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Attachment Styles and Nomophobia in Young Adults: The Mediating Role of Mindful Awareness

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The present study investigated the relationships among attachment style, mindful awareness and nomophobia in university students. The study hypothesized that attachment style and mindful awareness are likely to predict nomophobia in university students; and mindful awareness is likely to mediate the relationship between attachment styles and nomophobia. With the help of cross-sectional research design and non-probability purposive sampling technique, a sample of 208 young adults was selected. Data was collected through Attachment Style Questionnaire (ASQ; Van Oudenhoven et al., 2003), Mindful Attention Awareness Scale (MASS; Brown & Ryan, 2003) and Nomophobia Questionnaire (NMP- Q; Yildrim & Correia, 2015). To analyze the data, SPSS and AMOS software were used. It was showed by Pearson Product Moment Correlation that secure attachment style had positive association with nomophobia and mindful awareness. Fearful and preoccupied attachment styles had negative association with mindful awareness and both are positively related to nomophobia. Analysis showed that secure, fearful, and preoccupied attachment styles were positively predicting nomophobia. Secure attachment style was positively predicting mindful awareness but fearful and preoccupied attachment styles were negatively predicting mindful awareness. Furthermore, mediation analysis showed that mindful awareness was significantly mediating the relationsship between attachment style and nomophobia. It was concluded that mindfulness could be helpful in the management of nomophobia.

Keywords. Attachment Styles, Mindful Awareness, Nomophobia, Young Adults.

The advancement in Information and Communication Technologies (ICTs) has made communication easy, but it has also created challenges, especially for young adults (Hussain & Adeeb,

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2009; Netburn, 2012). One of the emerging psychological problems related to ICTs is Nomophobia (no mobile/smartphone phobia), defined as nervousness, discomfort, distress, or agony that is experienced because of being away from one's smartphone (Bragazzi & Del- Puente, 2014). The dimensions of nomophobia were explored by Yildirim and Correia (2015): (i) losing connectedness; (ii) not being able to communicate with others; (iii) not being able to access information; and (iv) giving up conveniences associated with a smartphone. A Turkish study reported that nomophobia is less prevalent among Pakistani students as compared to Turkish students because they are less exposed to Information and Communication Technologies (ICTs). This study also indicated that, in undergraduate students of Pakistan, the scores of nomophobia tend to increase across study years (Ozdemir et al., 2018).

Literature showed a negative association between students' academic performance and usage of smartphone as it promotes distraction and reduces attention during classroom hours (Levine et al., 2007). Moreover, nomophobia could lead towards the development of different psychological disorders such as personality disorders, depressive disorders and anxiety (Mendoza et al., 2018). Among the causes of nomophobia, previous studies showed that parents play an important role and permissive parenting is associated with nomophobia as children may develop an association with smartphone due to lack of parental responsiveness (Muyana & Widyastuti, 2018). One other important factor is attachment style in which anxious (preoccupied) and avoidant (dismissing and fearful) styles are positively associated with nomophobia (Arpaci et al., 2017). Bowlby (1973) formulated the attachment theory to explain parent-infant emotional bonding and this theory has been used to understand psychological processes of an individual. It was also explained by Bowlby (1973) that when an individual interacts with significant others in time of need, working models of attachment related to self and others are formed. Based on these working models, people make mental representations, either positive or negative, about themselves and others (Bartholomew & Horowitz, 1991). Research showed that when an individual develops an insecure attachment with others, it may lead towards smartphone dependency, and ultimately, nomophobia (Kim & Koh, 2018).

Although attachment theory was formulated to describe an individual's relationship with one another but now it is also used to describe relationships with objects with important implications for understanding relationship or attachment with smartphones (Cipriani & Kreider, 2009). A theory of extended self, proposed by Belk (2013),

explained that people perceive their smartphone as extension of their self and felt anxious when they did not have their smartphones with themselves. This theory was built upon the notion that consumers prefer products to have association with them. Culture also plays an important role and have an influence on individuals to incorporate these possessions in their extended self. Hazan and Shaver (1994) also stated that sometimes people develop an attachment with inanimate objects such as smartphones. As human attachment figures, object attachment is considered as a source of security and by learned association, it becomes a target for attachment (Bretherton, 1985; Passman, 1987; Parent & Shapka, 2019). Through object attachment approach, the continual connectivity to smartphone is considered as compatible strategy to inhibit activation of attachment system and helps to maintain a sense of safety or security whenever someone experiences emotional distress (Cheevar et al., 2014).

