (Allred & Atkin, 2020; Ivanova et al., 2020; Roberts et al., 2014) and nomophobia (Anshari, et al., 2019; Arpaci, 2022; King et al., 2014; Lee et al., 2021). Due to the rise of cell phone ownership and dependence, the present study focuses on positive and negative

emotions experienced when using cell phones, feelings of security and attachment-related anxiety.

LITERATURE REVIEW

Emotions and cell phone addiction

Negative emotions like fear and anxiety characterize cell phone addiction. For example, nomophobia is the fear of not having access to one's cell/mobile phone and of being disconnected (Anshari et al., 2019; Yildrim & Correia, 2015). Predictors of nomophobia are loneliness, anxiety, stress (Bragazzi et al., 2014; Galhardo et al., 2020; Kara et al., 2021; Vahedi & Saiphoo, 2018), FOMO (fear of missing out) (Vagka et al., 2023), diminished impulse control and distractibility (Arpaci, 2022; Smetaniuk, 2014), and psychiatric disorders of social phobia (Darcin et al., 2016) and panic disorder (King et al., 2014).

Nomophobia shares features with addiction in that nomophobia consists of compulsive behavior (Arpaci & Esgi, 2018; Arpaci, 2022; Adawi et al., 2019) and withdrawal symptoms such as discomfort and stress when not being able to access the cell phone (King et al., 2010; Smetaniuk, 2014; Tams et al., 2018). Further, nomophobia can lead to stress when a person experiences a social threat (i.e., no access to cell phones) and when situations are perceived as uncertain and uncontrollable (Tams et al., 2018). Similar to other addictions, cell phone addiction is related to negative consequences such as avoidance of face-to-face communication (Allred & Atkin, 2020), depleted cognitive resources, and impaired learning (Galhardo et al., 2020; Lee et al., 2017; Lee et al., 2021).

Addictive behaviors are characterized by a craving, which is an intense urge, or need, for a substance, object, or behavior (Sayette, 2016; Wilson, 2022) especially in situations where the substance cannot be accessed (Hormes, 2017; Tiffany, 2010). Craving states can have a positive or negative valence depending on the availability of the desired object (Sayette, 2016). Following principles of operant conditioning, people are more likely to use cell phones to gain positive feelings and/or to avoid negative feelings, e.g., to escape from an evaluative environment (Busch & McCarthy, 2021; Roberts et al., 2014; Smetaniuk, 2014). Based on these considerations, the current study investigates the emotions experienced while using cell phones with the prediction that nomophobia will be

characterized by a complex emotional profile involving positive and negative emotional states.

While seeking out positive moods and alleviating negative ones are primary reasons for smartphone use, addictions are also characterized by the persistence of behaviors despite their negative consequences (Roberts et al., 2014). Thus, people higher in cell phone addiction may experience more negative and less positive emotions while using them than they do in general. While the relationship between nomophobia and participant characteristics such as stress, anxiety and loneliness are understood, there is little known about associations with feeling states while using cell phones. The present study is designed to address this question as well as consider other emotional characteristics of cell phone addiction, such as insecure attachment and the feelings of security provided by using cell phones.

Attachment

Forming attachments is essential for survival (Bowlby, 1969), creating a template for future relationships with others and with material objects that represent or replace them (Bowlby, 1969; Ainsworth, 1969). Material items can become invested with the same emotional attachment held toward the person/people with whom they are associated (Ainsworth, 1969). Four key features of attachment with people or objects are the following: desire to remain close to object or person; dependence on in times of distress or discomfort to create support and protection; elicitation of feelings of security and confidence; and experience of separation anxiety when not in contact with object or person.

In line with these key features, cell phones are a mechanism by which individuals gain proximity to other people and maintain relationships (Galhardo et al., 2020; Han et al., 2017). In stressful, unsatisfactory situations, individuals attempt to regulate and alter emotions by attaching themselves to their cell phones (Springstein et al., 2022). A cell phone can relieve discomfort experienced in interpersonal situations and face-to-face communication (Allred & Atkin, 2020) and provide external sources of affirmation and connection. Because cell phones connect individuals to social and instrumental forms of support, they provide feelings of comfort, security, and convenience and may relieve stress and ameliorate fears of abandonment (Allred & Atkin, 2020; King et al., 2014; Walendorf & Arnould, 1988). Cell phone dependency is due in part because they have become objects

of attachment, surpassing the sole purpose of communication (Parent & Shapka, 2019; Kardos et al., 2018).

