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RESEARCH PAPER

Impact of Self-esteem on Smartphone Dependency among Young Adults: Mediated by Nomophobia

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ABSTRACT

The current research explored the effect of self-esteem on smartphone addiction in young adults, with nomophobia tested as a mediator. A total of 300 university students took part in the research using standardized tests: the Rosenberg Self-Esteem Scale, the Nomophobia Questionnaire, and the Smartphone Addiction Scale. Correlational and regression analyses identified a significant negative correlation between self-esteem and smartphone addiction. Mediation analysis also revealed that nomophobia partly mediated this association, indicating that lower self-esteem individuals tend to have higher levels of nomophobia, which further lead to higher levels of smartphone dependence. The results emphasize the need to tackle both self-view and anxiety in digital environments while promoting health technologies. It is advised that targeted interventions focusing on boosting self-esteem and alleviating nomophobia be integrated into digital literacy and mental health initiatives for young adults. Such programs can equip individuals with healthier coping strategies and foster more balanced, mindful engagement with technology.

Keywords: Self-Esteem, Nomophobia, Smartphone Dependency, Young Adults, Mediation

Introduction

Self-esteem is defined as a person's general perception of self-worth or value. It is an integral component of psychological wellness, influencing one's perception of himself or herself and how one deals with difficulties in life. Self-esteem theory predicts that those who have higher self-esteem tend to have improved mental health, with the tendency to be positive towards life, believing they can manage stress, and more likely to participate in positive behaviors for their well-being (Rosenberg, 1965). Low self-esteem holders tend to suffer from inadequacy, sensitivity to stress, and low mental resilience (Leary & Baumeister, 2000).

Research has shown that self-esteem impacts many psychological processes, such as emotional regulation, interpersonal relationships, and general mental health. People with low self-esteem tend to lean more toward external validation and may be more sensitive to what others say about them, which, in turn, increases chances that anxiety and depressive symptoms will manifest (Crocker & Park, 2004). Apart from this, low self-esteem is linked with maladaptive coping styles such as rumination and social withdrawal, which can be damaging not only to interpersonal relationships but also work relationships (Dion, 2008). On the other hand, highly self-esteem individuals typically are more resilient in adversity and use better coping styles that protect their mental health (Baumeister et al., 2003).

Furthermore, self-esteem is related to other types of behavior, including the attitudes of people toward technology. For example, it is believed that individuals with high self-esteem would be able to manage their excessive use of digital technologies because their self-esteem would serve as sufficient inner resources. On the contrary, low self-esteem may induce dependence on social media and other online sources as a way of seeking validation or evading the feeling of inadequacy (Tiggemann & Slater, 2014). Studies have shown that people who have low self-esteem use technology to fill the gap, whereby they do social comparison, and validation in online relationships, and, eventually, this might lead to greater unhealthy dependency on smartphones and social networks (Fioravanti et al., 2012).

In today's fast-paced digital world and in the hands of those young adults who are most interested in smartphones and social media, online and offline worlds are probably going to be losing their balance. Low self-esteem among young adults may lead to maladaptive smartphone use, as a means of escapism or self-worth validation (Kuss & Griffiths, 2017). For those who suffer from low self-esteem, the smartphone is not just a communication device but also a means of seeking approval and validation from their peers online. This interaction between smartphone usage and self-esteem indicates that those with lower self-esteem are more susceptible to developing smartphone addiction, especially through overuse of social media websites (Pantic et al., 2012).

Smartphone Dependency

Smartphone dependency is the compulsive and excessive use of smartphones that disrupts social interactions and daily activities. With smartphones becoming an integral part of contemporary life, dependency has become a serious issue, especially among young adults. The introduction of social media, gaming applications, and ubiquitous connectivity has provided a digital world where people feel the urge to stay constantly connected with their phones (Billieux, 2012). Although smartphones bring a lot of advantages, like communication, convenience, and entertainment, excessive use of them causes psychological problems like anxiety, sleeping problems, and loss of productivity (Kuss & Griffiths, 2017). The dependency is very serious because most of the time it gets connected with other problems, like social isolation and emotional problems.