Currently, there is a constant struggle to minimize the negative consequences of smartphone use. In this regard, one important variable is mindful awareness. Kabat-Zinn (1994) proposed that mindfulness embodies attention on purpose, to the present moment, without any judgement. Mindful awareness helps in reducing anxiety of an individual when they are unable to communicate through their smartphones, therefore, showing negative association between mindful awareness and nomophobia (Arpaci et al., 2017). Furthermore, Elhai et al. (2018) argued that mindful awareness inversely predicts problematic smartphone use and is also significantly mediates the association between anxiety and nomophobia. Mindfulness-based therapies assert that behavioural addictions lead to psychological complications and maladjustment. A study conducted in Spain suggested that mindfulness-based interventions may be helpful in treating technology-based addictions, including nomophobia by enhancing awareness and cognitive control over cravings (Garland et al., 2014; Plaza et al., 2013). They can also help in developing adaptive strategies in an individual to deal with novel circumstances and prevent them from developing maladaptive coping (McClelland et al., 2018). Strong evidence suggested that mindfulness-based interventions and practices can target behavioural and cognitive processes in individuals that are helpful in treating behavioural addictions. Therefore, mindfulness-based practices can prove helpful in enhancing the level of mindful awareness and lowering the levels of nomophobia (Shonin et al., 2015). Therefore, based on these arguments, the present study was designed to explore attachment styles and mindful awareness as predictors of nomophobia in young

adults and to explore the mediating role of mindful awareness between attachment styles and nomophobia in young adults.

Method

Sample

To estimate the sample size for this study, the power analysis was done by using G*Power (3.1.9.4). Power analysis (medium effect size ($f2$= .15), α of .05, target power of .95 and 5 predictors) showed that a minimum sample of 146 participants was required for the present study. Through non- probability purposive sampling, a sample of 208 young adults was recruited. The participants were recruited from different public and private universities and data was collected through Google forms. Only those participants were included who had personal smartphones for at least a year and were using it for more than one hour on daily basis.

Table 1

Demographic Characteristics of Young Adults (N= 208)

Demographics	*M*	*SD*	*f*	%
Age	21.96	1.76	-	-
Education	16.11	1.08	-	-
Family income	97125.0	81061.46	-	-
Duration of having personal smartphone (in years)	4.86	2.07	-	-
Duration of using smartphone on daily basis (in hours)	7.17	3.30	-	-
Gender				
Men	-	-	76	36.5
Women	-	-	132	63.5
Sector				
Public	-	-	150	72.1
Private	-	-	58	27.9
Departments				
Life sciences	-	-	46	22.1
Commerce/Business/Management sciences	-	-	35	16.8
Social sciences	-	-	33	15.9
Engineering and technology	-	-	28	13.5
Applied sciences	-	-	32	15.4
Arts and humanities	-	-	7	3.4
Health sciences	-	-	27	13.0
Occupation				
Working	-	-	30	14.4

Continued…

Demographics	*M*	*SD*	*f*	%
Non-working	-	-	178	85.6
Marital status				
Married	-	-	5	2.4
Unmarried	-	-	198	95.2
Engaged	-	-	4	1.9
Reasons of using smartphone				
Calling	-	-	4	1.9
Texting	-	-	120	57.7
Listening music	-	-	67	32.2
Playing games	-	-	53	25.5
For academic purposes	-	-	137	65.9
Social networking sites	-	-	159	76.4
Onlineclasses/quizzes/assignments	-	-	4	1.9
Watching movies/dramas	-	-	8	3.8
Commonly used social networking sites	-	-		
Whatsapp	-	-	176	84.6
Facebook	-	-	86	41.3
Instagram	-	-	104	50.0
Snapchat	-	-	32	15.4
Twitter/linkedln	-	-	12	5.8
Youtube/Netflix	-	-	9	4.3
Zoom/Google classroom	-	-	4	1.9
Is smartphone consuming your time?				
Very much	-	-	85	40.9
A little much	-	-	103	49.5
Not at all	-	-	20	9.6

Measures

Demographic Sheet. It was prepared by the researcher to explore the participant's age, education, university, department, gender, birth order, family background, duration of having a smartphone, approximately usage of mobile phone, type of usage, income, and family system, were obtained.

