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The Relationship between Self-Control, Personality Traits, and Smartphone Addiction in Students

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Abstract

The objective of this study was to investigate the correlation between Self-Control, Personality Traits, and Smartphone Addiction in Students. A total of four hundred samples (200 males and 200 females) were recruited using purposive sampling. The research design employed was correlation study design. Information was gathered from various governmental, private, and academic institutions. The age range of the participants was between 18 and 25 years old, with a mean age of 21.07 and a standard deviation of 1.0684. Three scales were utilized in the study: the Brief Self-Control Scale (Tangney et al., 2004), the Ten-item Personality Inventory (Gosling et al., 2003), and the Smartphone Addiction Scale (Kwon et al., 2013). A correlation analysis was conducted to determine the association between self-control, personality traits, and smartphone addiction. An independent sample t-test was utilized to evaluate gender differences between males and females. Regression analysis was employed to examine the predictors. Process analysis is employed for the purpose of moderation. The results of our study indicate that self-control is positively correlated with personality traits and negatively associated with Smartphone Addiction. Furthermore, no gender differences were seen between males and females. The study found that personality qualities did not have any influence on Smartphone Addiction. However, personality traits, family system, socio-economic status, and the number of hours spent using a mobile phone were significant predictors of Smartphone Addiction.

Keywords: Self-Control, Personality Traits and Smartphone Addiction.

Introduction

As we embarked on the 21st century, the proliferation of cell phones significantly quenched our thirst for instant connectivity. The surge in smartphone adoption has been notable, with data showing that 269.9 million units were purchased, indicating a global expansion to half a billion smartphones (Weintraub, 2010). Smartphones offer far more capabilities than traditional cellphones, addressing a range of functionalities from communication to comprehensive media consumption.

In the context of Pakistan, a developing country with its unique set of challenges, the scenario becomes particularly interesting. Pakistan exhibits a low higher education ratio, with only 5.1% of the population aged 17-23 enrolled in higher educational institutions (Dawn, 2011). The interconnection between social media usage and academic performance suggests that changes in one can significantly affect the other.

Recent studies have delved into smartphone use and its relationship with personality traits, revealing that extroverts are more likely to own smartphones and utilize their messaging features to communicate (Robic et al., 2013). On the other hand, introverts may use these platforms for personal disclosure, thereby seeking social compensation through online interactions. Research also indicates that introverted individuals are less prone to smartphone addiction (Roberts, Pullig, & Manolis, 2014).

The dynamics of technology use and self-control have been explored across various media, including television, internet, and mobile phones. Notably, studies suggest a negative correlation between self-control and the amount of time spent on these technologies (Khang, Kim, & Kim, 2013). This research underscores how increasing self-control can reduce time spent with technology, thereby highlighting the potential impact of self-regulatory behaviors on media consumption.

Smartphone addiction, often referred to colloquially as “nomophobia” — the fear of being without a mobile phone — is primarily driven by the compulsive use of internet-based applications rather than the devices themselves. This form of addiction encompasses various impulse-control issues and can severely disrupt real-life interactions and relationships. The understanding of smartphone addiction is complemented by theories ranging from behaviorism, which views it as a learned behavior, to psychodynamic theories that interpret it as a means to avoid frustration and seek pleasure. The cognitive perspective links smartphone addiction to distorted thinking patterns, while an integrative approach considers it a result of complex interplays among personal, environmental, and social factors. In this digital era, the study of personality traits, self-control, and their interaction with technology use remains critical. These insights not only enhance our understanding of digital media's role in modern society but also guide interventions to mitigate the negative impacts of technology overuse.

Literature Review

In an extensive exploration of the dynamics between self-control and smartphone addiction, numerous studies have delineated how various psychological and environmental factors interact

to influence addictive behaviors. Jeongmin Lee and Boram Cho (2015) highlighted that elementary students in Seoul who adhered more strictly to school rules exhibited lower levels of smartphone addiction, whereas those inclined towards immediate gratification demonstrated higher addiction risks. This suggests a crucial role for self-regulation in managing technology use among young children.

Further, Allison Hibbard (2015) examined the interplay between self-control and attachment styles among college students, finding that self-control was a more decisive factor in predicting cellphone dependence than attachment styles, although attachment anxiety also showed a notable correlation with increased dependence.