The psychological driver of smartphone addiction can be traced to a craving for ongoing social validation and concern about missing out (FoMO). For many young adults, smartphones serve as a gateway to social interaction, which is thought to foster a sense of belonging and approval (Przybylski et al., 2013). The continual craving of validation through social media platforms such as Facebook and Instagram can reinforce dependence, as individuals rely more on their cellphones for social comparison and validation (Kuss & Griffiths, 2017). Those individuals with low self-esteem are particularly vulnerable to the tendency of using social media interactions to receive external validation and comfort, which ultimately increases their dependence on cellphones.

Additionally, the fear of being disconnected from the virtual world termed "nomophobia," can often exacerbate mobile phone addiction (Yildirim & Correia, 2015). This phobia will compel someone to become dependent on their smartphone even in situations where becoming unreachable or having a lack of actual social interaction is not an imminent need, in order to relieve the anxiety of the situation. A smartphone addiction can create an infinite cycle of increasingly relying on one's cell phone, all of which can impact psychological problems adversely. According to Elhai et al. (2017), smartphone addiction may act on the brain similar to other more traditional types of behavioral addictions since the anxiety of being without a smartphone can create feelings like withdrawal in other behavioral addictions.

Promoting healthier smartphone use and habits related to digital detoxes is often the main objective of interventions aiming to reduce smartphone reliance. The interventions may commonly involve limiting screen time, promoting in person communication and human connections, and promoting mindfulness (Liu et al., 2017). In order to effectively address and prevent smartphone dependencies, it is essential to identify psychological factors contributing to excessive technology use e.g., self-esteem. Without addressing psychological factors, more inclusive and long lasting solutions can not be established regarding smartphone addiction.

Nomophobia: The Link Between Self-Esteem and Smartphone Dependency

Historically, 'nomophobia' - fear of not having a cell phone, has become a major issue recently amongst young adults. In relation to nomophobia, smartphone overuse has been directly correlated with the disease and Lowe self-esteem individuals experience the disease more severely (Yildirim & Correia, 2015). Smartphone dependence can be interpreted as an attempt at resolving anxiety, loneliness, and feeling of inadequacies, which are often engendered in poor self-esteem individuals. Smartphones are uniquely reassuring devices that can provide individuals with inclusion and a sense of being connected to humanity, contributing to a continuance of smartphone dependence issues.

Nomophobia is a type of emotional coping strategy that allows for temporary relief from feelings of insecurity or disconnection from other people. However, people who use their cell phones and smartphones to provide repeated emotional release to negative feelings may find that the repeated use makes them feel more dependent on smart phones and ultimately could result in a negative long-term impact on self-esteem. People with low self-esteem reported a higher incidence of nomophobia because they believed that using a smart phone allowed a way to stay connected while avoiding feelings of inadequacy (Pyszczynski et al., 2013). Nomophobia and addiction to a smartphone, then, are not just behaviors. Alternatively, both can be framed on connections to a person's sense of worth.

Smartphone Dependency and Self-Esteem: The Mediating Role of Nomophobia

Addiction to cell phones is common and becoming more common with young people using them as sources of social media, entertainment, and a means of connecting with others. When, a person has low self-esteem, then they are more likely to become addicted to a smartphone because their self-esteem is dependent on their online friends and connections. A smartphone can then subsequently becomes a way to fill the emotional space created by low self-esteem. This dependence is exacerbated with, nomophobia since people fear losing their cell phones which can in turn make them more emotionally vulnerable (Zhou et al., 2017).

The moderating role of nomophobia between smartphone dependency and self-esteem is critical when considering emotional needs in relation to the use of technology. The higher levels of nomophobia, the higher levels of smartphone addiction indicative of a negative cycle which can be detrimental as it prevents the individual from addressing the core reason for their self-esteem problems and can potentially lead to mental illnesses such as anxiety and depression (Elhai et al., 2017).

Finally, self-esteem is a key predictor of smartphone dependency among young people. Low self-esteem predicts nomophobia which mediates the relationship between self-esteem and smartphone dependency. Understanding the psychological processes involved in this relationship can help generate interventions aimed at curbing dependence on technology and problems with self-esteem. The interventions should focus on having individuals build healthier relationships with technology, developing a sense of self-acceptance, and developing ways of meeting emotional needs without using the smartphone as a vehicle for self-acceptance.

