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MEDIATING ROLE OF ONLINE SOCIAL CONNECTEDNESS IN SMARTPHONE ADDICTION AND ONLINE RELATIONSHIP AMONG YOUNG ADULTS

Palwasha Khan¹, Muhammad Sajjad Shahid², Hafsa Abdul Majid³

¹Cooperative Lecturer, Department of Psychology, Jinnah University for Women, Karachi, Pakistan

²Department of Psychology, Alumni, Lahore Garrison University, Lahore, Punjab Pakistan

³PhD Scholar, Department of Psychology, University of Sargodha, Pubjab, Pakistan

KEYWORDS	ABSTRACT
Smartphone Addiction, Online Social Connectedness, Mediate, Online Relationship	The smartphones have transformed the way, young adults communicate and form relationships, but its misuse increasingly distracts from academic pursuits, that necessitate additional explorations towards diverse effects of smartphone addiction. This study aims to investigate that how online social connectedness mediates the relationship between smartphone addiction and online relationships among young adults, addressing gaps in existing literature. The correlational design and purposive sampling technique was employed wherein participants completed smartphone addiction scale to measure smartphone addiction, the social connectedness scale the online relationship initiation scale to measure online relationship in young adults. Findings revealed a significant relationship between smartphone addiction and online relationships. The results offer significant information in chasing the direct and indirect relationships, reaching the conclusion and making the suitable decisions about the hypotheses. The study concludes that the smartphone addiction significantly influences online relations, highlighting the standing of managing smartphone use to improve the young adult wellbeing. The study is expected to contribute the existing literature from different dimensions.
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Corresponding Author	Muhammad Sajjad Shahid: Sajjadkhansajjad565@gmail.com
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INTRODUCTION

In digital age, smartphones have profoundly transformed how we interact, build relationships, and sustain social connections, becoming an indispensable part of our daily lives. With over 5-billion smartphone users globally (Pew Research Center, 2020), these devices facilitate both the personal & professional connections. Pakistan alone accounts for about 73 million smartphone users (Newzoo, 2019). Still, smartphones offer instant communication and connectivity across

social networks, pose challenges, mainly about excessive smartphone use (Elhai, Yang, McKay & Asmundson, 2020). The overuse can lead to smartphone addiction, which is often linked to poor psychological, social and physical, particularly among the young adults (Pera, 2020). The COVID-19 pandemic drastically altered lifestyles, affecting education, work & relationships. It resulted in short-term, long-term psychosocial & mental health implications for children and adolescents (Rathod, 2023). One of most exacerbated issues during pandemic was addiction (Avena, Simkus, Lewandowski, Gold & Potenza, 2021) particularly behavioral addictions like problematic use of smartphones and social media (Alimoradi, Lotfi, Lin, Griffiths & Pakpour, 2022). Smartphone addiction shares features with other behavioral addictions, like compulsive use, increased engagement over time, withdrawal, and functional impairment (Yu & Sussman, 2020).

In the post pandemic era, the digital communication, including texting, social media and video conferencing calls and online gaming surged (Nguyen, Gruber, Marler, Hunsaker & Hargittai, 2020). The people typically spend the majority of their daily mobile phone usage on social and communication apps (DataReportal, 2020). More than 70% online users spend time in building personal relationships, including online friendships, sexual partnerships & romances (Lykens, Pilloton, Silva, Schlamm, Wilburn & Pence, 2019). These online relationships are informal and sustained over digital platforms, like social media (Nguyen, Gruber, Marler, Hunsaker, Fuchs & Hargittai, 2022). Social connectedness, which refers to the sense of belonging to the group or community significantly affects health & well-being (Kuek, 2023). This need further intensified during the pandemic, as social distancing reduced face-to-face interactions, pushing people towards online platforms for social connections to cope with psychological stress (Marinucci, Pancani, Aureli & Riva, 2022) Online technologies could facilitate humans' connectedness by complementing existing offline relationships & allowing social connections when they would otherwise be unachievable (Lieberman & Schroeder, 2020). Moreover, individuals who strive with forming the meaningful offline relationships often turn to online platforms to alleviate the loneliness.

LITERATURE REVIEW

Smartphone addiction is increasingly recognized as a form of behavioral addiction, exhibiting traits similar to other behavioral dependencies, like prominence, mood swings, habituation, withdrawal symptoms, conflicts & relapses (Ratan, Parrish, Zaman, Alotaibi & Hosseinzadeh, 2021). While people of all ages are becoming dependent on these devices, young individuals are particularly vulnerable, often struggling to manage their usage. This addiction can lead to psychological and behavioral issues that disrupt daily life (Volungis et al., 2020). The appeal of smartphones lies in their capacity to create a sense of connection (Miller, 2021), easing online relationships, especially cyber friendships (Harkin & Kuss, 2021). Many young adults engage in these online friendships, with the significant number transitioning to offline interactions. For adolescents, smartphones serve mainly as tool for expressing interests and seeking validation and social acceptance (Webster & Paquette, 2023). Research indicates that many individuals find online connections to be more secure and comforting than traditional romantic relations (Terzimehić et al., 2023). Those facing social challenges prefer online dating (Toma, 2022), social

technology impacts mental health in positive and negative ways (Valkenburg, Meier & Beyens, 2022).

