

EXAMINING THE RELATIONSHIP BETWEEN PERSONALITY AND SMARTPHONE ADDICTION AMONG COLLEGE STUDENTS

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ABSTRACT

Smartphone addiction can stem from excessive smartphone use when people find quitting or controlling their behaviour difficult. Improper and excessive use of connected personal devices and popular apps can lead to dependence on the smartphone. This study investigated the relationship between personality traits and smartphone addiction among college students and its adverse effects. The results showed that business students (B.Com) used smartphones more frequently than arts and sciences students. No significant differences were found in smartphone addiction based on gender, birth order, area of living or family structure. The personality traits of neuroticism, extraversion, openness, agreeableness, and conscientiousness were not significantly related to each other or affected by smartphone addiction.

Keywords: Personality, Smartphone addiction, Gender

1. INTRODUCTION

Smartphones have become an indispensable aspect of daily life worldwide. With them, it has become easier to carry out even basic tasks. People spend considerable time on various activities such as social networking, messaging, sharing media, playing games, online shopping, and paying bills. The availability of public Wi-Fi and attractive unlimited data plans from service providers allows for unrestricted internet access. All age groups are now grappling with the issue of increasing smartphone usage. Young adults are using their smartphones more and more, which has sparked worries about potential addiction and its effects on mental health. Although personality characteristics have been looked at as potential causes of smartphone addiction, research is still lacking, especially among undergraduate students. For the purpose of creating successful intervention strategies and encouraging responsible technology use, it is essential to comprehend how personality traits and smartphone addiction interact in this demographic. The relationship between personality traits and the risk of smartphone addiction is evaluated based on the amount of time spent using the device, its usage patterns, favourable attitudes towards it, and anxiety without technology. Cocoradă et al. (2018) found that neuroticism, openness, and conscientiousness are negative risk factors for smartphone addiction. Arpacı & Kocadag Unver (2020) found a significant positive relationship between neuroticism (emotional instability) and smartphone addiction, which only applies to women. Conscientiousness was negatively correlated with smartphone addiction in women. Agreeableness had a significant negative relationship with smartphone addiction in both sexes. The results showed that the relationship between neuroticism and smartphone addiction was influenced by gender, while the relationship between smartphone addiction and social-emotional distress was not affected by personality. Liu et al. (2020) found negative relationships between extraversion, openness, agreeableness, conscientiousness and smartphone addiction, while neuroticism had a positive relationship with it. A study by Mehmood et al. (2021) found that international students are at high risk for smartphone addiction, which can negatively impact their mental health and behaviour. Addiction is influenced by various social, psychological, emotional, and cognitive factors. To achieve academic goals, it would be beneficial to encourage students to limit their phone use and engage in healthy physical activities. Wang et al. (2020) found no meaningful relationship between sensation-seeking and smartphone addiction. Hobbies and self-control cannot mediate the relationship between boredom propensity and smartphone addiction. However, neither the avoidant attachment nor the avoidant attachment-smartphone addiction pathways were as significant as expected. Kim & Koh (2018) found that anxiety and self-esteem fully mediated the relationship between smartphone addiction and avoidant attachment. Herrero et al. (2022) found that flow experience and self-control play a crucial role in transmitting sensation seeking's effect on smartphone addiction. There was a positive relationship between social and digital pressure and smartphone addiction. This influence was not affected by personality traits such as low conscientiousness, depression, low social support, or high social disorder in the neighbourhood. Social digital pressure was a significant mediator, especially for social factors like social support and social disorder in the neighbourhood. In situations where social connection is essential, social and digital pressure may be critical factors to consider when assessing the risk of smartphone addiction. De Pasquale et al. (2019) found that messaging (50%), calling (42.5%), internet access (38%), social networking (33.5%), taking photos (26.5%), playing games (8.5%), and app use (.5%) were the primary ways college students in their sample used

their smartphones. According to suggested cut-off scores, smartphone addiction was detected in 22.8% of men and 28.0% of women. The growing prevalence of smartphone addiction among undergraduate students and the lack of knowledge regarding the potential influences of personality traits on this phenomenon highlight the necessity for this study. In order to shed light on potential risk factors, inform targeted interventions, and encourage responsible smartphone use while protecting students' psychological wellbeing, this gap must be filled.

2. MATERIALS AND METHOD

In this study, the participants were college students, and the sample was selected through convenience sampling. The criteria for inclusion in the study were that the participants must be enrolled in a college program and have a smartphone. The data collection was carried out through self-administered surveys, and the scales used were the short version of the big five personality scale by Lang et al. (2011) and Kwon et al. (2013) smartphone addiction scale. The data were analyzed using descriptive statistics, t-test, ANOVA correlation, and regression analysis to examine the relationship between personality traits and smartphone addiction. The study aimed to provide insight into the factors contributing to smartphone addiction among college students and their potential consequences.