The influence of familial and social environments was investigated by Hye-Jin Kim, Jin-Young Min, et al. (2018), who found that teenagers with unstable family conditions were more prone to smartphone addiction, whereas those with strong friendships and robust self-control mechanisms were less affected. Similarly, Zhaocai Jiang & Xiuxin Zhao (2016) observed that self-control significantly mediated the relationship between various mobile phone usage patterns and addiction levels among Chinese college students, indicating that self-regulatory behaviors could mitigate or exacerbate addiction risks.

Examining stress and communication skills, Sohyune R. Sok and Mi Hyeon Seong (2019) identified significant variations in stress levels and self-control between general and at-risk nursing students in South Korea, although no marked differences in communication skills were noted. This underscores the impact of emotional and psychological stress on addiction tendencies.

On the personality front, Wilburn Lane & Chris Manner (2011) demonstrated that extroverts were more likely to engage extensively with their smartphones, particularly for texting, whereas agreeable individuals preferred voice calls. Elena Cocorada and Catalin Ioan Maican (2018) discovered that traits such as openness, conscientiousness, and neuroticism were inversely related to the likelihood of smartphone addiction among adolescents, suggesting that certain personality profiles may buffer against the risks of technology overuse.

Shaoyu Ye & Atsushi Toshimori (2018) further examined how personality traits influenced emotional responses to smartphones, which in turn affected addiction levels among Japanese university students. Additionally, behavioral inhibition and impulsivity were identified by Yejin Kim and Jo-Eun Jeong (2016) as critical factors in the development of smartphone addiction, providing valuable markers for clinical assessment.

Zaheer Hussain & Mark D.Griffiths (2017) linked psychological traits such as conscientiousness, openness, emotional stability, and anxiety with problematic smartphone use, enhancing the understanding of how intrinsic personality factors correlate with technology interaction patterns. Omid Isanejad, Ahmad Amani, Arman Azizi, and Shirin Azimifar (2016) studied marital conflict and found significant effects from both personality traits and self-control on conflict resolution strategies within relationships. Meanwhile, Tayebeh Baniassadi & Zeinab Javanmard (2015) uncovered a negative correlation between nicotine dependence and self-

control among male prisoners, pointing to broader implications of personality traits on addictive behaviors.

In sum, these studies collectively underline the intricate relationships between self-control, personality traits, and technology use, especially smartphones. They illuminate the complex fabric of individual differences and contextual factors that contribute to technology-related addictive behaviors, advocating for targeted intervention strategies to address these issues effectively.

Hypotheses

- **H1:** There is likely to be a negative relationship between Self-control and Smartphone Addiction in students.
- **H2:** There is likely to be a negative relationship between personality traits (extroversion, openness to experience, agreeableness, conscientiousness) and smartphone addiction in students.
- **H3:** There is likely to be a positive relationship between neuroticism, and smartphone addiction.
- **H4:** Male students are likely to have more smartphone addiction than female students.
- **H5:** Demographics variables (age, Scio-economic, family system, family size and usage period) are likely to predict the smartphone addiction.
- **H6:** Personality traits (conscientiousness) are likely to Moderate on the relationship of self-control and smart phone addiction.

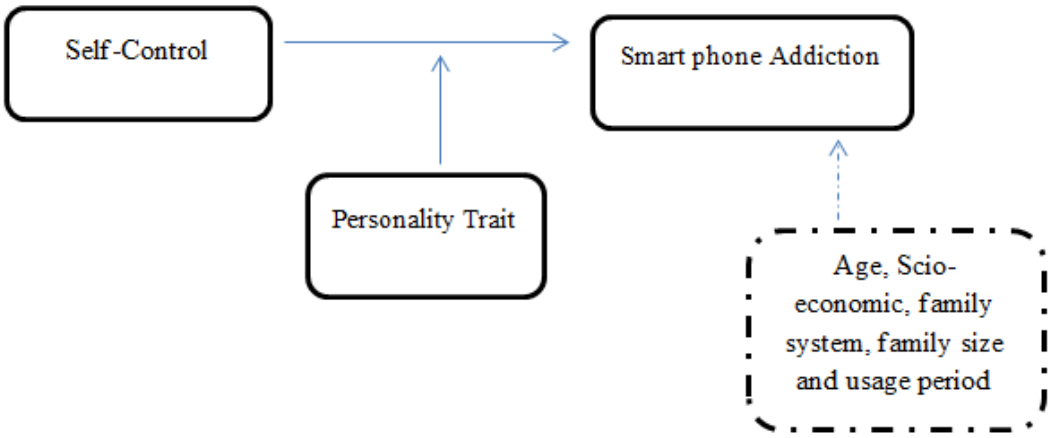

Figure 01 Conceptual Framework

Methodology

Research design

Correlational research design was used to elaborate the relation between self-control, personality traits and smartphone addiction in students.