Functioning as attachment proxies, cell phones satisfy needs for security (Ribak, 2009). This function is particularly relevant to college students who are transitioning away from home, parents, and childhood friends. Attachments offer a sense of security much like a "safety blanket" (Passman, 1976). Transitional objects, like a cell phone, help individuals function in the "real world" by keeping them connected to important social networks. Cell phones function as a form of social support and the fear of losing contact resembles separation anxiety, therefore, the current study focuses on the elicitation of feelings of security when using cell phones in connection to nomophobia.

Individual differences in attachment style play a role in understanding attachment and cell phone addiction. Three attachment styles have been identified; secure, anxious/preoccupied, avoidant/dismissive (Hazan & Shaver, 1987; Kobak & Sceery, 1988). Individuals with anxious-attachment styles are driven by heightened responsiveness to and need for support within relationships (Hazan & Shaver, 1990). The fear of not having access to the cell phone, i.e., nomophobia, can elicit insecurity and separation anxiety, particularly for those with attachment-related anxiety. Therefore, social connections facilitated by cellular devices, ultimately give the cell phone power to regulate emotional attachment. Thus, attachment style, particularly attachment-related anxiety (or preoccupied style), becomes relevant to understanding emotional underpinnings of this behavioral addiction.

Understanding factors such as attachment styles and emotional experiences contributes to a better understanding of the types of people who are more vulnerable to nomophobia. Because cell phones offer instant contact with others, individuals with attachment-related anxiety may be more prone to experiencing nomophobia, especially if cell phones provide a sense of security for them. Further, due to the rewarding interactions and escape from negative situations cell phones provide, nomophobia is likely to be characterized by positive and negative feelings while using. However, it may be the case that there are negative consequences to cell phone use. It may be that emotions experienced while using cell phones are less positive and more negative than experienced in general, particularly if individuals report high levels of nomophobia.

Aims of the Current Study

The current research focuses on the relationship between nomophobia, and emotions experienced while using cell phones, feelings of security, and attachment-related anxiety. We asked undergraduates to complete measures of nomophobia, and to report discrete emotional states experienced while using cell phones and those experienced more generally. One of these feelings included in this inventory is security, experienced when using cell phones and experienced in general life. We also obtained information on attachment-related anxiety.

Hypotheses

H1: Nomophobia will have a rich emotional characterization being positively related to positive and negative emotions experienced when using cell phones.

H2: Nomophobia will be related to the experience of feeling secure when using cell phones independent of general feelings of security.

H3: Nomophobia will be positively correlated to attachment-related anxiety

H4: For individuals with greater nomophobia, using cell phones will elicit less positive and more negative emotions compared to individuals with lower levels.

METHODS

Participants

The participants in this study were 102 undergraduate college students from a university in the Northeastern United States, 69 (or 67.6%) were female, 26 (or 25.5%) were male, 1 nonbinary (1%) and 6 (5.9%) did not report their gender. Age ranged from 18 to 25 years with a mean of 19 (SD=1.19). The sample was diverse with 20.6% Black, 19.6% Latino, 39% White, 3.9% Asian, and 7.8% mixed ethnicity.

Measures

Nomophobia

Nomophobia was measured using the NMP-Q, a 20-item scale developed by Yildirim and Correia (2015). This measure has demonstrated both validity and reliability. An example of an item is "If I did not have a data signal or could not connect to Wi-Fi, then I would constantly check to see if I had a signal or could find a Wi-Fi network." Statements in the test incorporated multiple dimensions of cellphone use such as news, weather

forecast, events, communication with family and friends, and social media. Items are scored from 1-7, ranging from "strongly disagree" to "strongly agree." Nomophobia scores ranged from 20 to 122 (m=79.05, SD=23.70) with higher scores indicating more nomophobia. In our sample, Cronbach's alpha was .930 for overall score.

Emotion

Based on the PANAS (Watson et al., 1988), we listed 23 emotional terms representing positive and negative affect states. We then asked participants to respond to the items first with respect to the positive (PE) and negative (NE) emotions they feel when using cell phones (PE-CP and NE-CP, respectively) and second with respect to the positive (PE) and negative (NE) emotions they feel in general (PE-GEN and NE-GEN, respectively). Positive emotion terms were: secure, interested, excited, relieved, strong, alert, enthusiastic, proud, determined, attentive and active. Negative emotion terms were: anxious, upset, over-reliance, guilt, distressed, overwhelmed, upset, scared, irritable, hostile, ashamed, and jittery. Each item was rated on a scale of 1 to 5 (where 1= very slightly/not at all, 2= a little, 3= moderately, 4= quite a bit, and 5= extremely), resulting in four emotion assessments: PE-CP (positive emotions with cell phones), PE-GEN (positive emotions general), NE-CP (negative emotions with cell phones), and NE-GEN (negative emotions general). Cronbach's Alphas were .860 for PE-CP, .795 for PE-GEN, .868 for NE-CP, and .855 for NE-GEN. We created a variable CP/Secure by taking the responses from PE-CP **Secure** and subtracting it from PE-GEN **Secure.** Thus, CP/Secure measures the degree to which one feels secure when using a cell phone independent of general feelings of security.