Sample

To achieve a diverse representation of the undergraduate population for analysis, the study used a sample of 208 undergraduate participants that were chosen through simple random sampling.

Tools

1. Big Five Inventory (Short Version)

Lang et al. (2011) developed the Big Five Inventory Short Version contains 15 items. The Big Five Inventory assesses extraversion, agreeableness, neuroticism, conscientiousness, and openness as five different personality traits. The response is required on a 7-point Likert scale, where 1 strongly disagrees, 2 disagrees, 3 somewhat disagrees, 4 neither agrees nor disagrees, 5 is somewhat agreed, 6 agrees, and 7 strongly agree. Neuroticism ($\alpha = .60$), extraversion ($\alpha = .66$), openness ($\alpha = .63$), agreeableness ($\alpha = .50$), and conscientiousness ($\alpha = .60$) are the reported values for each dimension.

2. Smartphone Addiction Scale

The SAS-SV is a scale that has been validated and was formed in South Korea (English version) by Kwon et al. (2013). It consists of ten items that were rated on a dimensional scale (1 being "strongly disagree" through 6 being "strongly agree"). The overall score ranges from 10 to 60, with the highest score indicating the most recent example of "Smartphone addiction." A valid scale to assess smartphone addiction was shown to have both content and concurrent validity and internal consistency (Cronbach's alpha: 0.91).

3. RESULTS

Hypothesis 1: There would be a significant gender difference in smartphone addiction

Table 1 Mean, standard deviation and 't' value

Gender	Mean	SD	t
Male	32.05	9.67	1.43 ^{NS}
Female	29.87	9.12	

NS: Not significant

Smartphone addiction did not significantly differ by gender. The mean score for males was 32.05 (SD = 9.67), and the mean score for females was 29.87 (SD = 9.12). The t-test showed that the difference was insignificant ($t = 1.43$, $p > .05$). Additionally, no significant variation was found based on gender, place of residence, or field of study. 30% of participants belonged to the risk group, with 32.1% of males and 28.8% of females scoring higher than the cut-off points. The most widely used apps among the participants were WhatsApp, Instagram, YouTube, Facebook, and Snapchat, with over 50% of the participants using those (Kim & Koh, 2018).

Hypothesis 2: There would be a significant difference in smartphone addiction based on the stream of study

Table 2 Mean, standard deviation and 'F' value

Stream of study	Mean	SD	F
Arts	25.70	10.05	16.71*
Science	32.10	9.08	
Commerce	33.35	33.35	

Significant at 0.05 levels.

On the other hand, there was a significant difference in smartphone addiction based on the stream of study. The mean score for arts students was 25.70 (SD = 10.05), while the mean score for science students was 32.10 (SD = 9.08). An ANOVA showed a significant difference ($F = 16.71, p < 0.05$). Additionally, the mean score for commerce students was 33.35 (SD = 33.35), which may be an outlier. According to the study's results, positive anticipation, increased impatience or tolerance, withdrawal, daily-life disturbance, and cyber friendship significantly contribute to smartphone addiction among business students in Bangladesh and affect their academic performance (Arefin et al., 2017).

Hypothesis 3: There would be a significant difference in smartphone addiction based on the area of living

Table 3 Mean, standard deviation and 'F' value

Area of living	Mean	SD	F
Rural	29.78	9.23	1.84 ^{NS}
Semi-Urban	32.03	9.87	
Urban	33.58	8.13	

NS: Not significant at 0.05 levels

In terms of area of living, the study found that urban residents tend to report higher levels of smartphone addiction compared to rural residents. The mean score for rural residents was 29.78 (SD = 9.23), the mean score for semi-urban residents was 32.03 (SD = 9.87), and the mean score for urban residents was 33.58 (SD = 8.13). However, the ANOVA test indicated that the difference between the means was insignificant ($p > 0.05$) for the three groups. These findings highlight the importance of understanding the relationship between digital technologies and residential areas for effective digital planning and policy-making. Curwell et al. (2005) emphasized developing e-skills to achieve a sustainable knowledge society.