Sampling strategies

This research was established on non-probability purposive sampling strategy consisting of student. The sample of the Study had taken 400 students that were determined through G-Power analysis. The age variety of the sample was 18 to 25 years (M = 21.07, SD = 1.06). Male (n=200) and Female (n=200) sample was selected. For the study, the inclusion criteria encompassed students aged 18-25 years from both government and private institutes, and included participants of both male and female genders. Conversely, the exclusion criteria were set to omit students who had been diagnosed with any psychological problems or physical disabilities. Additionally, students who were married, divorced, or widowed were also excluded from the sample.

Instrument

This exploration involved following procedures as independent variable and dependent variable.

Demographic Sheet

Demographic sheet had been mentioned (Age, Gender, Birth order, Education, Parental education, Scio Economic Status, Marital Status, Family system, siblings, occupation and duration etc).

Brief Self-control scale

Tangney et al. (2004) was developed the self-control scale. This assessed the self-control. This measure had (13 items). This scale had five point scales (1-Not At All to 5-Very Much). Reliability was estimated as far as both individual and item reliability. For the main example, the items reliability (.97) and individual reliability (.75) both are adequately high. Measured was used in Urdu translated by Iqra et al., (2014).

Ten item personality inventory

The ten item personality inventory was developed by (Gosling et al., 2003). This scale was used in Urdu language translated by Arshad & Malik (2016). Cronbach's Alpha for Urdu version =.63. It measured the personality traits. Every of the ten substances were graded on a 7 point scale ranges from 1 (disagree strongly) to 7(agree strongly).The TIPI had five dimensions extraversion, Agreeableness, conscientiousness, openness to experience and emotional stability.

Smartphone Addiction Scale

Smartphone compulsion was established by Kwon et al., (2013). Smartphone compulsion scale (SAS) was a scale for cell phone Addiction that had 33 substances with a six-point Likert scale (strongly disagree 1 and strongly agree 6) in light of self-detailing. The interior reliability investigation effect (Cronbach's alpha) was 0.96. In this investigation, the inner constancy test result (Cronbach's alpha) of SAS was 0.96.Urdu version scale was used and reliability .90.

Procedure

Foremost, approval had been sought from Defense Committee, Riphah Institute of Clinical and Professional Psychology (RICPP). Permission had been asked from the authors of

Questionnaire for the use of their assessment tools. Prior permission had taken from the HOD of institutes. Informed consent of participants had been used. The purpose of the examination had been clarified to them. Information sheet had been provided to the participants. The questionnaire was given to the participants. The researcher had given the questionnaires after brief instructions and all questioners had been done in existence of investigator. After getting the questioners had been taken back and applicants had to be grateful for their cooperation.

Ethical Consideration

Several ethical considerations were meticulously followed in conducting the present research to ensure the integrity and safety of the participants involved. Prior permission was obtained from the Head of the Department at the Institute before initiating the study. Informed consent was secured from all participants, ensuring they were fully aware of the research details and their voluntary involvement. Permissions were also obtained from the authors of the scales used in the study to ensure compliance with intellectual property rights. Data confidentiality was strictly maintained, with the assurance that all information would only be used for research purposes. Participants were informed of their rights to withdraw from the study at any time without any consequences. Additionally, therapeutic services were provided to participants who experienced any emotional distress following the completion of the inquiry forms, ensuring their well-being throughout the study.