Attachment Style Questionnaire (ASQ; Van-Oudenhoven et al., 2003). It is a 24- item scale which investigates attachment styles of an individual. It consists of four subscales: Secure (7 items), Fearful (5 items), Preoccupied (7 items) and Dismissing (5 items). Items were rated on a 5-point Likert-type scale ranging from 1 "*strongly disagree*" to 5 "*strongly agree*". Few items were keyed reversely while total score on each subscale was calculated by computing means of the items of that subscale. The internal consistencies were .75 for Secure, .80 for Preoccupied, .79 for Fearful and .62 for Dismissing subscale. For the present study, the reliability of secure, fearful, dismissing and fearful attachment was .64, .72, .60 and .82 respectively.

Mindful Attention Awareness Scale (MAAS; Brown, & Ryan, 2003). It is a 15- item scale that assess dispositional or trait mindful awareness, including attention to and awareness of on- going events and experiences. It is used It assesses core characteristic of mindfulness on 6- point Likert-type scale with 1 being "*almost always*" and with 6 being "*almost neve*r". Items were scored by computing means and total score of 15 reflect higher level of dispositional mindful awareness. This scale has Cronbach's α reliability ranging from .89 to .93. For this study, the Cronbach's *alpha* reliability of the scale was .86.

Nomophobia Questionnaire (NMP-Q; Yildirim & Correia, 2015). It is comprised of of 20 items that cover four main dimensions of nomophobia: *not being able to communicate with others, not being able to access information, losing connectedness, and giving up conveniences related to smartphone.* Each item was measured by a 7-point Likert-type scale, with 1 being "*strongly disagree*" and with 7 being "*strongly agree*." Total score of 20 show an absence of nomophobia while a score of 140 indicates severe level of nomophobia. For the present study, the internal consistencies of four dimensions of nomophobia were .92, .87, .83 and .79 respectively while the reliability of NMP-Q was .93.

Procedure

Firstly, research proposal was approved by the Doctoral Program Coordination Committee (DPCC). To use the tools for the present study, permission was taken from the authors. Moreover, authors were informed about the use of their tools through Google forms and permission was taken for this purpose. The next step was to collect the data after taking permissions from respective participants. Students from different universities were approached. The questionnaires along with an information sheet, informed consent, and demographic sheet were provided to the participants. The nature and purpose of the study were explained to the participants with the assurance that their information will be remain confidential.

Results

With the help of SPSS (20.0.0) and AMOS (21.0.0), data analysis was done. Pearson Product Moment Correlation was employed to evaluate the hypothesis that there are likely to be relationships among attachment styles, mindful awareness, and nomophobia in young adults.

Results showed that secure, fearful, and preoccupied attachment styles had positive association with nomophobia. It showed that high scores on secure, fearful, and preoccupied attachment are linked to high levels of nomophobia. Furthermore, secure attachment style had positive association with mindful awareness, but fearful and preoccupied attachment styles were negatively associated with mindful awareness. It showed that high scores on secure attachment style was associated with more mindful awareness; however, high scores on fearful and preoccupied attachment were associated with low levels of mindful awareness. It was clearly demonstrated that mindful awareness had significant negative relationship with nomophobia, indicating that high mindful awareness is associated with low level of nomophobia.

The hypothesis that mindful awareness is likely to mediate the relationship between attachment styles (secure, fearful, dismissing, and preoccupied) and nomophobia was tested with the help of Structural Equation Modeling (SEM) and AMOS. The model fit indices of the initial an emerged models are demonstrated in Table 3.

Table 3

Model Fit Indices for Attachment Styles, Mindful Awareness and Nomophobia (N= 208)

Model	χ^2	*p*	*df*	χ^2/df	TLI	CFI	GFI	RMSEA
Initial model	45.08	.00	6	7.51	.44	.78	.94	.18
Final model	4.24	.24	3	1.41	.97	.99	.99	.05
$\Delta\ \chi^2$	40.84							

It has been recommended that for continuous data, RMSEA value should be .06 or lesser and values for TLI, CFI, and GLI should be .95 or higher for the model fit (Hu & Bentler, 1999). In the initially emerged model, chi-square (χ^2) was significant (χ^2 (6, 21) = 45.08, p <.05) and the values for CFI, TLI, GFI and RMSEA were .78, .44, .94 and .18, respectively. The model was not a good fit as indicated by these values and therefore, the model was modified with the help of modification indices. It was suggested to draw direct effects of secure, fearful and preoccupied attachment with nomophobia. Between the independent variables, the covariances were drawn. The model was analyzed again after using these modification indices. The final model showed that chi-square (χ^2) was non-significant as χ^2 (3, 21) = 4.24, p >.05 and the values for CFI, TLI, GFI and REMSEA were .99, .97, .99 and .05, respectively. The indices showed that it was a good fit. The emerged Mediation Model is shown in Figure 1.

