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The Relationship Between Nomophobia, Addiction, and Distraction

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Abstract
Nomophobia is the fear of not accessing a mobile phone which has been recognised in the literature as a series of feelings and symptoms experienced by mobile/smartphone users. In the same manner, distraction and addiction have been found to interact with increasing usage and impact on users' wellbeing. This study aimed to explore the relationship between nomophobia and distraction-addiction through a cross-sectional study. One hundred and sixty-four participants aged between 18 and 70, 118 females (72%) and 46 males (28%) completed the Smartphone Addiction Scale, the Mindful Attention Awareness Scale, and the Nomophobia Questionnaire (NMP-Q). Distraction, addiction, and nomophobia scores were moderately to strongly correlated. Distraction and addiction scores were both significant predictors of nomophobia scores. Males scored higher for nomophobia but lower for addiction than females, with no differences for distraction. Results suggest that feelings of nomophobia may be related to withdrawal and addiction effects rather than fear. Findings may support the inclusion of a "Smartphone Addiction Disorder" in future editions of the Diagnostic and Statistical Manual of Mental Disorders. Further research exploring symptoms and severity of Nomophobia may contribute to the diagnosis and treatment.

Keywords Nomophobia · Distraction · Addiction · Mindfulness · Smartphone

Introduction

Nomophobia

Nomophobia is a term that refers to symptoms and behaviours linked to the use of smartphones. These include a fear of being unable to access and communicate through a smartphone (Fig. 1). King et al. (2014) emphasised that this fear appears to be a situational phobia related to agoraphobia. King et al. (2010) described nomophobia as "a twenty-first century disorder resulting from new technologies" (p. 52). Nomophobia: "It is the fear of becoming technologically incommunicable, distant from the Mobile Phone or not connected to the Web" (King et al., 2010, p. 52). King et al. (2013) defined nomophobia as "a disorder of the modern world and has only recently been used to describe the discomfort or anxiety caused by the non-availability of a Mobile Phone, Personal Computer, or any other virtual communication device in individuals who use them habitually" (King et al., 2013, p. 141). Buctot et al. (2020) found high levels of nomophobia (95.5%) and smartphone addiction (62.60%) in high school students in the Philippines. In addition, the authors reported a strong positive correlation between the two measures.

Excessive use of smartphones has been associated with impaired cognitive function and cognitive-emotional regulation (Wacks & Weinstein, 2021). A 2008 study in the UK, conducted with over 2100 subjects, demonstrated that more than half the phone users suffered from nomophobia (Bhattacharya et al., 2019; Notara et al., 2021). Bhattacharya found a gradual increase in the incidence of nomophobia commensurate with the gradual increase of smartphone usage as well as higher impacts for females compared to males. In a study of Turkish university students, Arpaci et al. (2019) found significant gender differences in nomophobia scores utilising the NomoPhobia Questionnaire (NMPQ; Yildirim & Correia, 2015). The authors found that females display more anxious attachment than males. In addition, mindfulness had a direct effect on nomophobia for females but not for males. León-Mejía et al. (2021) reviewed 108 studies and found that females and younger smartphone users are more vulnerable to experiencing nomophobia.