Results

Table 1. *Demographic characteristics of sample (N = 400).*

Variable	***f* (%)**	**M (SD)**
Age in years (18-25)		21.07 (1.68)
Gender		
Female	200 (50)	
Male	200 (50)	
Education		
B.A	71 (17.8)	
M.A	113 (28.3)	
B.S (hons.)	216 (54.0)	
Background		
Urban	333 (83.3)	
Rural	67 (16.8)	
Family system		
Nuclear	294 (73.5)	
Joint	106 (26.5)	
Father income		
No income	6(1.5)	
20-40,000	106 (26.5)	
41-100,000	189 (47.3)	
Above 100,000	99 (24.8)	
Personal smartphone		
Yes	387 (96.8)	
No	13 (3.3)	
Usage hours		

Below 5	86 (21.5)
6-10 hours	167 (41.8)
11-15 hours	142 (35.5)
15 above	5 (1.3)
Usage years	
5 below	324 (81.0)
6-10	68 (17.0)
10 above	8 (2.0)
SNS(social network service)	
Twitter	2 (0.5)
WhatsApp	37 (9.3)
More than one	361 (90.3)
Usage SNS	
Often	270 (67.5)
Sometimes	69 (17.3)
Normal	61 (15.3)
RFSN(real life friend in social network)	
Below 50	298 (74.5)
50-100	76 (19.0)
100 above	26 (6.5)

Note: *f* = frequency, M = mean, SD = standard deviation.

Table 1 showed that age range of the sample was 18 to 25 years. The education of the sample was B.A, M.A, and BS level students of different institutes. Participant had been taken equally by gender. Table showed that most of the participant had 1 to 5 years of smart phone usage experience most of the participants had 6 to 15 hours of smart phone usage. Maximum of the scholars belonged to middle “socio -economic status”. Participants belonged to joint (26.5%) and (73.5%) from nuclear family system. It showed that most of the members did not practice emotional and bodily infection in their lives.

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Table 2
Correlation between Self-Control, Personality Traits and Smartphone Addiction (N = 400).

Variables	1	2	3	4	5	6	7	8	M	SD
1.BSCS	_	.04	-.00	.03	.03	-.03	.04	.03	39.23	7.38
2.TIPI		_	-.16**	.56**	.55**	.47**	.63**	.54**	41.65	6.47
3.SAS			_	-.08	-.10*	-.09	-.07	-.10*	124.16	25.46
4.TIPIex				_	.22**	.12*	.17**	-.05	7.74	2.63
5.TIPIop					_	-.03	.26**	.09	8.29	2.29
6.TIPIag						_	.07	.24**	8.04	2.11
7.TIPIco							_	.27**	8.62	2.25
8.TIPIem/nu								_	8.97	2.30

Note: *p< .05. **p<.01. ***p<.001, BSCS=Brief Self Control scale, TIPI= Ten Items Personality Inventory, SAS=Smartphone Addiction scale

Table 2 indicated that self-control had a positive but non-significant correlation with the Ten Item Personality Inventory. Self-control also demonstrated a negative non-significant relationship with smartphone addiction and non-significant relationships with conscientiousness, extroversion, openness to experience, and agreeableness. Personality traits exhibited a highly significant negative relationship with smartphone addiction, suggesting that participants with favorable personality traits tended to use their smartphones less, whereas those with less favorable traits used their phones more frequently. Additionally, personality traits had a highly significant positive relationship with extroversion, implying that individuals with positive traits were more social, while those with negative traits were more likely to be solitary.

Personality traits also showed highly significant positive correlations with conscientiousness, emotional stability, openness to experience, and agreeableness, indicating these individuals was more likely to be secure, calm, creative, open, and responsible. The smartphone addiction scale displayed a non-significant negative association with extroversion and a significant negative relationship with conscientiousness, indicating that extensive smartphone use might negatively impact an individual's responsibility and conscientious behaviors. Specifically, heavy smartphone users tended to perform their duties less well compared to those who used their phones sparingly.

Moreover, the smartphone addiction scale had a non-significant negative effect on emotional stability and openness to experience, and a significant negative effect on agreeableness. This

suggests that heavy smartphone use could reduce an individual's likelihood of helping or caring for others effectively. In contrast, those who spent less time on their phones tended to be more helpful and caring.

Extroversion was positively and highly significantly correlated with conscientiousness and openness to experience, and had a significant positive correlation with emotional stability/neuroticism, but an insignificantly negative relationship with agreeableness. Conscientiousness displayed an insignificant negative effect on emotional stability and an insignificant positive association with agreeableness. Emotional stability had a non-significant positive effect on openness to experience and a highly significant positive influence on agreeableness. Openness to experience had an extremely significant positive connection with

Table 3
Gender Differences on Self-Control, Personality Traits and Smartphone Addiction (N=400).