Literature Review

Smartphone addiction is gradually being accepted as a behavioral problem that can have harmful psychological effects. There are serious concerns about the impact of computers and cellphones on mental health due to their prevalence, particularly with young people. Very high levels of smartphone use have been linked to 'social isolation, academic decline, and increased mental distress' (Kuss & Griffiths, 2017). The overuse of smartphones can have negative psychological and social outcomes for individuals, such as 'anxiety and sleep issues' even while smartphones become more necessary for communication, entertainment, and information. Kuss and Griffiths (2017) stated that smartphone addiction is quickly becoming better recognized as a new issue with similarities to existing behavioural addictions such as gambling and internet addiction.

Evidence has shown that the need for social validation and fear of missing out (FoMO) is linked to smartphone addiction. Socialcomparison theory states that individuals value themselves by comparing themselves with others, and smartphones are increasingly being used to compare people's lives on social media (Vogel et al., 2014). As such, young adults with low self-esteem may wind up dependent on using their smartphones to obtain social validation from others using operantly conditioned, fast and unstable content embedded in these online spaces while trapping users in a cycle of excessive use (Przybylski et al., 2013). This connection between dependency on smart phones and self-esteem suggests that it may be largely an internalized psychological mechanism that triggers smart phone dependency.

Nomophobia which is short for "no mobile phone phobia," is another element that contributes to smartphone addiction, and it has emerged as a significant factor in smartphone addiction. Nomophobia refers to the fear of losing a smartphone if one is obsessively checking a smartphone and using it too much. Research has shown that people who struggle with what have been identified as low self-esteem issues utilize smartphones as a coping mechanism to make reassurances of not being inadequate or alone (Yildirim & Correia, 2015). Individuals may be using their smartphones even more, in that they may feel they should be using their smartphones to reach out to someone and reassure themselves that their presence is known somewhere, just in case they feel anxiety about excluding themselves from social interaction or anything online (Elhai et al., 2017). This negative spiral of fear and dependency illuminates how smartphone use, nomophobia, and self-esteem potentially work together and relate to each other.

Smartphone addiction and mental health has been the focus of multiple studies. LeBourgeois et al. (2017) suggest that smartphone overuse is related to poor sleep, which in turn increases rates of stress and anxiety. The experience of perceived social isolation could also be increased due to disruptions in face-to-face social connection (Hoffman & Novak, 2018) as a result of almost constant connectivity provided by cellphones. In addition, because cellphones create constant accessibility to digital alerts, smartphone addiction has also related to poorer attention and academic performance (Rosen et al., 2013). It is suggested that an addiction to smartphones might have long-term consequences on cognitive and emotional performance.

That said, it is clear that addressing smartphone addiction is a nuanced process that begins with understanding the psychological processes that are at play, including nomophobia and self-esteem. One way to conceptualize the goal of decreasing smartphone reliance, is to promote healthy balance, suggested, a more digital detoxification and instilling better self-regulation habits on the user's part (Liu et al. 2017). However, further research is needed to find effective methods to stop the cycle of addiction develop, and to treat any mental health issues leading to excessive smartphone use.

Hypotheses

H1: There is a significant negative correlation between self-esteem and smartphone dependence in young adults.

H2: Young adults' reliance on smartphones is significantly affected by their self-worth.

H3: There is a mediated relationship between young adults' smartphone dependence and self-esteem through nomophobia.

Material and Methods

Nature of the Study

This quantitative research has the goal of examining the relationships between smartphone dependence, nomophobia and self-esteem among young adults. Correlational research designs will be used to explore the associations proposed, and evaluate the direction and strength of such associations. Statistical tests will be used to measure the associations. The study will also examine the role of nomophobia as a mediator, adding a complexity to understanding smartphone dependence.

Research Design

The cross-sectional design of this study will allow for data to be collected as a snapshot-in-time. To explore the relationships identified between nomophobia, smartphone addiction, and self-esteem, this study will obtain interviews of young people from multiple contexts including college, social places and virtual discussion boards. This is a useful approach to measure the influences of smartphone use and its psychological effects.