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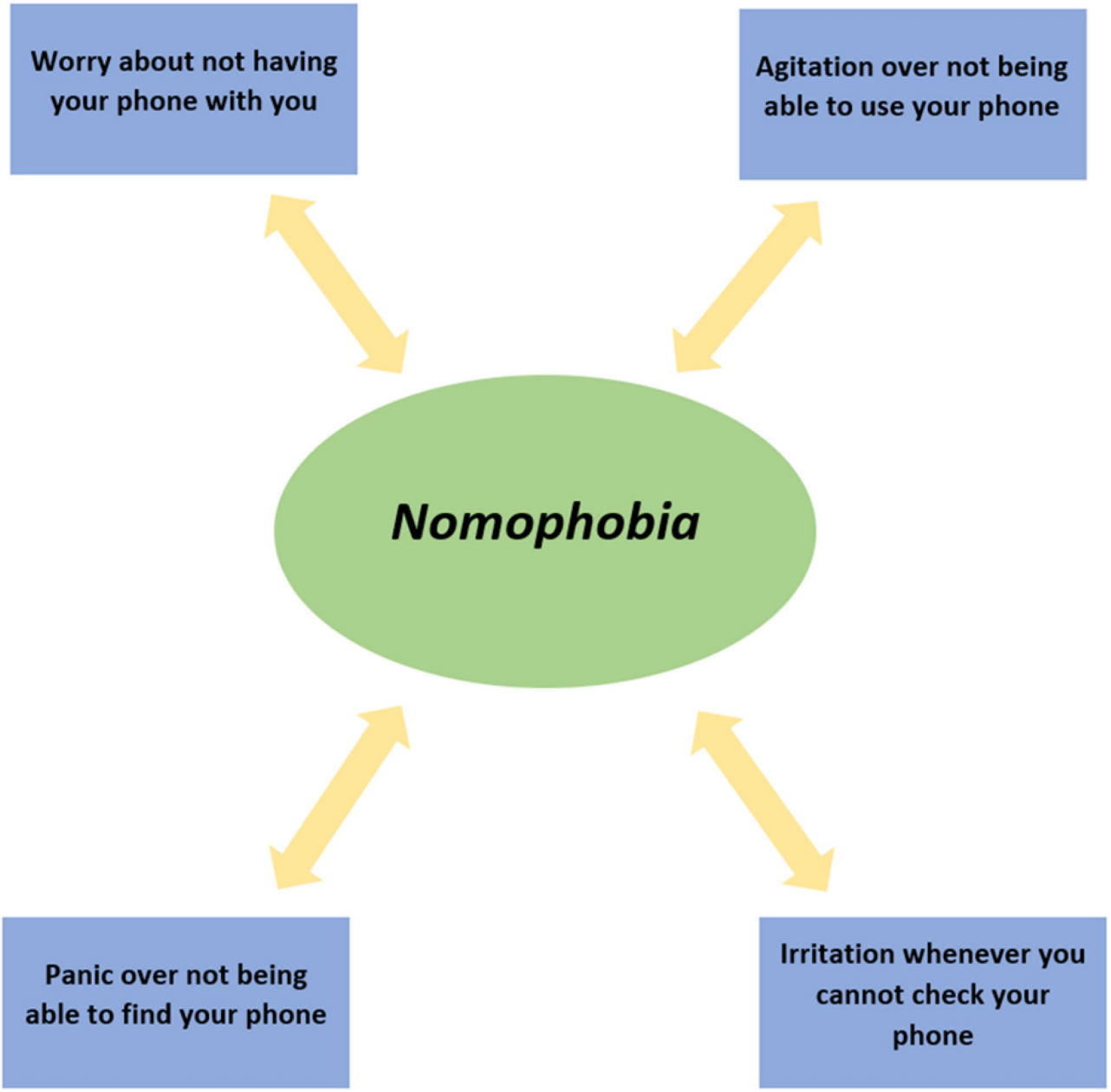

Fig. 1 Feelings associated with nomophobia

This paper investigates the possible relationship between nomophobia and distraction-addiction. More precisely, this study aims to explore the underlying mechanisms leading to nomophobia.

Distraction-Addiction

Distraction-addiction involves a compulsion to move away, repeatedly, and uncontrollably, from your initial purpose. The behaviour may be motivated by either an internal or an external source (Oraison et al., 2020). While the concepts of distraction and addiction have been defined and studied separately in the past, the notion of these two variables as one influencing factor is relatively new and warrants further exploration.

An internal driver of distraction-addiction is triggered when there is any diminished ability to pay attention and hold one's focus on the task. The individual simply lacks the ability to attend. Another internal driver occurs when an individual merely lacks interest in the subject of the moment (Sriwilai & Charoensukmongkol, 2015). On the external side, individuals seeking interest will be distracted toward some externality more readily when they are feeling unstimulated or bored. A second

external motivation moving individuals toward distraction is escapism. These individuals are wanting to avoid an unpleasant/uncomfortable situation and are thus more prone to become susceptible to distraction (Chiu, 2014).