On the positive side, it can enhance emotional well-being by fostering social connectedness, particularly during times of limited in-person interaction, such as during pandemic lockdowns (Massing, Nesi, Telzer & Lindquist, 2022). However, social media also induce stress through social comparison and feelings of rejection, poorly affecting emotional health & contributing to the anxiety and depression (Hartanto, Quek, Tng & Yong, 2021; Alonzo Hussain, Stranges & Anderson, 2021). The social media platforms allow users to create profiles, connect, and share content. Many individuals report feeling that online relationships provide more security and comfort than face-to-face romantic connections. While smartphone addiction impacts people across various demographics, it is mainly pronounced amid young individuals, who primarily use smartphones to express interests and seek social validation (Ratan et al., 2021). Individuals from diverse cultures & backgrounds connect through internet platforms, where relationships can range from casual to romantic or business-related. Messaging, texting, and video calls are common forms of communication and become avenues for personal linking (Cairns, Ebinger, Stinson, Jordan & Spring 2020). Also, those experiencing social anxiety, depression often seek refuge in online interactions to avoid face-to-face engagement (Iqbal, Asghar, Ashraf & Rafiq, 2022).

Social connectedness, defined as the feeling of belonging to the community or group, is a vital human need that significantly affects health and well-being (Kuek, 2023). Thus, fostering social connectedness is crucial for enhancing various aspects of psychological well-being (Arslan et al., 2022). Humans are naturally inclined to build and maintain social relationships, engaging in activities like joining groups and reconnecting with old friends (Tsang, Barrentine, Chadha, Oishi & Wood, 2024). Still, those who find it challenging to establish meaningful relationships offline turn to online platforms to alleviate loneliness (Della, Valori & Farroni, 2022). Research suggests that online connections can lead to issues like cyberbullying and online harassment (Saha, Ahlawat, Akram, Dhaigude, Sharma & Kumar, 2024). Some studies indicate that social media users may experience heightened online social connectedness (Taylor, Abba, Baradel, Lay, Herewini & Taylor, 2021; Holmes, 2021). Despite the growing global focus on smartphone addiction & its psychological effects, there is lack of research in Pakistan examining mediating role of online social connectedness in relationship between smartphone addiction and online relationships. This study aims to examine online social connectedness that effects smartphone addiction on online relationships amid young adults in Pakistan, addressing previous research gaps.

Research Hypotheses

- H1: There is expected to positive and significant relationship between smartphone addiction, social connectedness and online relationship in young adults.
- H2: Online social connectedness is likely to mediate relationship between independent variable smartphone addiction and dependent variable online relationship in young adults.

H3: There is likely to be a significant gender change between study variables i.e. smartphone addiction, online social connectedness and online relationship in young adults.

RESEARCH METHODOLOGY

This study employs quantitative correlational research design, utilizing cross-sectional survey approach and purposive sampling technique to investigate relationship between smartphone addiction, social connectedness, and online relationships among young adults. In this linking, the sample comprised 110 participants, selected through the purposive sampling from various educational institutions, aged between 18 and 25. This group included 61 men (56%) and 49 women (44%), with a mean age of 21.40 years and a standard deviation of 4.08. The participants were required to own the smartphone and have used it for at least the past six months to be eligible.

Measures of Study

The Smartphone Addiction Scale-Short Version (SAS-SV), developed by [Kwon et al. \(2013\)](#), is used to measure smartphone addiction. It consists of 10 items rated on a 6-point Likert scale, from 1 (strongly disagree) to 6 (strongly agree). The SAS-SV has a reliability coefficient of 0.96. The Social Connectedness Scale Revised (SCS-R), created by Lee and his colleagues in 2001, is a self-report questionnaire that assesses individual feelings of connection to social environment. This 20-item scale measures various aspects of social connectedness and is applicable in both research and clinical contexts. Respondents rate item on a 6-point Likert scale, from 1 (strongly disagree) to 6 (strongly agree). In study, scale is used to measure online social connectedness and has a reliability coefficient of 0.87. Online Relationship Initiation Scale (ORIS), developed by Harris and Aboujaoude in 2016, assesses individuals' tendencies and behaviors related to initiating relationships through online platforms. The scale consists of 9 items: first 6 measure engagement and success in online relationship initiation, rated from 1 (never) to 5 (frequent), while last 3 compare ease of online versus offline relationship development, rated from 1 (not at all) to 5 (much easier). Scale demonstrates high internal consistency, with a Cronbach's alpha of 0.90.