	Male		Female				95%Cl		
Variable	M	SD	M	SD	t(398)	P	LL	UL	Cohen's d
1.BSCS	39.10	7.47	39.35	7.31	.33	.67	-1.20	1.70	0.03
2.TIPI	41.39	6.66	41.94	6.27	.89	.85	-6.92	1.85	0.08
3.SAS	124.60	25.29	123.72	25.68	-.34	.88	-5.89	4.13	0.03

agreeableness.

Note: BSCS=Brief self-control scale, TIPI=Ten item personality inventory, SAS=Smartphone Addiction Scale, LL=lower limit; UL=upper limit, $p<.05$.

Table 3 showed that here were positive non-significant changes in self-control and personality traits between male and females. They use their cell phone equally. However, there were non-significant differences in personality traits and smartphone dependence between male and female.

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Table 4
Regression Analysis Predicting Demographics Variables and Smartphone Addiction (N=400).

Smartphone Addiction		
Variable	ΔR2	B
Step1	.06	
Age		.00
Family system		.12**
Family size		.05
Scio-Economic Status		.04
Usage in Hours		.20***
Step2	.00	
BSCS		-.00
Step3	.02	
TIPI		-.16***

Note: *p<.05, **p<.01, ***p<.001, β = Standardized coefficient, ΔR2 = R changed square, BSCS=brief self- control scale, TIPI=ten item personality inventory.

The result showed that in first step family system and smartphone usage in hours highly significant predict on smartphone addiction. (.12**, .20***). In second step, BSCS did not predict on smartphone Addiction. And also third step showed the TIPI highly significant prediction on smartphone Addiction (-.16***).

Table 5
Processes Analysis Between Self-Control and Smartphone Addiction (N=400).

		R	F	R2	B	S.E	t	P	LL	UL
BSCS					.42	.58	.72	.46	-.72	1.57
TIPI(EX)					1.17	2.66	.44	.65	-4.05	6.41
Interaction-1					-.05	.06	-.76	.44	-.18	.08
		.09	1.16	.00						

Note: *p<.05, **p<.01, ***p<.001, β = Standardized coefficient, SE = Standardized error, p = significance, LL=lower level, UL=upper value, R2=Adjusted R-square, BSCS=brief self- control scale, TIPI (extroversion)=ten item personality inventory.

Table 5 showed that the Moderate effect among self-control, Personality Traits (extroversion) and Smartphone Addiction. This present study showed, there was non-significant interaction on

Smartphone Addiction. The people who had high or low extroversion trait that are not affected on cell phone.

Table 6

Processes Analysis Between Self-Control and Smartphone Addiction (N=400).

		R	F	R2	B	S.E	t	P	LL	UL
BSCS					-.17	.66	-.26	.78	-1.47	1.12
TIPI(AG)					-1.94	2.81	-.69	.49	-7.47	3.59
Interaction-1					.01	2.07	.27	.78	-.12	.16
		.10	1.56	.01						

Note: *p<.05, **p<.01, ***p<.001, β = Standardized coefficient, SE = Standardized error, p = significance, LL=lower level, UL=upper value, R2=Adjusted R-square. BSCS=brief self- control scale, TIPI (Agreeableness) =ten item personality inventory.

Table 6 showed that the Moderate effect among self-control, Personality Traits (agreeableness) and Smartphone Addiction. This study showed, there was non-significant interaction on Smartphone Addiction. Helping personality did not effect on Smartphone Addiction.

Table 7

Processes Analysis Between Self-Control and Smartphone Addiction (N=400).

		R	F	R2	B	S.E	t	P	LL	UL
BSCS					-.26	.62	-.43	.66	-1.49	.95
TIPI(CO)					-2.46	2.94	-.83	.40	-8.49	3.31
Interaction-1					.03	.07	.44	.65	-.11	.17
		.10	1.58	.01						

Note: *p<.05, **p<.01, ***p<.001, β = Standardized coefficient, SE = Standardized error, p = significance, LL=lower level, UL=upper value, R2=Adjusted R-square, BSCS=brief self- control scale, TIPI (conscientiousness)=ten item personality inventory.

Table 7 showed that the Moderate effect among self-control, Personality Traits (conscientiousness) and Smartphone Addiction. This recent study showed, there was non-significant interaction on Smartphone Addiction. That people had self-control, so they did not effect on Smartphone.

Table 8

Processes Analysis Between Self-Control and Smartphone Addiction (N=400).