Internal Distraction

When distraction is triggered by a lack of interest, there may also be a lack of motivation or purpose (Hadlington, 2015). When intrinsic motivation is low, the lack of interest will be high. When one's sense of purpose is low, lack of interest will again be high. A person who becomes satiated, or fed up, with a learning task or recreational pursuit may also be vulnerable to an eventual lack of interest (Sriwilai & Charoensukmongkol, 2015, Arpaci et al., 2018; Mendoza et al., 2018). At the tipping point of one's lack of interest, distractibility becomes more inviting.

External Distraction

Losing interest in an activity or task leads to seeking an alternative interest. The availability of alternatives has never been greater. We have the World Wide Web readily available. The sheer volume of possible distractions we can sequester challenges boredom thresholds (Arpaci et al., 2018). Screens are everywhere: in the home, in the car, at school, at university, at the sports bar, at the medical centre, at the airport, and in the gym. We have smartphones, laptops, PCs, and iPads, whenever and wherever we go.

External distraction as an escape is all about coping. In this sense, distraction may serve a positive purpose, possibly to avoid stress or conflict (Sriwilai & Charoensukmongkol, 2015). The escape, however, is most likely only a temporary solution. The escape hatch of distraction will solve the immediate issues but has limited lasting value. Escape through addiction to alcohol and other drugs is an unequivocal example. Notara et al. (2021) mentioned the concept of "behavioural addiction" with psychosocial and physical symptoms of smartphone addiction and nomophobia.

Accounting for the idea of continuous partial attention (Stone, 2007), distraction-addiction appears to be labile and habitual. Both distraction and addiction are extremely reactive and reflexive in nature. Internal and external, as well as hybrid, trigger ignite reactions of behaviour that are not reflective and thoughtful. The "mindfulness" potential is absent.

Levy (2016) found that individuals are continually making microdecisions in relation to attention behaviours throughout the day. These include cognitive and emotional functioning, as well as physical consequences and symptoms. These microdecisions occur in the context of multitasking that include performing two or more activities simultaneously in the digital world or combining digital tasks at the same time as performing non-digital activities. Social media use contains a combination of intentional and unconscious habits and impulses (Damico & Krutka, 2018). In what is called a "blessing of perpetual connectivity," the use of social media is causing more distancing and distraction. The combination of connectivity and multitasking is shown to be counterproductive and unhealthy in the long term. In the current context of social isolation due to the COVID-19 pandemic, we are experiencing significant restrictions to our daily non-digital activities (Mendoza et al., 2018).

Digital Mindfulness

Mindfulness proposes an increased awareness at any present moment leading to increased attention on activities, minimising distracting thoughts and unconscious habits and behaviours. The use of social media and other digital engagement may include mindless behaviours affecting areas of attention, intention, and attitude as well as reducing stress and frustration. Damico and Krutka (2018) divided activities in the use of social media into mindful and mindless. An American study utilised a reflective approach focussing on increasing the mindful use of technology by students (Levy, 2016). By identifying their feelings, habits, and behaviours, students were able to attend despite the constant distractions of smartphones and other devices.

Digital mindfulness can also assist individuals in focusing on one task at a time, closing their minds to alternative distracting tasks. Leroy (2009) proposed the concept of attention residue when switching between work tasks. This residue has a cognitive detrimental impact as the mechanistic nature of multitasking reduces the ability to concentrate on the second task. In addition to cognitive consequences, the concept of attention residue also includes a diminished psychological presence relating to the second task (Sriwilai & Charoensukmongkol, 2015).

The aim of this study was to investigate the relationship between nomophobia and the distraction-addiction model. To the best of the authors' knowledge, there is no study to date exploring the interaction of the three variables. In light of this, this study proposes the following question; does the interaction of addiction and distraction predict nomophobia scores? In addition, this study aims to explore gender differences for all variables with the following question: Are there any gender differences in regard to the relationship between distraction, addiction, and nomophobia?