Attachment

To measure attachment, participants were administered the ECR-R (Fraley et al., 2000), which is a 36-item questionnaire with demonstrated validity and reliability. An example of an item is "When I show my feelings for romantic partners, I'm afraid they will not feel the same about me" Statements given in the questionnaire incorporate styles of attachment (anxiety and avoidant). Participants rated their relationship attachment using a Likert-rating scale. Items are scored from 1-7, ranging from "strongly disagree" to "strongly agree." The measure resulted in scores for attachment-related anxiety and attachment-related avoidance. Cronbach's alpha for the scale overall was .928 and for

attachment-related anxiety was .923 and for attachment-related avoidance was .920. We were interested only in attachment-related anxiety.

Procedure

After approval from the IRB, participants were recruited from an online recruitment platform administered by the Psychology Department at a public university. Students enrolled in Introduction to Psychology (PSY 100) and other courses have access to this recruitment platform and receive participation credit as required in their course. Participants understood that their participation was voluntary and if they needed to leave the study at any time, they were allowed without penalty.

RESULTS

Table 1

Descriptive Statistics: Nomophobia, PE-CP, NE-CP, PE-GEN and NE-GEN

Scale	N	Minimum	Maximum	Mean	SD
Nomophobia	102	20	122	79.05	23.70
Attachment-related anxiety	100	20	104	64.13	22.32
Positive emotions cell phones	101	13	52	32.08	8.74
Positive emotions general	98	12	60	33.97	9.56
Negative emotions cell phone	101	11	46	21.76	6.34
Negative emotions general	99	11	48	19.34	7.05
Valid N (listwise)	96				

Statistical Analyses

We hypothesized that nomophobia would have a rich emotional characterization and supporting this, we found that nomophobia was positively correlated with PE-CP, $r(100) = .201$, $p = .044$, NE-CP, $r(100) = .314$, $p < .001$ and NE-GEN, $r(99) = .415$, $p < .001$. PE-GEN was not related, $r(98) = .034$, $p = .741$.

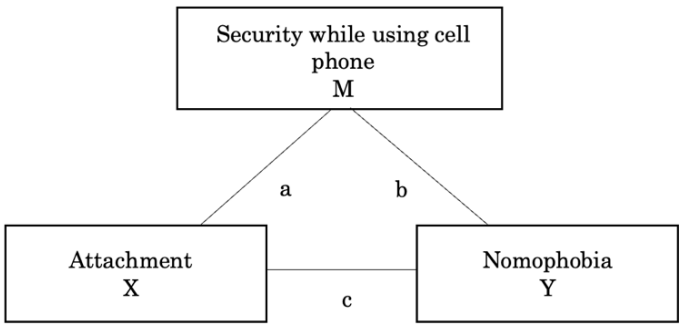

Figure 1. Mediation Analysis. Displays the relationship between attachment-related anxiety and nomophobia that is mediated by the degree to which individuals feel security while using a cell phone.

Examining CP/secure and attachment-related anxiety and nomophobia, we found CP/secure and attachment-related anxiety were both related to nomophobia, $r(99) = .300$, p .003, and, $r(100) = .231$, $p = .021$, respectively. Given the relationships between CP/Secure and attachment-related anxiety, we explored mediational analysis with nomophobia as the criterion and CP/secure, attachment-related anxiety as predictors. Because this is an exploratory analysis, we set our alpha level at .1 (See *Figure 1*).

Attachment-related anxiety was predictive of nomophobia and accounted for 5.3% of the variance, $F(1,98)= 5.51$, $p = .021$. Attachment-related anxiety was marginally predictive of CP/Secure accounting for 2.9% of the variance, $F(1,95) =2.85$, $p = .095$. CP/secure was predictive of nomophobia, accounting for 9% of the variance, $F(1,97)= 9.59$, $p = .003$. The resulting model was significant indicating that both variables predicted nomophobia, $F(3, 87) = 6.58$, $p = .002$, accounting for 12.6% of the variance, $F(2,94)= 6.75$, $p = .002$ [CP/secure, $\beta = .263$, $t = 2.69$, $p = .008$, and attachment-related anxiety, $\beta = .197$, $t=2.01$, $p=.047$].