Instruments

Rosenberg Self-Esteem Scale (RSES)

The Rosenberg Self-Esteem Scale (RSES), first developed by Rosenberg in 1965, is one of the most widely used measures of overall self-esteem around the world. The RSES consists of ten items, and measures overall self-worth and self-acceptance. The RSES scale uses a 4-point Likert scale (1 ("strongly disagree") to 4 ("strongly agree"). The RSES provides a total score that reflects overall self-esteem, however there are no subscales. The RSES is designed principally to measure levels of self-esteem in people which may relate to a variety of behavioral and psychological measures. Since its inception, the RSES has been reported to have good reliability, with a Cronbach's alpha coefficient level of 0.77 to 0.88 indicating good internal consistency (Rosenberg, 1965). Due to robust psychometric properties and its ease of use, the scale is widely used in psychological research.

Smartphone Addiction Scale (SAS)

The Smartphone Addiction Scale (SAS) developed by Kwon et al. (2013) is a scale used to measure smartphones addiction, or dependency. The 33 items of the SAS were designed to measure various aspects of smartphone usage, including compulsive behavior, withdrawal, and impairment in daily life. The 33 items are scored by a 6-point Likert scale that ranges from 1 (Strongly Disagree) to 6 (Strongly Agree). The SAS consists of multiple subscales including "Smartphone Use", "Interference with Daily Life", "Pre-occupation", and "Lost Control", which can mitigate the assessment of the multidimensional nature surrounding smartphone addiction. This smartphone addiction scale can measure the extent to which a person's smartphone usage interrupts their social, academic or occupational life. For example, the SAS reported a countries reliability value of 0.92

(Cronbach's alpha) and excellent internal consistency (Kwon et al., 2013). The SAS scale is used in research examining smartphone usage behaviors and overall digital addiction.

Nomophobia Questionnaire (NMP-Q)

The Nomophobia Questionnaire (NMP-Q), which stands for fear of not having a cell phone, was designed by Yildirim and Correia (2015). Based on 20 items, the NMP-Q assesses the psychological effects of dependence on a cell phone. Each item is measured on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The four subscales of the NMP-Q are Loss of Connectivity, Inability to Access Information, Unable to Communicate, and Being without Mobile Phone. The NMP-Q explores the extent to which individuals rely on smartphones, especially in terms of anxiety when destroyed or lost. The NMP-Q has demonstrated very high reliability, with Cronbach's alpha of 0.89, which means it has high internal consistency (Yildirim & Correia, 2015). It is usually used in research studies that measure various psychological and behavioral effects of smartphone addiction.

Results and Discussion

Table 1
Descriptive Characteristics of the Study Sample (N=300)

Sample Data		n	%
Age			
	19-23	130	43.33
	24-28	170	56.66
Gender			
	Men	150	50
	Women	150	50
Family system			
	Joint	120	40
	Nuclear	180	60
Qualification			
	BS	130	43.33
	MSC	170	56.66
Marital Status			
	Single	160	53.33
	Married	140	46.66

The study sample consisted of 300 participants that were evenly distributed across the broad demographic characteristics. There were 43.33% (n = 130) between 19-23 years, while 56.66% (n = 170) were between 24-28 years. Gender was evenly distributed, where 50% (n = 150) of the participants were men and 50% (n = 150) were women. On family system, 60% (n = 180) belonged to nuclear families and 40% (n = 120) belonged to joint families. On education, 43.33% (n = 130) possessed a Bachelor's degree (BS), and 56.66% (n = 170) had completed a Master's degree (MSC). Lastly, marital status had almost an equal division, with 53.33% (n = 160) unmarried and 46.66% (n = 140) married. This representative sample allows for a critical analysis of smartphone addiction across various age groups, genders, types of households, educational levels, and marital status.