Methods

Participants

Two hundred and four individuals participated in the study; however, 40 were removed due to incomplete responses.

Subsequently, the final sample comprised participants aged between 18 and 70 (M = 32.27 years, SD = 12.50 years) recruited via convenient and snowball sampling from Victoria University campuses (students, staff, and faculty) and online via social media (e.g. Facebook) during a period of 3 months. Participants comprised 118 females (72%) and 46 males (28%). Due to convenience sampling, there was no control over the gender distribution and there was a much higher rate of female participation.

Materials and Measures

A Personal Information Questionnaire included demographic information and the reasons and frequency of smartphone use. The Smartphone Addiction Scale (SAS) (Kwon et al., 2013) measures the level of smartphone addiction, with higher overall scores indicating a greater level of smartphone addiction. The SAS has high internal consistency and concurrent validity (Cronbach's alpha 0.967) (written permission was received from Prof. Kwon to use the SAS). The Mindful Attention Awareness Scale (Brown & Ryan, 2003) consists of 15 statements related to attention and distraction levels. A 6-point Likert scale from almost always (1) to almost never (6) with lower scores indicating higher levels of distraction (with internal consistency, Cronbach's alpha 0.871, and high convergent and discriminant validity) was used to measure participants' distractibility. The higher overall score on the MAAS indicated greater mindfulness and lower distractibility. The Nomophobia Questionnaire (NMP-Q — Original English Version) (Yildirim & Correia, 2015) consists of 20 statements relating to the usage of the smartphone (fear of not having access to a smartphone). A 7-point Likert scale ranged from strongly disagree to strongly agree. Cronbach's alpha for all the 20 items in the questionnaire was 0.918, indicating a good internal consistency. This tool was used to measure nomophobia scores as per definitions in the introduction (King et al., 2010) given the empirical support of its reliability and validity (Yildirim & Correia).

Procedure

Consent for this research was obtained from the Victoria University Human Research Ethics Committee (HRE18-071). Each participant received a hyperlink to a Qualtrics survey containing the online test battery. The survey data was imputed, collated, cleaned, and analysed using IBM® SPSS® Statistics Version 24 (IBM Corp., 2016).

Study Design and Data Analysis

The data was collected over a period of 3 months. The data collected offers a cross-sectional overview of the variables. The analyses conducted included correlational and pre-Outliers in the present data set were checked using boxplots. In addition, inspection of the descriptives' tables provided an indication of the extent of the problem associated with the identified outlier. This was done by comparing the original mean and the new trimmed mean values to determine whether extreme scores were likely to create a bias in the results. To minimise the exclusion of cases as a result of outliers, a winsorising procedure, as opposed to a trimming procedure was deemed an appropriate method for treating outliers. Winsorisation required the identification of all outlier multicollinearity was assessed through the examination of the computer tolerances, the condition indices, the variance proportions associated with each variable, and the Pearson's correlation coefficients between the independent variables, all produced by SPSS (Tabachnick & Fidell, 2013).

Table 1 Means and standard deviations for nomophobia, distraction and addiction by gender

	Gender	*N*	*Mean (STD)*	*STD error mean*
Nomophobia	Male	39	85.20 (24.28)	3.88
	Female	102	70.89 (22.59)	2.23
Distraction	Male	37	62.37 (11.86)	1.95
	Female	97	61.39 (13.35)	1.35
Addiction	Male	35	84.08 (24.33)	4.11
	Female	102	94.01 (24.04)	2.38

Results

Descriptive statistics were calculated to obtain means and standard deviation for nomophobia, distraction, and addiction as well as any gender differences for the variables. Results are shown in Table 1.

Independent sample *t-tests* were conducted to explore significant differences for the three variables by gender. Results are shown in Table 2.

The results indicated significant differences by gender with males having higher scores for nomophobia and females having higher scores of addiction to smartphones.

A Pearson's correlation was run to explore the relationships between the variables. Results are shown in Table 3.