Finally, we predicted that NE-CP would be greater than NE-GEN, and PE-CP would be less than PE-GEN for people experiencing high levels of nomophobia. Using a median split, we created high and low nomophobia groupings and then conducted a 2(nomophobia, high vs. low) x 2(NE-CP vs NE-GEN) repeated measures ANOVA. These analyses resulted in a significant difference in NE-CP vs. NE-GEN, $F(1, 97)=14.91$, $p<.001$ (see *Figure 2*). We then conducted a 2(nomophobia, high vs. low) x 2(PE-CP vs. PE-GEN) repeated measure ANOVA and found a significant difference in PE-CP vs. PE-GEN,

$F(1,96)=4.01$, $p = .048$ (see *Figure 3*). The interactions between negative emotions (CP vs. GEN) and nomophobia grouping (high vs. low) and positive emotions (CP vs. GEN) and nomophobia groupings (high vs. low) were not significant at the $p<.05$ level [$F(1, 97) = 3.4$, $p=.068$, and $F(1, 96) = 3.14$, $p = .079$, respectively].

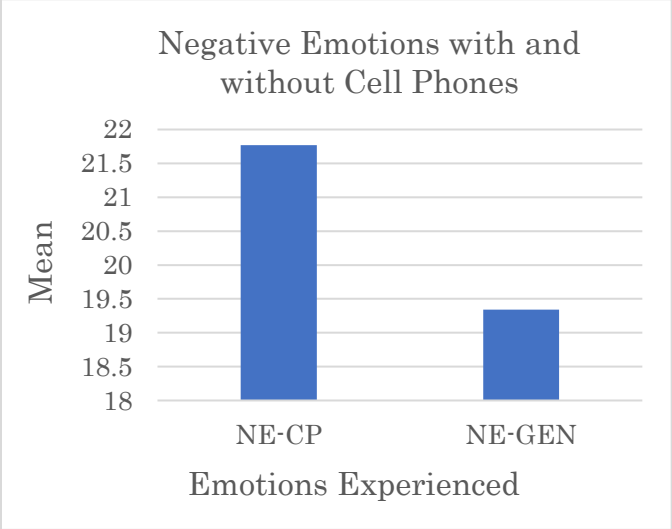

Figure 2. Negative Emotions with Cell Phones and Without Cell Phones

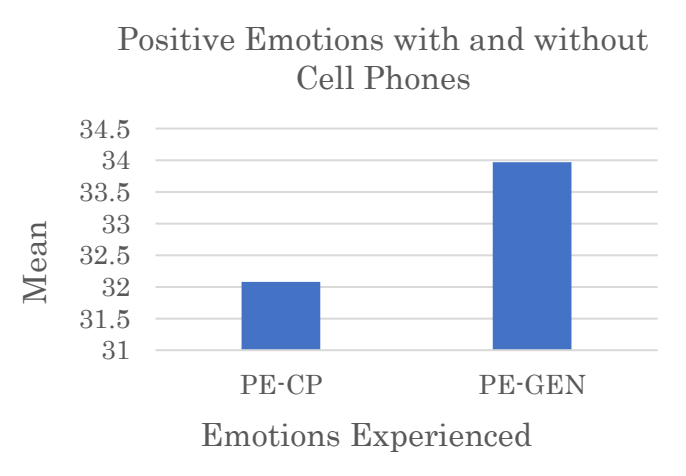

Figure 3. Positive Emotions with Cell Phones and Without Cell Phones

DISCUSSION

The main aim of this study was to characterize the emotional and attachment features of cell phone addiction as defined by nomophobia. Prior research has documented relationships between cell phone addiction and loneliness, depression, anxiety, and stress

(Arpaci, 2022; Bragazzi et al., 2014; Galhardo et al., 2020; Vahedi & Saiphoo, 2018). Supporting this, we found that general negative feelings are also related to nomophobia, while general positive feelings are not.