Table 2
Descriptive statistics of all the scales (N=300)

Scales	k	α	M	SD	Range		Skew	Kurt
					Actual	Potential		
RSES	10	.81	18.42	8.21	14-55	10-40	.86	.78
SMAS	33	.92	22.45	9.65	15- 196	33- 231	.92	.97
NQ	20	.88	14.23	8.98	34- 123	20 -140	.75	.92

Note: RSES= Rosenberg Self-esteem Scale; SMAS= Smartphone Addiction Scale; NQ= Nomophobia Questionnaire

The three scales used in the study's descriptive statistics depict generally satisfactory psychometric properties. The Rosenberg Self-Esteem Scale (RSES), measuring global self-esteem, possessed acceptable internal consistency with a relatively normal distribution of scores, and there were no technical issues in the data collection. Similarly, the Smartphone Addiction Scale (SMAS) was very reliable and covered a large range of response, suggesting varying levels of smartphone dependence among participants. There were some observed discrepancies between possible and achieved score ranges, but these did not reflect any large technical imperfections and could be an artifact of subject differences in response sets. The Nomophobia Questionnaire (NQ) also proved to have excellent reliability and good distribution, which indicated that participants were varied in fear of being out of place without a mobile phone. On each of the three scales, data distribution was within acceptable limits of kurtosis and skewness, suggesting that the data set was responsive to further statistical analysis.

Table 3
Correlation matrix between Study Variables (N=300)

	Variables	1	2	3
1.	RSES	-		
2.	SMAS	-.55**	-	
3.	NQ	-.62**	.76**	-

Note: RSES= Rosenberg Self-esteem Scale; SMAS= Smartphone Addiction Scale; NQ= Nomophobia Questionnaire

The correlation matrix shows the associations between the three main study variables: self-esteem, smartphone addiction, and nomophobia. The outcomes reveal a considerable negative correlation between self-esteem and smartphone addiction and between self-esteem and nomophobia, meaning those who have lower self-esteem score higher on smartphone dependency as well as phone phobia. In addition, a high positive correlation between smartphone addiction and nomophobia was established, whereby smartphone addiction is associated with a higher likelihood of experiencing nomophobia. These results are consistent with previous literature and lend empirical support to the hypothesized relationships between the variables, further ensuring that any mediation effects can be established using a sound basis for further analysis.

Table 4
Regression Coefficients of Independent Variables on Dependent Variable (Smartphone Depedency)

Variables	B	SE	t	p	95%CL
Constant	29.45	7.5	9.42	.00	19.57– 39.56
RSES	12.35	5.4	6.56	.00	8.65 – `24.89
NQ	16.55	6.1	7.86	.00	10.54- 24.64

Note: RSES= Rosenberg Self-esteem Scale; SMAS= Smartphone Addiction Scale; NQ= Nomophobia Questionnaire

Regression analysis tested the predictive function of nomophobia and self-esteem on smartphone dependency. Results indicated that nomophobia and self-esteem were strong predictors of smartphone dependency. The regression model produced a statistically significant constant, representing the baseline smartphone dependency when predictor variables are zero. Self-esteem negatively contributed significantly, such that people who have lower self-esteem are more likely to report higher smartphone dependency. Nomophobia also had a strong positive contribution, such that people with a higher level of fear of not having their phones are more likely to be dependent on smartphones. Overall, the model supports that both psychological constructs—self-perception and mobile-related anxiety—are significant predictors of the level of smartphone use and dependence.

Table 5
Mediating Role of Nomophobia between Smartphone Dependency and Self-esteem (N=300)

Variables	R^2	B	SE	t	95% CI	
					LL	UL
Total effect RSES--SMAS (c)	.72	.53***	.16	3.31	.47	.82
Direct effect						
RSES--NQ(a)		.42***	.10	4.20	.54	.95
NQ--SMAS(b)		.48***	.12	4.00	.47	.85
RSES--SMAS (c′)		.50***	.14	3.57	.44	.73
Indirect effect						
RSES—NQ--SMAS	.16	.21***	.09		.28	.51

Note: RSES= Rosenberg Self-esteem Scale; SMAS= Smartphone Addiction Scale; NQ= Nomophobia Questionnaire

*p< .01**; p< .001****

The table analyzed the mediating effect of nomophobia on the link between self-esteem and smartphone addiction. The overall effect of self-esteem on smartphone addiction was significant, signifying that self-esteem contributed significantly to smartphone addiction, accounting for a high percentage of variance. The link was direct, where self-esteem also significantly predicted nomophobia, and nomophobia significantly predicted smartphone dependency. When controlling directly for the road from self-esteem to smartphone dependence, even while controlling for nomophobia, the impact was significant, which demonstrates that self-esteem still had a direct effect on smartphone dependence apart from nomophobia. This provides evidence that self-esteem has both a direct role in smartphone dependence and an indirect role through nomophobia.