		R	F	R2	B	S.E	t	P	LL	UL
BSCS					.85	.68	1.24	.21	-.49	2.20
TIPI(EM/nu)					2.99	3.14	.95	.34	-3.18	9.17
Interaction-1					-.10	.07	-1.32	.18	-.25	.05
		.11	1.68	.01						

Note: *p<.05, **p<.01, ***p<.001, β = Standardized coefficient, SE = Standardized error, p = significance, LL=lower level, UL=upper value, R2=Adjusted R-square, BSCS=brief self- control scale, TIPI (emotional stability)=ten item personality inventory.

Table 8 showed that the Moderate effect among self-control, Personality Traits (emotional stability, neuroticism) and Smartphone Addiction. This study showed, there was non-significant interaction on Smartphone Addiction. Person who sad or anxious did not effect on smartphone.

Table 9

Processes Analysis Between Self-Control and Smartphone Addiction (N=400).

		R	F	R2	B	S.E	t	P	LL	UL
BSCS					-.83	.64	1.31	.18	-2.07	.41
TIPI (OP)					-4.58	2.82	-1.62	.10	-10.13	.97
Interaction-1					.09	.07	1.63	.17	-.04	.23
		.09	1.30	.00						

Note: *p<.05, **p<.01, ***p<.001, β = Standardized coefficient, SE = Standardized error, p = significance, LL=lower level, UL=upper value, R2=Adjusted R-square, BSCS=brief self- control scale, TIPI (openness to experiences)=ten item personality inventory.

Table 9 showed that the Moderate effect among self-control, Personality Traits (openness to experience) and Smartphone Addiction. This present study showed, there was non-significant interaction on Smartphone Addiction. Person who had flexibility of thoughts did not effect on Smartphone Addiction, because they experience new different ideas.

Discussion

The current study was designed to explore the associations among self-control, personality traits, and smartphone addiction among students. Additionally, the study aimed to investigate the moderating effect of personality traits on the relationship between self-control and smartphone addiction. The sample comprised 400 individuals, split evenly between 200 males and 200 females. Most participants belonged to nuclear families and came from moderate socio-economic backgrounds, with a majority residing in urban areas.

The study hypothesized a negative relationship between self-control and smartphone addiction. Contrary to expectations, the results indicated no significant correlation between self-control and smartphone addiction, which did not support the findings of Jeongmin Lee et al.

(2015), who noted that lower self-control was associated with greater smartphone addiction. Another hypothesis proposed a negative relationship between personality traits and smartphone addiction. The results revealed a negative association between these variables, aligning with the findings of Zaheer Hussain et al. (2017), which showed that the personality trait of honesty was negatively correlated with problematic smartphone use. The study suggested that individuals low in honesty are more likely to experience problematic smartphone use. Additionally, emotional stability, conscientiousness, and age were found to be negatively associated with problematic smartphone use, supporting the observations by Elena Cocorada et al. (2018) about the significant relationships between smartphone use, personality traits, attitudes, and addiction. Furthermore, the results also revealed negative correlations between smartphone addiction and neuroticism, honesty, and conscientiousness.

Regarding gender differences in smartphone addiction, it was hypothesized that male students would be more prone than female students. However, the findings showed no significant difference in smartphone usage duration between male and female students, corroborating the research by Anastasios A. Economides and Amalia Grousopoulou (2009). They discussed various motivations for mobile phone ownership (e.g., fashion, safety, social status, loneliness, freedom, relationships) and its effects (e.g., distraction, addiction, gratification), noting no significant gender differences in mobile phone use. The study also hypothesized that demographic variables (such as age, socio-economic status, family system, family size, and usage periods in hours) would predict smartphone addiction. The results indicated that the family system and usage duration significantly predicted smartphone addiction. This finding highlights the influence of demographic factors on smartphone usage, as previously noted in the literature where the extraversion subscale was found to significantly predict smartphone ownership (Wilburn Lane & Chris Manner). Lastly, it was hypothesized that personality traits would moderate the relationship between self-control and smartphone addiction. However, the study found that personality traits did not significantly interact with smartphone addiction, suggesting that the moderating role of personality traits in this context might be limited. This conclusion calls for further research to explore potential variables that might influence this dynamic.