Looking deeper, however, we find that nomophobia is associated with positive and negative emotions experienced during use. According to Izard (2007), emotions are primary motivational forces. Thus, the complexity of the emotional profile experienced while using cell phones may be important in understanding the strength of this addiction. Similar to emotional profiles of substance addictions (Shrier et al., 2012), cell phones become embedded into people's routines because of the links to positive and negative emotional needs. For example, using cell phones elicits feelings of security, relief, and happiness, but also guilt, anxiety, and shame, and the extent to which these feelings are elicited predicts nomophobia. College students are more inclined to use their cell phones when they experience positive feelings, and possibly when seeking relief from an evaluating environment (Roberts et al., 2014). However, the emotional involvement is more complicated given that nomophobia is associated with negative feelings, thus the situation may set up a vicious cycle of feeling bad and seeking relief which then results in feeling bad.

Cell phones serve to connect people to others and may function as a source of security similar to an attachment object (Ainsworth, 1969; Bowlby, 1969; Passman, 1976). This function may be particularly important for those who have attachment-related anxiety. Attachment is not only formed within interpersonal relationships, but also with objects that mimic the security received in relationships (Zhang et al., 2022). We find that individuals with attachment-related anxiety display higher levels of nomophobia supporting evidence of relationships between insecure attachment and mobile phone addiction (Zhang et al., 2022) and evidence that priming using the word mobile phone (vs. other personal object) increased the accessibility of words related to social networks and reduced needs to belong (Kardos et al., 2018). The relationship between attachment-related anxiety and nomophobia suggests that underlying attachment issues can manifest in various ways, including through excess use of cellphones. Attachment figures facilitate the basis of the attachment system and create a sense of security in stressful situations (Konok et al., 2016). When primary attachment figures are not available, individuals form

secondary attachment figures (Bowlby, 1969), which can include non-human objects, such as cell phones (Konok et al., 2016). A cellular device serves as a "safety blanket" and has evolved from a simple communication device to a symbol of connectivity in social relationships (Kardos et al., 2018). Reinforcing this interpretation, the security felt when using cellphones, independent of general feelings of security, was related to nomophobia and its subscales. That is, the degree to which using cell phones elicits feelings of security, separate from baseline, is related to cell phone addiction.

The relationship between attachment-related anxiety and cell phone addiction is mediated by the degree to which using cell phones provides a sense of security independent of how secure one feels in general. The fear of not having contact with one's cell phone may be generated because it threatens the sense of security that cell phones provide, which is particularly difficult for those with attachment-related anxiety. Unlike Arpaci (2022) who did not find a relationship between nomophobia and "social comfort," our findings suggest that security experienced while using is an important factor of cell phone addiction. Clearly this discrepancy warrants further investigation. Furthermore, the security gained by the dependence on cell phones, especially for those with attachment disorders, may underlie other addictive behaviors motivated by attachment to objects such as hoarding.

While nomophobia is characterized by positive and negative feelings while using a cell phone, using does not result in people feeling "good" — in fact our study suggests the opposite. Individuals, regardless of their level of nomophobia, feel fewer positive and more negative emotions when using cell phones than they do in general, indicating a state of discomfort. Perhaps this pattern results from feelings of being overwhelmed by social pressure to stay connected and provide social support to others (Allred & Atkin, 2020; Gergen, 2002) or from downward social comparisons and resulting feelings of inadequacy (Kong et al., 2020). While previous work has pointed to associations between cell phone addiction, stress and anxiety (Allred & Atkin, 2020; Galhardo et al., 2020; Vahedi & Saiphoo, 2018), our findings suggest that these negative feelings, such as shame, anxiety, and feeling overwhelmed can be induced by cell phones. The idea that using cell phones provides relief from stressful situations or escapism (Roberts et al., 2015) is not supported here. Positive emotions are experienced less when using cell phones than they are when

not using them. Given that those experiencing anxiety and depression are at risk for nomophobia (Bragazzi et al., 2014), our findings suggest that cell phones present greater threats to emotional well-being than even previously appreciated. Cell phone use is not only deleterious for those with mental health concerns, rather it is problematic for everyone. Previous research has not specifically examined feelings experienced while using cell phones. Based on our findings, a more complex emotional picture of cell phone addiction emerges.