The indirect effect, where nomophobia acted as the mediating factor between self-esteem and smartphone dependency, was significant, validating that nomophobia is an essential factor in explaining how self-esteem affects smartphone dependency. This result indicates that individuals with lower self-esteem can have higher levels of nomophobia, which then elevates smartphone dependency. However, because the direct effect remains significant, it means that nomophobia partly mediates the relationship.

Discussion

The current study sought to examine the effect of self-esteem on smartphone addiction in young adults with nomophobia investigated as a mediator. The assessment was informed by three hypotheses and utilized standardized and valid tools such as the Rosenberg Self-Esteem Scale, Smartphone Addiction Scale, and the Nomophobia Questionnaire, whose high internal consistency was established. The results shed light on the psychological mechanisms of problematic smartphone use, for example how an individual's self-concept and being disconnected creates fear, resulting in problematic smartphone behavior.

The results supported Hypothesis 1 that there would be a strong negative correlation between smartphone dependence and self-esteem. The results indicated that participants with low self-esteem perceived greater smartphone dependence. This finding is aligned with previous research which found that individuals with poor self-esteem are more likely to use their smartphones excessively in search of social connection, validation, or a way to decompress (Błachnio et al., 2016; Kim & Koh, 2018).

The research also found significant impact of self-esteem on smartphone addiction, which supported Hypothesis 2. Self-esteem remained a significant predictor even while

controlling for the mediating role of nomophobia. This means that in addition to external factors, the way individuals manage their use of, or dependence on, digital technology is directly influenced by their self-esteem psychological attributes. Since phones are mechanisms for dealing with social anxiety, boredom or emotional pain, low self-esteem may mediate emotional reliance on phones (Kuss & Griffiths, 2017).

To conclude, mediation analysis revealed that nomophobia partially mediated the relationship between self-esteem and smartphone dependence, which supported Hypothesis 3. The implication is that lower self-esteem increases the nomophobia, or fear of losing a cell phone, which in turn makes them more dependent to use their smartphone more. The partial mediation dimension suggests that self-esteem has a direct effect on the relationship even though nomophobia only partially mediated it. This is a pattern that supports other studies of nomophobia being an active psychological process motivating compulsive smartphone use in vulnerable populations (e.g., low levels of self-esteem) (Gezgin, 2018; Yildirim & Correia, 2015).

In sum, these results reinforced the need to address digital fear as well as self-perception when developing programs aimed at decreasing smartphone dependence. Young people's digital wellness programs which address self-perception and digital fear may provide psychological support to develop self-esteem and strategies for awareness and coping with nomophobia.

Conclusion

In summary, the present study sheds light onto the psychological factors surrounding young adults' smartphone dependence. Specifically, smartphone use is predicted by self-esteem, and those with lower self-esteem show higher dependence. It was also revealed that the association of self-esteem and smartphone dependence was, in part, mediated by nomophobia or anxiety about not having a smartphone. This finding suggests that low self-esteem individuals will become overly dependent on cellphones as their anxiety pertaining to disconnection increases. To increase healthier technology use among young adults, the findings suggest the need for interventions that address digital habits but also seek to increase self-esteem, and mitigate nomophobia.

Recommendations

Though it offers a lot of data, this study has several limitations. Its cross-sectional study approach limits its ability to specify causality including self-esteem, nomophobia, and mobile phone dependence. Based on self-reported metrics, information collecting was done and hence could have produced social desirability biases. Even further, only a sample including younger adults were selected, so reducing the overallity of study generalizability to other age-defined populations. Longitudinal designs are required in future research to offer a more thorough understanding of causal mechanisms and investigate these variables across several populations. Moreover, strategies aimed at improving self-esteem and controlling nomophobia should be developed and tested to significantly reduce smartphone addiction.

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