Table 2 Independent sample *t*-test for nomophobia, distraction, and addiction by gender

	t	*df*	*Sig. (2tailed)*	*Cohen's d*
Nomophobia	3.30	139	0.001	0.61
Distraction	3.94	132	0.69	0.07
Addiction	−2.10	135	0.03	0.41

Significance $p < 0.05$

Table 3 Pearson's correlations results for gender, nomophobia, distraction and addiction

		Gender	*Nomophobia*	*Distraction*	*Addiction*
Gender	*Pearson C*	1	*−0.269***	*−0.034*	*0.178**
	Sig. (2-tailed)		*0.001*	*0.694*	*0.037*
	N	*154*	*141*	*0.466***	*−0.760***
Nomophobia	*Pearson C*				
	Sig. (2-tailed)	*0.001*		*0.000*	*0.000*
	N	*141*	*142*	*132*	*128*
Distraction	*Pearson C*	*−0.035*	*0.481***	*1*	*−0.602***
	Sig. (2-tailed)	*0.694*	*0.000*		*0.000*
	N	*134*	*132*	*135*	*121*
Addiction	*Pearson C*	*0.178**	*−0.760***	*−0.602***	*1*
	Sig. (2-tailed)	*0.037*	*0.000*	*0.000*	
	N	*137*	*128*	*121*	*138*

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

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

Results indicated a significant correlation (moderate to high) between nomophobia, distraction, and addiction. There was a weak negative correlation between gender and nomophobia and a weak positive correlation with addiction.

A multiple linear regression analysis was run to determine whether smartphone addiction and distractibility could predict levels of nomophobia. All regressions were tested using SPSS, and all assumptions were met. Histograms revealed the normality of residuals (non-correlated). No multivariate outliers were present. Predictor variables were independent of each other.

Following the Pearson's correlation results, a linear regression analysis was conducted with variables showing moderate to strong correlations. The purpose of this analysis was to investigate the role of distraction and addiction in predicting nomophobia. Results are shown in Table 4.

With alpha set at 0.05, a significant model was found $F(2,117) = 70.35$, $p < 0.001$, adj $R^2 = 0.54$, 54% of the variance in participants' nomophobia scores was predicted by the model. The model combining addiction and distraction predicted 54% of the nomophobia scores. Both independent variables were significant contributors to the model.

Table 4 Results of the linear regression analysis using addiction and mindfulness distraction as predictors of nomophobia

Model	*B*	*SE B*	*β*	*p*
Constant	0.953	0.662		0.000
Addiction	0.628	0.172	0.619	< 0.001
Distraction	0.370	0.129	0.204	0.005

Model $R^2 = 0.54$

b beta values, *SE B* standard errors, *β* standardised beta values

Discussion

The results of this study revealed a close relationship between distraction-addiction and nomophobia. Nomophobia scores were predicted by the interaction between distraction and addiction. Males' scores for nomophobia were significantly higher than females, while the opposite occurred with addiction; there was no difference for distraction coinciding with Arpaci et al. (2017). These results are in line with Sriwilai and Charoensukmongkol (2015) who found that women with higher levels of mindfulness had lower levels of distractibility and nomophobia. The role of gender is particularly interesting given the strong negative correlation between nomophobia and addiction. There were weak significant correlations between gender and nomophobia, gender, and addiction (Sriwilai & Charoensukmongkol, 2015).

Reflecting on the feelings underlying nomophobia (King et al., 2010), it could be useful to consider the relationship between fear and compulsion (Schwartz et al., 2015). Individuals make microdecisions based on their preferences and needs that in turn may turn into patterns of behaviour (Levy, 2016). The findings of this study suggest that these microdecisions are influenced by addiction and distractibility factors. Following the concept of "perpetual connectivity" (Damico & Krutka, 2018), we can identify, at least to some degree, the seeds of nomophobic feelings and behaviours. The usage of social media and smartphones in general is in part due to unconscious habits and impulses that demand/command our attention in a mindless context. The findings are in line with Chiu (2014) confirming that the addictive nature of smartphones is related to the rewarding and social benefits and distractions from daily life stresses. The use of smartphones can become a relief or reward as a distraction from stress and eventually a necessary mode of escape for the individual (Hadlington, 2015). Once this mechanism of