Hypothesis 4: There would be a significant difference in smartphone addiction based on the order of birth

Table 4 Mean, standard deviation and 'F' value

Birth order	Mean	SD	F
First born	29.67	9.29	0.48 ^{NS}
Second born	30.76	8.91	
Middle born	32.87	9.74	
Last born	30.88	10.44	
Only child	29.33	8.78	

NS: Not significant at 0.05 levels

Regarding birth order, the study found no significant difference in smartphone addiction among first-born, second-born, middle-born, last-born, and only-child participants. The mean scores and standard deviation scores for each group were reported as follows: first-born ($M = 29.67, SD = 9.29$), second-born ($M = 30.76, SD = 8.91$), middle-born ($M = 32.87, SD = 9.74$), last-born ($M = 30.88, SD = 10.44$), and only-child ($M = 29.33, SD = 8.78$). An ANOVA score of 0.48 indicated that the difference between the means was insignificant ($p > 0.05$). The study suggests that factors such as love for smartphones, social networking sites, family and friend relationships, and smartphone apps play a more crucial role in determining a person's smartphone addiction than their birth order. Additionally, the study found that students with smartphone addiction had higher odds of having high anxiety and family relationship problems than those not addicted to smartphones (Hawi & Samaha, 2017).

Hypothesis 5: There would be a significant difference in smartphone addiction based on the type of family

Table 5 Mean, standard deviation and 't' value

Type of family	Mean	SD	t
Nuclear	30.20	9.34	1.34 ^{NS}
Joint	33.27	8.52	

NS: Not significant at 0.05 levels

Regarding the family type, the study found that the mean score for smartphone addiction was 30.20, with a standard deviation of 9.34 for nuclear families. In contrast, the mean score for joint families was 33.27, with a standard

deviation of 8.52. However, the t-test showed that the difference was insignificant ($t = 1.34$, $p > 0.05$). Despite smartphones being equally available in both types of families, teenage smartphone addiction has been a concern due to its adverse impacts on physical and emotional health. The majority of the studied population, 82%, came from nuclear families, while only a small percentage of participants, 11% and 7%, respectively, were from joint and extended families.

Hypothesis 6: There would be a significant relationship between personality traits and smartphone addiction

Table 6 Mean, standard deviation and Correlation for Big-five Personality traits

Variables	Mean	Std. Deviation	Correlation
Neuroticism	11.72	3.39	0.07 ^{NS}
Extraversion	13.72	3.66	-0.00 ^{NS}
Openness	15.58	3.31	-0.07 ^{NS}
Agreeableness	14.72	3.01	-0.11 ^{NS}
Conscientiousness	14.78	3.45	-0.03 ^{NS}
Smartphone addiction	30.43	9.29	

NS: Not significant at 0.05 levels

Results of the correlation analysis revealed that none of the personality traits was significantly correlated with smartphone addiction, with all correlation coefficients falling below the $p < .05$ threshold for statistical significance (Neuroticism: $r = .07$, $p = .27$; Extraversion: $r = -.00$, $p = .97$; Openness: $r = -.07$, $p = .23$; Agreeableness: $r = -.11$, $p = .10$; Conscientiousness: $r = -.03$, $p = .68$). The study also found that gender may play a role in the relationship between neuroticism and smartphone addiction, as a significant positive relationship was found only in women. Additionally, there was a negative correlation between smartphone addiction and agreeableness for both genders. These results suggest that personality does not restrict smartphone addiction and is determined by other factors such as technological breakthroughs and gender (Arpacı & Kocadag Unver, 2020).

Hypothesis 7: There would be a significant influence between personality traits and smartphone addiction

Table 7 multiple regression result for smartphone addiction

Variable	B	95% CI for B		SE B	B
		LL	UL		
O	-.18	-.58	.22	.20	-.06
C	-.00	-.39	.38	.19	-.00
E	.07	-.29	.43	.18	.02
A	-.31	-.74	.12	.22	-.10
N	.16	-.22	.54	.19	.05
R²	.02				
ΔR²	-.00				

The overall regression model was insignificant ($R^2 = .02$, $p = .13$), indicating that personality traits did not significantly predict smartphone addiction. Further analysis of the unstandardized regression coefficients revealed that none of the personality traits was significant predictors of smartphone addiction (Neuroticism: $B = 0.16$, 95% CI [-0.22, 0.54], $SE = 0.19$, $\beta = 0.05$, $p = .41$; Extraversion: $B = 0.07$, 95% CI [-0.29, 0.43], $SE = 0.18$, $\beta = 0.02$, $p = .71$; Openness: $B = -0.18$, 95% CI [-0.58, 0.22], $SE = 0.20$, $\beta = -0.06$, $p = .38$; Agreeableness: $B = -0.31$, 95% CI [-0.74, 0.12], $SE = 0.22$, $\beta = -0.10$, $p = .15$; Conscientiousness: $B = -0.00$, 95% CI [-0.39, 0.38], $SE = 0.19$, $\beta = -0.00$, $p = .99$). The study found that the Big Five personality traits were not strongly associated with smartphone addiction, with low and non-significant correlation coefficients. However, another study by Erdem and Uzun (2020) suggested that the Big Five traits still impact smartphone addiction when individual differences are considered. Specifically, neuroticism was a positive predictor, while agreeableness and conscientiousness were negative predictors. Extraversion and openness to new experiences did not have a significant impact. Therefore, while personality traits may not be a strong predictor, they may still interact with other factors to contribute to smartphone addiction.