Despite the contribution of this research, there are several limitations. The cross-sectional nature of this study cannot determine the direction of the relationship between emotion and nomophobia. Emotions, positive and negative, could be the cause or the result of cell phone use. However, by comparing emotions felt when using cell phones to general emotions, we are able to differentiate emotions elicited by cell phone usage, gaining a clearer picture of how cell phones may give rise to particular emotional responses. Additionally, the attachment-related anxiety and the relationship of negative emotions in general with nomophobia points to a conclusion that emotions precede cell phone dependence. To further this line of inquiry, future research might include a beeper study that focuses on emotions experienced with cell phones in real time to evaluate whether negative feelings are also a consequence of cell phone dependency. Incorporating this Experience Sampling Method (ESM) can create an adequate representation of the emotions felt when using, or not using, their cell phones as it emphasizes the use of self-reporting and real-time mental processes (Csikszentmihalyi & Larson, 1987). It would also be of interest to extend these findings beyond college students. People of all ages have become reliant on cell phones and the conveniences afforded by them. We know little of the emotional experiences accompanying cell phone use in older people and the attachments formed to these devices. Future research should address the paucity of research on different generations. Finally, we chose to examine cell phone addiction as measured by nomophobia. Future work might employ other measures of cell phone addiction and/or problematic use to replicate the patterns observed in this current research.

References

Adawi, M., Zerbetto, R., Re, T. S., Bisharat, B., Mahamid, M., Amital, H., Del Puente, G., & Bragazzi, N. L. (2019). Psychometric properties of the Brief Symptom Inventory in nomophobic subjects: insights from preliminary confirmatory factor, exploratory factor, and clustering analyses in a sample of healthy Italian volunteers. *Psychology Research and Behavior Management, 12*, 145–154. doi.org/10.2147/PRBM.S173282.

Ainsworth, M. D. (1969). Object relations, dependency, and attachment: A theoretical review of the infant-mother relationship. *Child Development, 40*, 969-1025. doi.org/10.2307/1127008.

Alavi S. S., Ferdosi M., Jannatifard F., Eslami M., Alaghemandan H., & Setare M. (2012). Behavioral addiction versus substance addiction: Correspondence of psychiatric and psychological views. *International Journal of Preventive Medicine. 3(*4*)*, 290–294.

Allred, R. J., & Atkin, D. (2020). Cell phone addiction, anxiety, and willingness to communicate in face-to-face encounters. *Communication Reports, 33(*3*)*, 95-106. doi.org/10.1080/08934215.2020.1780456.

Anshari, M., Alas, Y., & Sulaiman, E. (2019). Smartphone addictions and nomophobia among youth. *Vulnerable Children and Youth Studies, 14(*3*)*, 242-247. doi.org/10.1080/17450128.2019.1614709.

Arpaci, I., & Esgi, N. (2018). Psychometric properties of the Turkish version of the Smartphone Addiction Inventory (SPAI). *Current Psychology, 39(*6*)*, 2246-2251. doi.org/10.1007/s12144-018-9913-8.

Arpaci, I., Baloğlu, M., Kozan, H. I. O., & Kesici, S. (2017). Individual differences in the relationship between attachment and nomophobia among college students: The mediating role of mindfulness. *Journal of Medical Internet Research, 19(*12*)*, e404. doi.org/10.2196/jmir.8847.

Arpaci, I. (2022). Gender differences in the relationship between problematic internet use and nomophobia. *Current Psychology, 41(*9*)*, 6558–6567. doi.org/10.1007/s12144-020-01160-x.

Bowlby, J. (1969). *Attachment and loss* (Vol. 1). New York: Basic Books.

Bragazzi, N. L., & Del Puente, G. (2014). A proposal for including nomophobia in the new DSM-V. *Psychology Research and Behavior Management, 7*, 155–160. doi.org/10.2147/PRBM.S41386.

Busch, P. A. & McCarthy, S. (2021). Antecedents and consequences of problematic smartphone use: A systematic literature review of an emerging research area. *Computers in Human Behavior,* 114, 106414. doi.org/10.1016/j.chb.2020.106414.

Csikszentmihalyi, M. & Larson, R. (1987). Validity and reliability of the experience sampling method. *Journal of Nervous Mental Disorders, 175(*9*)*, 526-536. doi.org/10.1097/00005053-198709000-00004.

Darcin, A. E., Kose, S., Noyan, C. O., Nurmedov, S., Yilmaz, O., & Dilbaz, N. (2016). Smartphone addiction and its relationship with social anxiety and loneliness. *Behavior and Information Technology, 35(*7*)*, 520-525. doi.org/10.1080/0144929X.2016.1158319.

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78(*2*)*, 350–365. doi.org/10.1037/0022-3514.78.2.350.

Galhardo A., Loureiro, D., Raimundo, E., Massano-Cardoso, I., & Cunha, M. (2020). Assessing nomophobia: Validation study of the European Portuguese version of the nomophobia questionnaire. *Community Mental Health Journal, 56(*8*)*, 1521-1530. doi.org/10.1007/s10597-020-00600-z.