relief is entrenched in the individual's behaviour, the path to addiction appears to be cleared. Nomophobia may be considered more like a withdrawal presentation to the addicted individual than a phobia. In fact, nomophobia may be more related to an internet gaming disorder, which was listed as a "Condition for Further Study" in the DSM 5 (American Psychiatric Association, 2013). Some of the diagnostic criteria for this disorder include repetitive use, obsession, withdrawal, tolerance, an inability to stop, and the use of internet games to relieve and escape anxiety or guilt. The American Psychiatric Association is encouraging further research on this topic for a possible inclusion in further DSM editions (American Psychiatric Association, 2013).

Whether nomophobia is a fear (phobia) associated with social phobia (King et al., 2014) or a withdrawal symptom from an addiction (Chiu, 2014), its presence appears to fit in the context of the *distraction-addiction model* (Oraison et al., 2020). The need to use smartphones is indeed an external distraction, seeking interest but more so seeking escape in parallel to many of the substance dependency patterns, which may begin as an exploration or adventure elevating to an addiction. The addictive use of smartphones and withdrawal symptoms when that use is denied fits with the concept of a "compulsion loop" (King et al., 2010; Schwartz et al., 2015). Furthermore, there is also an internal perspective in the *distraction-addiction model*, as individuals lacking attention mindlessly appear to engage in smartphone use (Hadlington, 2015; Sriwilai & Charoensukmongkol, 2015). Further consideration of the impact of nomophobia may focus on neuroeducation and cognitive processes such as learning and memory as well as the development of a mindful digital literacy.

Limitations, Applications, and Suggestions for Further Study

This exploratory study offers new insights into the relationship between nomophobia and distraction-addiction. To the best of our knowledge, this is the first study encompassing these three variables. The implications of the findings may lead to the consideration of nomophobia and distraction-addiction as part of a mental health disorder related to the use of smartphones. This research was limited to quantitative data; further research may include qualitative data in order to better understand the relationship between the variables as well as other variables to widen the understanding of nomophobia. Our sample was comprised of a larger number of females (78%) than males; further studies may consider a gender balance as part of the recruiting process. In addition, the study is also limited by a relatively small sample; further research with large samples with mediation or moderation analyses may provide better opportunities for generalisability.

Through a more reflective digital mindfulness, rather than a reflexive approach, the mitigation of distraction-addiction and nomophobia could begin. Inattentive of the skills for a more mindful utilisation of technology, distraction-addiction, and nomophobia will continue to negatively impact our purpose, our meaning, and our lives.

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Data Availability Data is available.

Declarations

Competing Interests The authors declare no competing interests.

Ethics Approval Ethics approval for this study was obtained by the Victoria University Human Research Ethics Committee (HRE18-071).

Consent to Participate Informed consent was gained by providing the participants with an explanatory statement before they completed the online survey and ensuring that they indicated their consent on the online survey prior to gathering any data.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Publisher.

Arpaci, I., Baloğlu, M., & Kesici, Ş. (2019). A multi-group analysis of the effects of individual differences in mindfulness on nomophobia. *Information Development, 35*(2), 333–341. https://doi.org/10.1177/0266666917745350

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

Arpaci, I., Kesici, N., & Baloğlu, N. (2018). Individualism and internet addiction: The mediating role of psychological needs. *Internet Research, 28*(2), 293–314. https://doi.org/10.1108/IntR-11-2016-0353

Bhattacharya, S., Bashar, M. A., Srivastava, A., & Singh, A. (2019). Nomophobia: No mobile phone phobia. *Journal of Family Medicine and Primary Care, 8*(4), 1297–1300.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*(4), 822–848.

Buctot, D. B., Kim, N., & Kim, S. H. (2020). The role of nomophobia and smartphone addiction in the lifestyle profiles of junior and senior high school students in the Philippines. Social Sciences & Humanities Open, 2(1). https://doi.org/10.1016/j.ssaho.2020.100035

Chiu, S.-I. (2014). The relationship between life stress and smartphone addiction on Taiwanese university students: A mediation model of learning self-Efficacy and social self-Efficacy. *Computers in Human Behavior, 34*, 49–57.