Several limitations of this research should be highlighted, which also suggest new directions for future studies. Firstly, the duration for data collection was relatively short, which could be considered a constraint of the study. Secondly, the research was conducted solely with students; to enhance the generalizability of the results, similar studies should be extended to include children and older adults. Another limitation arises from the reliance on self-reported data, which carries an inherent risk of bias and may affect the reliability of the findings. Additionally, the sample size was relatively small and not sufficiently large to ensure a broader representation. Data collection was confined to a single city, limiting the geographical diversity and reducing the applicability of the results to other regions. Finally, some participants were not fully willing to engage, which might have influenced the overall data quality and study outcomes. These limitations underscore the need for more extensive, diverse, and longer-term studies to better understand the dynamics explored in this research.

Implication of the Study

To prevent the maladaptive patterns of smartphone usage, students must exercise control over the time and regularity of their daily mobile phone usage. It's advisable to intervene at an early stage before smartphone compulsion escalates. Additionally, students grappling with smartphone addiction should seek time management training from qualified therapists to effectively manage their usage. Developing self-control is crucial for overcoming addiction, and cultivating positive personality traits can aid individuals in controlling their dependence on cellphones.

Conclusion

In conclusion, the analysis provided insightful revelations into the interrelations among self-control, personality traits, and smartphone addiction among students. Key findings indicated that self-control alone does not have a significant impact on smartphone addiction, highlighting the importance of targeted awareness and intervention programs aimed at fostering better self-regulatory practices among students to prevent addiction. The study also underscored a crucial link between personality traits and smartphone usage, where individuals with positive traits demonstrated lesser engagement with smartphones compared to those with negative traits, who were more prone to excessive use. This finding emphasizes the need for individuals to be cognizant of their personality dispositions and potentially seek psychological guidance if their traits predispose them to addictive behaviors. Importantly, the absence of interaction between self-control and smartphone addiction, coupled with the significant predictive power of demographic variables on smartphone addiction, calls for a more nuanced approach in future research. These elements point to the need for tailored intervention strategies that consider both individual differences and demographic factors to effectively address and mitigate smartphone addiction. This comprehensive understanding is crucial for developing targeted programs that not only raise awareness but also foster healthier technology usage behaviors among students.

References

Akers, R. L. (1985). *Deviant behavior: A social learning approach*. Wadsworth Publishing Company.

Alosaimi, F. D., Alyahya, H., Alshahwan, H., Al Mahyijari, N., & Shaik, S. A. (2016). Smartphone addiction among university students in Riyadh, Saudi Arabia. *Saudi medical journal*, *37*(6), 675.

Baniassadi, T., Javanmard, Z., Zivari-Rahman, M., Shokouhi-Moqhaddam, S., & Adhami, M. (2015). Investigating the relationship between personality traits and self-control and nicotine dependence symptoms in male prisoners in kerman, iran. *Addiction & health*, *7*(1-2), 82.

Bashir, M. A., Ali, H. M., Ali, M., & Siddiqui, A. M. (2015). An experimental investigation of performance of photovoltaic modules in Pakistan. *Thermal Science*, *19*(Suppl 2), S525-S534.

Choi, Y. J., Kim, N., Chang, H., Lee, H. S., Park, S. M., Park, J. H., ... & Jung, H. C. (2015). Helicobacter pylori-induced epithelial-mesenchymal transition, a potential role of gastric cancer initiation and an emergence of stem cells. *Carcinogenesis*, *36*(5), 553-563.

Cocoradă, E., Cazan, A. M., & Orzea, I. E. (2018). School climate and school achievement in the Romanian secondary education. *Journal of Psychoeducational Assessment*, *36*(5), 516-522.

Cocoradă, E., Maican, C. I., Cazan, A. M., & Maican, M. A. (2018). Assessing the smartphone addiction risk and its associations with personality traits among adolescents. *Children and Youth Services Review*, *93*, 345-354.

Diener, E., Lucas, R. E., & Oishi, S. (2002). Subjective well-being: The science of happiness and life satisfaction. *Handbook of positive psychology*, *2*, 63-73.

Gosling, S. D., Rentfrow, P. J., & Swann Jr, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in personality*, *37*(6), 504-528.

Hibbard, A. (2015). *The relationship of attachment styles and self-control on cell phone reliance* (Doctoral dissertation).

Hirschi, T., & Gottfredson, M. (1983). Age and the explanation of crime. *American journal of sociology*, *89*(3), 552-584.

Hofmann, W., Luhmann, M., Fisher, R. R., Vohs, K. D., & Baumeister, R. F. (2014). Yes, but are they happy? Effects of trait self-control on affective well-being and life satisfaction. *Journal of personality*, *82*(4), 265-277.