Figure 1

Graphical Representation of the Direct and Indirect Effects of Attachment Styles, Mindful Awareness and Nomophobia in Young Adults.

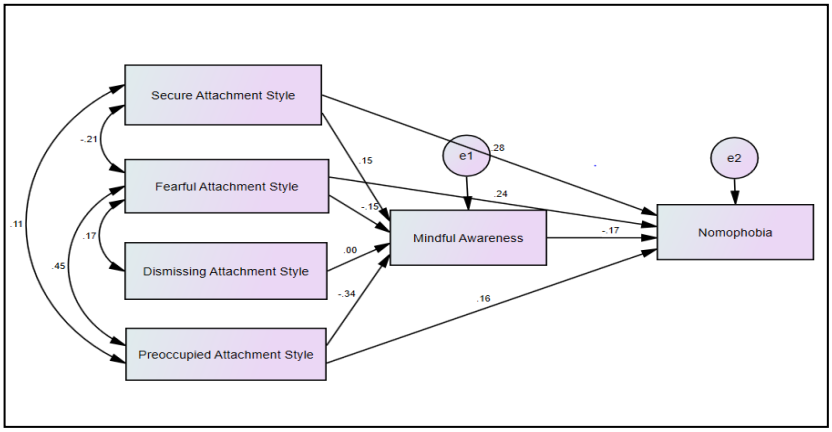

Table 4

Direct Effects of Attachment Style on Mindful Awareness and Nomophobia (N= 208)

Variables	Mindful Awareness		Nomophobia	
	β	*S.E*	*β*	*S.E*
Secure Attachment	.15*	.08	.28**	.06
Fearful Attachment	-.15*	.08	.24*	.08
Dismissing Attachment	.00	.07	-	-
Preoccupied Attachment	-.34**	.08	.16*	.07
Mindful Awareness			-.17*	.07

Table 4 showed that secure attachment style was positively predicting mindful awareness which indicates that individuals who develop secure attachment in their relationships exhibit high level of mindful awareness. Fearful and preoccupied attachment styles were negatively predicting mindful awareness while positively predicting nomophobia which suggested that those who develop fearful or preoccupied attachments are likely to have low level of mindful awareness and high level of nomophobia. It was also observed that mindful awareness was negatively predicting nomophobia which showed that high levels of mindful awareness was predicting low levels of nomophobia.

Table 5

Indirect Effects of Attachment Style on Mindful Awareness and Nomophobia (N= 208)

	Nomophobia		
Variables	*B*	*LB*	*UB*
Secure Attachment	-.03*	-.06	-.01
Fearful Attachment	.03*	.00	.07
Dismissing Attachment	-.00	-.03	.02
Preoccupied Attachment	.06*	.02	.12

To evaluate the role of mediator (mindful awareness) between attachment style and nomophobia, indirect effects were analyzed. Table 5 demonstrated that mindful awareness was mediating the relationship between attachment styles (such as secure, fearful, and preoccupied attachment) and nomophobia in young adults.

Discussion

In the present era, a smartphone is not just a tool to communicate with others but is also an attachment object (Li & Hao, 2019). Studies have been conducted to explore the relationships between attachment styles and nomophobia and between mindful awareness and nomophobia separately (Arpaci et al., 2017; Cladwell & Shaver, 2013; Divya et al., 2019). The purpose of this study was to investigate the relationship among attachment styles, mindful awareness and nomophobia in young adults and to explore the mediating role of mindful awareness between the relationship of attachment styles and nomophobia. In this following section, results are discussed with reference to previous literature and theoretical framework. It was hypothesized that there are likely to be relationships among attachment styles, mindful awareness, and nomophobia in young adults. Findings of Pearson Product Moment Correlation showed a significant positive relationship between duration of smartphone usage and nomophobia and the results are supported by previous research findings which suggested that those who spend more hours on their smartphones are more prone to develop nomophobia and its negative consequences (Kalaskar, 2015). A study by Yildirim and Correia (2015) also explored that duration of smartphone usage was associated with greater level of nomophobia. Furthermore, the present study explored that duration of having smartphone (ownership) had no significant association with nomophobia. Gezgin et al. (2018) also reported no significant relationships between duration of smartphone ownership and nomophobia.