Damico, N., & Krutka, D. (2018). Social media diaries and fasts: Educating for digital mindfulness with pre-service teachers. *Teaching and Teacher Education, 73*, 109–119.

Hadlington, L. J. (2015). Cognitive failures in daily life: Exploring the link with Internet addiction and problematic mobile phone use. *Computers in Human Behavior, 51*(Part A), 75–81. https://doi.org/10.1016/j.chb.2015.04.036

IBM Corp. (2016). IBM SPSS statistics for windows, Version 24.0. Armonk, NY: IBM Corp.

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: Official Journal of the Society for Behavioral and Cognitive Neurology, 23*(1), 52–54. https://doi.org/10.1097/WNN.0b013e3181b7eabc

King, A. L. S., Valença, A. M., Silva, A. C., Sancassiani, F., Machado, S., & Nardi, A. E. (2014). "Nomophobia": Impact of cell phone use interfering with symptoms and emotions of individuals with panic disord. *Clinical Practice and Epidemiology in Mental Health, 10*, 28–35.

King, A. L. S., Valença, A. M., Silva, A. C. O., Baczynski, T., Carvalho, M. R., & Nardi, A. E. (2013). Nomophobia: Dependency on virtual environments or social phobia? *Computers in Human Behavior, 29*(1), 140–144. https://doi.org/10.1016/j.chb.2012.07.025

Kwon, M., Lee, J.-Y., Won, W.-Y., et al. (2013). Development and validation of a smartphone addiction scale (SAS). *PLoS ONE, 8*(2), 1–7.

León-Mejía, A. C., Gutiérrez-Ortega, M., Serrano-Pintado, I., & González-Cabrera, J. (2021). A systematic review on nomophobia prevalence: Surfacing results and standard guidelines for future research. *PLoS ONE, 16*(5), 1–22. https://doi.org/10.1371/journal.pone.0250509

Leroy, S. (2009). Why is it so hard to do my work? The challenge of attention residue when switching between work tasks. *Organizational Behavior & Human Decision Processes., 109*(2), 168–181.

Levy D. (2016). Mindful Tech. How to bring balance to our digital lives. Yale University Press, USA. https://go.microsoft.com/fwlink/?LinkId=550986

Mendoza, J. S., Pody, B. C., Lee, S., Kim, M., & McDonough, I. M. (2018). The effect of cellphones on attention and learning: The influences of time, distraction, and nomophobia. *Computers in Human Behavior, 86*, 52–60. https://doi.org/10.1016/j.chb.2018.04.027

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

Oraison, H. M., Nash-Dolby, O., Wilson, B. & Malhotra, R. (2020) Smartphone distraction-addiction: Examining the relationship between psychosocial variables and patterns of use. *Australian Journal of Psychology, 72*(2). https://doi.org/10.1111/ajpy.12281

Schwartz, D. C., Nickow, M. S., Arseneau, R., & Gisslow, M. T. (2015). A substance called food: Long-term psychodynamic group treatment for compulsive overeating. *International Journal of Group Psychotherapy, 65*(3), 386–409.

Sriwilai, K., & Charoensukmongkol, P. (2015). Face it, don't Facebook it: Impacts of social media addiction on mindfulness, coping strategies and the consequence on emotional exhaustion. *Stress and Health, 32*(4), 427–434. https://doi.org/10.1002/smi.2637

Stone, L. (2007), Continuous partial attention, Version 33, available at: http://continuouspartialattention.jot.com/WikiHome

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

Wacks, Y., & Weinstein, A. (2021). Excessive smartphone use is associated with health problems in adolescents and young adults. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.669042

Yildirim, C., & Correia, A.-P. (2015). Exploring the dimensions of nomophobia: Development and validation of a self-reported questionnaire. *Computers in Human Behavior, 49*, 130–137.