Hussain, Z., Griffiths, M. D., & Sheffield, D. (2017). An investigation into problematic smartphone use: The role of narcissism, anxiety, and personality factors. *Journal of behavioral addictions*, *6*(3), 378-386.

Iftikhar, M., & Tariq, S. Self-control, Narcissistic Tendencies and Internet Addiction among Adolescents. *JOURNAL OF ARTS AND SOCIAL SCIENCES*, 36.

Isanejad, O., Amani, A., Azizi, A., & Azimifar, S. (2016). The relationship between personality factors, self-control and marital coping strategies with marital conflict. *International Journal of Behavioral Sciences*, *9*(4), 19-25.

Ishaq, G., Rafique, R., & Asif, M. (2017). Personality traits and news addiction: Mediating role of self-control. *Journal of Dow University of Health Sciences*, *11*(2).

Jiang, Z., & Zhao, X. (2016). Self-control and problematic mobile phone use in Chinese college students: The mediating role of mobile phone use patterns. *BMC psychiatry*, *16*(1), 416.

Kaygusuz, C., & Ozpolat, A. R. (2016). An Analysis of University Students' Levels of Self-Control According to Their Ego States. *Eurasian Journal of Educational Research*, *64*, 197-212.

Kim, E. J., Namkoong, K., Ku, T., & Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *European psychiatry*, *23*(3), 212-218.

Kim, H. J., Min, J. Y., Min, K. B., Lee, T. J., & Yoo, S. (2018). Relationship among family environment, self-control, friendship quality, and adolescents' smartphone addiction in South Korea: Findings from nationwide data. *PloS one*, *13*(2), e0190896.

Kim, Y., Jeong, J. E., Cho, H., Jung, D. J., Kwak, M., Rho, M. J., ... & Choi, I. Y. (2016). Personality factors predicting smartphone addiction predisposition: Behavioral inhibition and activation systems, impulsivity, and self-control. *PloS one*, *11*(8), e0159788.

Kwon, M., Lee, J. Y., Won, W. Y., Park, J. W., Min, J. A., Hahn, C., ... & Kim, D. J. (2013). Development and validation of a smartphone addiction scale (SAS). *PloS one*, *8*(2), e56936.

Lane, W., & Manner, C. (2011). The impact of personality traits on smartphone ownership and use. *International Journal of Business and Social Science*, *2*(17).

LaRose, R., Lin, C. A., & Eastin, M. S. (2003). Unregulated Internet usage: Addiction, habit, or deficient self-regulation?. *Media Psychology*, *5*(3), 225-253.

Lee, J., Cho, B., Kim, Y., & Noh, J. (2015). Smartphone addiction in university students and its implication for learning. In *Emerging issues in smart learning* (pp. 297-305). Springer, Berlin, Heidelberg.

Moghadam, S. R. M., & Chegeni, M. E. (2015). Study the relationship between religious attitudes, self-control and spiritual health between Basij sisters, in the city of Shoush. *Journal of reaserch on religion & health*, *1*(1), 40-47.

Orlando, G., Booth, C., Wang, Z., Totonelli, G., Ross, C. L., Moran, E., ... & Al-Shraideh, Y. (2013). Discarded human kidneys as a source of ECM scaffold for kidney regeneration technologies. *Biomaterials*, *34*(24), 5915-5925.

Pearson, C., & Hussain, Z. (2017). Smartphone use, addiction, narcissism, and personality: A mixed methods investigation. In *Gaming and Technology Addiction: Breakthroughs in Research and Practice* (pp. 212-229). IGI Global.

Shaukat, S., Angez, M., Alam, M. M., Sharif, S., Khurshid, A., Malik, F., ... & Zaidi, S. S. Z. (2012). Molecular identification and characterization of a new type of bovine enterovirus. *Appl. Environ. Microbiol.*, *78*(12), 4497-4500.

Sok, S. R., Seong, M. H., & Ryu, M. H. (2019). Differences of Self-Control, Daily Life Stress, and Communication Skills between Smartphone Addiction Risk Group and General Group in Korean Nursing Students. *Psychiatric Quarterly*, *90*(1), 1-9.

YE, S., TOSHIMORI, A., & HORITA, T. (2018). The Effects of Personality Traits on Smartphone Dependency and Loneliness: A Study of University Students in Japan. *Journal of Socio-Informatics*, *10*(1), 1-13.