In this study, secure attachment style had significant association with mindful awareness, and it showed that those who are secure in their relationships tend to have high level of mindful awareness. Secure attachment and mindful awareness are linked to positive outcomes as those who develop secure relationship patterns with others have adaptive coping strategies, high self-esteem, and emotional regulation skills (Shaver et al., 2007). Another research finding support the results of present study as those who have secure attachment in their relationships reported to have high levels of attentional control (Cladwell & Shaver, 2013). Furthermore, in the present study, preoccupied and fearful attachment styles had negative relationship with mindful awareness and this can be supported by findings of another study in which a significant relationship was explored between attachment anxiety or avoidance and mindful awareness (Arpaci et al., 2017).

In this study, secure attachment style was positively related to nomophobia. It was an interesting result as it showed that even by having a secure attachment style, young adults developed an attachment with a smartphone, indicating the influence of information and technology in the present era. On the other hand, it could be interpreted as a tool to maintain social connectivity and to ensure social belongingness and interpersonal relationships with others (Kim & Koh, 2018; Oldmeadow et al., 2013). In this study, preoccupied and fearful attachment styles showed significant positive relationship with nomophobia. It showed that individuals who are emotionally dependent on others display high levels of discomfort when they are unable to get access to their smartphones. It is related to the results of another study in which a strong link was found between anxious attachment and nomophobia (Arpaci et al., 2017).

It was hypothesized that attachment styles and mindful awareness are likely to predict nomophobia in university students. Regression analysis showed attachment styles (such as secure, fearful, dismissing, and preoccupied) were positively predicting nomophobia. These results can be supported by previous research studies as Arpaci et al. (2017) also reported the same results and showed that attachment avoidance with its negative view about oneself or others was positively predicting the symptoms of nomophobia. Regression analyses also suggested that mindful awareness was negatively predicting nomophobia by suggesting that those who had high scores on mindful awareness tend to have low levels of nomophobia. Several studies supported these findings as it was suggested that through different interventions and programs, mindful awareness can be increased and, in this way, technology-based addictions (excessive

smartphone usage) can be controlled. Studies also found that individuals with smarter phone usage have low levels of mindful awareness (Garland et al., 2014; Plaza et al., 2013; Shonin et al., 2013)

Lastly, the hypothesis that mindful awareness is likely to mediate the association between attachment styles and nomophobia in university students was supported. It was showed by mediation analysis that mindful awareness significantly mediated the association between attachment styles and nomophobia. It showed that attachment styles are predicting the levels of mindful awareness and then, these levels of mindful awareness predict the levels of nomophobia. Findings of previous research also supported the results of present study as it was found that there was indirect effect of avoidant (dismissing and fearful) and anxious (preoccupied) attachment on nomophobia through mindfulness (mediator). These results confirmed the significant direct and indirect effects of attachment styles on nomophobia (Arpaci et al., 2017). These show that mindful use of smartphones could be developed with the help of mindfulness.

Conclusions

The present study sheds light on relationships between attachment styles, mindfulness, and nomophobia. Mediation analysis provided the evidence that mindful awareness is a significant component in the association between attachment styles and nomophobia. The present study also highlighted how different attachment styles contributed to technology-based addiction of nomophobia. The study concluded that mindful awareness could play an important role between attachment styles and nomophobia.

Limitations and Suggestions

1. The present study was comprised of limited sample size, and it has more representation of public sector university students.
2. Equal proportion of men and women university students should be added in the sample and there is a need to conduct a comparison study among college and university students to explore the differences in the level of nomophobia.
3. There is need to conduct qualitative studies exploring the experiences of individuals with nomophobia. Experimental studies should also be conducted to explore the effect of mindful awareness on nomophobia.

Clinical Implications

As nomophobia is continuously growing among young adults, so there is a need to conduct seminars, conferences and workshops to create awareness relate to the negative impacts of technology, specifically, smartphones in human lives. To promote mindful usage of smartphones, mindfulness-based workshops and programs could also be conducted. Mindfulness-based strategies and programs could be designed for the treatment of technology-based addictions to cultivate mindful awareness in students.

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