4. DISCUSSION

A recent study found no significant difference in smartphone addiction between male and female college students, contradicting previous research that reported higher addiction levels among female students. Kwon and Paek (2016) discovered that female students showed higher dependence levels on smartphones, while Yang et al. (2018) found that adolescent females relied more on their smartphones and were more affected by them than young males. Adolescent males' physical and mental health were positively correlated with weekend smartphone usage but negatively correlated with smartphone dependence.

The study identified that smartphone addiction among college students varied according to their area of study. Business students used smartphones differently than those studying arts or science, with students' adoption, usage, and perception patterns similar to those of students in developed countries, regardless of socioeconomic factors. Furthermore, smartphone addiction was more prevalent among women and humanities students than men and science students in Saudi Arabia, Yemen, and Sudan (Albursan et al., 2019). The study emphasizes the importance of using smartphones for educational purposes instead of entertainment and calls for restrictions on smartphone use and addiction awareness. Integrating smartphones into daily life has become widespread, with network connectivity and internet access becoming increasingly accessible, particularly in urban areas. However, policymakers are concerned about internet availability. The increasing demand for smartphones and mobile technologies is transforming higher education delivery systems, requiring a new pattern of interaction between various knowledge and skill-based components of society, as outlined by Sood (2001). Bojic et al. (2013) discuss the potential for significant change in the future mobile backhaul network by integrating new wireless, optical, and software-defined technologies. The study discovered that each household member had the latest smartphone, regardless of household income, and that birth order did not significantly impact smartphone usage. However, different smartphone generations' usability varies, and smartphone addiction could affect family harmony. Mohammed (2018) found that traditional factors like cost and ease of use were no longer the primary determinants in Gen-Z consumers' smartphone purchases. Instead, these consumers were significantly influenced by payment options, perceived enjoyment, peer and social influence, product design, and brand. Sujata et al. (2016) found that young students were influenced by the operating system version and hardware features when making their smartphone choices. Family type affects smartphone addiction differently. The individual's usage patterns determine the level of smartphone addiction, with joint family members having more restrictions on smartphone usage due to parental control software and their ability to control their behaviour. Natarajan (2020) found that 88% of respondents were from joint families, while only 12% were from nuclear families. Suman and Devasivadam (2022) found that 70.8% of study participants lived in nuclear families. Research findings show that personality traits are not significantly correlated with smartphone addiction. Instead, sophisticated smartphone use and the individual's ability to control their behaviour contribute independently to smartphone addiction. New and improved technology to meet consumer demands dominates the smartphone industry. The availability of various apps, mainly social media platforms and gaming apps, makes the younger generation more accustomed to using smartphones. The individual's awareness and usage behaviour also contribute to smartphone addiction. Furthermore, Cocoradă et al. (2018) found that smartphone addiction negatively correlates with neuroticism, openness, and conscientiousness. The study found that personality traits did not significantly predict smartphone addiction, but personal preference and technology acceptance played a more prominent role. The availability of various apps, mainly social media and gaming apps, has made younger generations more accustomed to using smartphones. Individual awareness and usage behaviour also contribute to addiction. Cho et al. (2017) found that neuroticism and extraversion could moderate the impact of stress on smartphone addiction. At the same time, Uchegbu et al. (2021) found that social anxiety was positively correlated with smartphone addiction. Other personality traits such as extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience were not significant predictors.

5. CONCLUSION

The findings indicate that smartphone addiction in college students is mainly determined by their usage patterns rather than their personality traits. While individual differences may play a role, they do not significantly impact addiction. To mitigate the effects of excessive smartphone use, it is recommended that those with higher levels of addiction seek counselling or other forms of therapy. Parents, guardians, and educators should promote positive smartphone habits and usage instead of simply restricting or criticizing them.

6. IMPLICATION

Studies examining the relationship between personality traits and smartphone addiction frequently produced non-significant findings, indicating that environmental and situational influences are likely to have a greater influence on the emergence of excessive smartphone use.

7. LIMITATION

The study's scope is limited to 208 undergraduates from a single institution, which may prevent it from having wider applicability. Furthermore, relying solely on self-report measures may introduce response bias, reducing the accuracy of results.

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