Gergen, K. (2002). The challenge of absent presence. In J. Katz & M. Aakhus (Eds.), *Perpetual Contact: Mobile Communication, Private Talk, Public Performance* (pp. 227-241). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511489471.018.

Han, S., Kim, K. J., & Kim, J. H. (2017). Understanding nomophobia: Structural equation modeling and semantic network analysis of smartphone separation anxiety. *Cyberpsychology, Behavior, and Social Networking, 20(*7*)*, 419-427. doi.org/10.1089/cyber.2017.0113.

Hazan, C. & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52(*3*)*, 511-524. doi.org/10.1037/0022-3514.52.3.511.

Hazan, C., & Shaver, P. (1990). Love and work: An attachment-theoretical perspective. *Journal of Personality and Social Psychology, 59(*2*)*, 270–280. doi.org/10.1037/0022-3514.59.2.270.

Hormes, J.M. (2017). The clinical significance of craving across the addictive behaviors: A review. *Current Addiction Reports, 4(*2*)*, 132–141. doi.org/10.1007/s40429-017-0138-y.

Ivanova, A., Gorbaniuk, O., Blachnio, A., Przepiórka, A., Mraka, N., Polishchuk, V., & Gorbaniuk, J. (2020). Mobile phone addiction, phubbing, and depression among men and women: A moderated mediation analysis. *Psychiatric Quarterly,* 91, 655-668. doi.org/10.1007/s11126-020-09723-8.

Izard, C. E. (2007). Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on Psychological Science, 2(*3*)*, 260-280. doi.org/10.1111/j.1745-6916.207.00044.x

Kara, M., Baytemir, K., & Inceman-Kara, F. (2021). Duration of daily smartphone usage as an antecedent of nomophobia: Exploring multiple mediation of loneliness and anxiety. *Behavior and Information Technology, 40(*1*)*, 85-98. doi.org/10.1080/0144929X.2019.1673485.

Kardos, P., Unoka, Z., Pléh, C., & Soltész, P. (2018). Your mobile phone indeed means your social network: Priming mobile phones activates relationship related concepts. *Computers in Human Behavior, 88,* 84-88. doi:10.1016/j.chb.2018.06.027.

King, A. L., Valença, A. M., Silva, A. D., Sancassiani, F., Machado, S., & Nardi, A. E. (2014). "Nomophobia": Impact of cell phone use interfering with symptoms and emotions of individuals with panic disorder compared with a control group. *Clinical Practice and Epidemiology in Mental Health, 10*, 28-35. doi.org/10.2174/1745017901410010028.

King, A. L. S., Valença, A. M., & Nardi, A. E. (2010). Nomophobia: The mobile phone in panic disorder with agoraphobia: Reducing phobias or worsening of dependence? *Cognitive and Behavioral Neurology, 23(*1*)*, 52-54. doi.org/10.1097/WNN.0b013e3181b7eabc.

Kobak, R.R., & Sceery, A. (1988). Attachment in late adolescence: working models, affect regulation, and representations of self and others. *Child Development, 59(*1*)*, 135–146. doi.org/10.1111/j.1467-8624.1988.tb03201.x.

Kong, F., Tang, F., Zhang, H., Sun, X., & Zhang, Y. (2020) Does downward social comparisons affect mobile phone addiction? Narcissism matters! *Journal of Technology in Behavioral Science, 5,* 266-272. doi.org/10.1007/s41347-020-00136-9.

Konok V., Gigler D., Bereczky B. M., & Miklósi Á. (2016). Humans' attachment to their mobile phones and its relationship with interpersonal attachment style. *Computers in Human Behavior, 61*, 537–547. doi.org/10.1016/j.chb.2016.03.062.

Lee, S., Kim, M.W., McDonough, I. M., Mendoza, J. S. & Kim, M. S. (2017). The effects of cell phone use and emotional-regulation style on college students' learning. *Applied Cognitive Psychology, 31(*3*)*, 360-366. doi.org/10.1002/acp.3323.

Lee, S., McDonough, I. M., Mendoza, J. S., Brasfield, M. B., Enam, T., Reynolds, C., & Pody, B. C. (2021). Cellphone addiction explains how cellphones impair learning for lecture materials. *Applied Cognitive Psychology, 35(*1*)*, 123-135. doi.org/10.1002/acp.3745.

Lepp, A., Barkley, J. E., & Karpinski, A. C. (2015). The relationship between cell phone use and academic performance in a sample of U.S. college students. *SAGE Open, 5(*1*).* doi.org/10.1177/2158244015573169.

Parent, N. & Shapka, J. (2019). Moving beyond addiction: An attachment theory framework for understanding young adults' relationships with their smartphones. *Human Behavior and Emerging Technologies, 2(*2*),* 179-185. doi.org/10.1002/hbe2.180.

Pew Research Center. (2021). *Demographics of mobile device ownership and adoption in the United States* [Fact Sheet]. https://www.pewresearch.org/internet/fact-sheet/mobile.

Passman, R. (1976). Arousal reducing properties of attachment objects: Testing the functional limits of the security blanket relative to the mother. *Developmental Psychology, 12(*5*)*, 468-469. doi.org/10.1037/0022-006X.55.6.825.

Ribak, R. (2009). Remote control, umbilical cord and beyond: The mobile phone as a transitional object. *British Journal of Developmental Psychology, 27(*1*)*, 183–196. doi.org/10.1348/026151008X388413.

Roberts, J. A., Yaya, L. H., & Manolis, C. (2014). The invisible addiction: Cell-phone activities and addiction among male and female college students. *Journal of Behavioral Addictions, 3(*4*)*, 254-265. doi.org/10.1556/JBA.3.2014.015.

Roberts, J. A., Pullig, C., & Manolis, C. (2015). I need my smartphone: A hierarchical model of personality and cell-phone addiction. *Personality and Individual Differences, 79,* 13-19. doi.org/10.1016/j.paid.2015.01.049.

Sayette M. A. (2016). The role of craving in substance use disorders: Theoretical and methodological issues. *Annual Review of Clinical Psychology, 12(*1*)*, 407–433. doi.org/10.1146/annurev-clinpsy-021815-093351.

Shrier, L. A., Walls, C. E., Kendall, A. D., & Blood, E. A. (2012). The context of desire to use marijuana: Momentary assessment of young people who frequently use marijuana. *Psychology of Addictive Behavior, 26(*4*)*, 821–829. doi.org/10.1037/a0029197.

Smetaniuk, P. (2014). A preliminary investigation into the prevalence and prediction of problematic cell phone use. *Journal of Behavioral Addictions, 3(*1*)*, 41-53. doi.org/10.1556/JBA.3.2014.004

Springstein, T., Hamerling-Potts, K. K., Landa, I., & English, T. (2022). Adult attachment and interpersonal emotion regulation motives in daily life. *Emotion, 23(*5*)*, 1281–1293. doi.org/10.1037/emo0001169.

Tams, S., Legoux, R., & Léger P. M. (2018). Smartphone withdrawal creates stress: A moderated mediation model of nomophobia, social threat, and phone withdrawal context. *Computers in Human Behavior, 81,* 1-9. doi.org/10.1016/j.chb.2017.11.026.

Tiffany, S. T. (2010). Drug craving and affect. In J. D. Kassel (Ed.), *Substance abuse and emotion* (pp. 83–108). American Psychological Association. doi.org/10.1037/12067-004.

Vagka, E., Gnardellis, C., Lagiou, A., & Notara, V. (2023). Prevalence and factors related to nomophobia: Arising issues among young adults. *European Journal of Investigation in Health, Psychology and Education, 13(*8*)*, 1467-1476. doi.org/10.3390/ejihpe13080107.

Vahedi, Z., & Saiphoo, A. (2018). Association between smartphone use, stress, and anxiety: A meta-analytic review. *Stress Health, (*3*)*, 347-358. doi.org/10.1002/smi.2805.

Walendorf, M., & Arnould, E. (1988). "My favorite things": A cross-cultural inquiry into object attachment, possessiveness, and social linkage. *Journal of Consumer Research, 14(*4*)*, 531-547. doi.org/10.1086/209134.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54(*6*)*, 1063-1070. https://doi.org/10.1037/0022-3514.54.6.1063.

Wilson, S. J. (2022). Constructing craving: Applying the theory of constructed emotion to urge states. *Current Directions in Psychological Science, 31(*4*)*, 347–354. doi.org/10.1177/09637214221098055.

Yildirim, C., & Correia, A. (2015). Exploring the dimensions of nomophobia: Development and validation of a self-reported questionnaire. *Computers in Human Behavior,* 49, 130-137. doi.org/10.1016/j.chb.2015.02.059.

Zhang, X., Li, J., Xie, F., Chen, X., Xu, W., & Hudson, N. W. (2022). The relationship between adult attachment and mental health: A meta-analysis. *Journal of Personality and Social Psychology, 123(*5*),* 1089-1137. doi.org/10.1037/pspp000043

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