Ethical Consideration

All ethical considerations were strictly followed throughout the research process. Permissions were obtained from the original authors for use of their scales, and necessary approvals were secured from relevant authorities for data collection. Informed consent was acquired from all participants, who were debriefed about the study's objectives to reduce biases. Confidentiality and anonymity of responses were assured, and participants had the right to withdraw from the study at time without consequences. No psychological or physical harm was inflicted upon any participant. All data reported in research were accurate & properly cited. Ethical approval was obtained from research ethics committee to proceed with publication. Participants were provided with an informed consent form prior to their participation in the study to ensure confidentiality. Data collection was conducted over online survey platform, helped maintain anonymity and provided ease of access. All the data were collected in compliance with ethical guidelines.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 25. Correlation analysis was conducted to examine relationships between smartphone addiction, online social connectedness, and online relationships. To assess mediating role of online social connectedness in relationship between smartphone addiction and online relationships, Hayes Process Model 4.1 was employed. Also, the independent sample t-tests were performed to explore gender differences across the study variables.

RESULT OF STUDY

Table 1
Correlation among Study Variables in 110 Participants

Variables	1	2	3	Mean	SD
1. Smartphone Addiction	-	.12	.31**	35.87	9.05
2. Online Social Connectedness		-	.30**	68.29	11.74
3. Online Relationship			-	22.22	9.17

Note. *p<.05. **p<.01

The table illustrates the relationships between study variables: smartphone addiction, online social connectedness, and online relationships. It reveals that while the smartphone addiction is positively linked with online social connectedness, relationship is not statistically significant. In contrast, smartphone addiction shows significant association with the online relationship. Additionally, online social connectedness is significantly and positively correlated with online relationships with respect to the strength and direction in association among research variables of study.

Table 2
Hayes Process (N=110)

Antecedent		Consequent						
		OSC (M)			OR(Y)			
		β	SE	P	c'	B	SE	P
Smartphone Addiction (X)	a	.16	.12	.19	b	.28	.09	.002
OSC(M)						.21	.06	.003
Constant	I	62.43	4.58	<.001	I	-2.21	5.45	.68
		R2 =.01			R2 =.16			
		F =1.73			F =10.83			

Note. OSC= Online Social Connectedness, OR=Online Relationship, *p<.05 **p<.01, ***p<.001.

According to table above, direct effect of smartphone addiction on online social connectedness is positive but not significant ($\beta = .16, p > .05$). In contrast, direct effect of smartphone addiction on online relationships is both positive and significant ($\beta = .28^*, p < .01$). Additionally, direct effect of online social connectedness on online relationships is positive & significant ($\beta = .21^{**}, p < .01$). in this connection, the results provide significant information in determining desired relationships.

Table 3
Indirect Effect

Indirect Path	Effect	Standardized Estimate	Lower Level	Upper Level
OSC	.03	.02	-.009	.09

Note. OSC= Online Social Connectedness'

The indirect effects show that the total indirect effect of the smartphone addiction on online relationships through online social connectedness is statistically insignificant, as indicated by the lack of significant difference between lower and upper bounds of the bootstrap confidence interval.

Table 4
Independent Sample T-Test

Variables	Men(n=61)		Women(49)		t (108)	P	Cohen's D
	Mean	SD	Mean	SD			
SPA	36.52	8.75	35.06	9.43	.84	.40	0.33
OSC	68.75	11.06	67.71	12.64	.46	.64	0.17
OR	23.5	9.41	20.63	8.71	1.64	.10	0.53

Note. SD= Standard Deviation, SPA= Smartphone Addiction, OCS= Online Social Connectedness, and OR= Online Relationship *p<.05. **p<.01, ***p<.001

The above table indicates no significant differences still, men score more on all three variables i.e., smartphone addiction, online social connectedness, online relationship than counterpart women.

DISCUSSION

In the quantitative analysis of present study, the first hypothesis of the study posited that there would be significant relationship between smartphone addiction, online social connectedness, and online relationships among young adults. The correlational analysis revealed that while smartphone addiction and online social connectedness are positively related, this relationship is not significant. The results are in line with previous researches that smartphones can enable that online interactions (Hsu, 2020) it does not inherently boost quality of social connectedness (Anderl et al., 2023). Smartphone addiction is both positively and significantly associated with online relationships. Various studies indicate that smartphones serve as a primary device for social networking, which can ultimately lead to the formation maintain of online relationships (Jeong et al., 2016, Ophir et al., 2020). Moreover, online social connectedness is significantly and positively linked with online relationships. These findings reflect previous research suggesting that smartphone addiction is linked to reduced social support and less interaction in physical world with peers & parents, as engagement is mainly over online connections (Ihm & Jennifer, 2018).

The second hypothesis of the study proposed that online social connectedness would mediate the relationship between smartphone addiction and online relationships among young adults. The results of mediation analysis indicate that online social connectedness partially mediates

this affiliation. Specifically, while direct effect of smartphone addiction on online relationships is positive and significant, indirect effect through online social connectedness is not significant. One of the reason of such findings could be peer pressure. Xu et al. (2023) showed significant effect of peer pressure on mobile social media addiction among adolescents. The online social connectedness, defined as perception of belonging and interaction in online social networks, plays crucial role in this dynamic has significant implications for psychological well-being and interpersonal relationships. As many turn to social media or smartphone to improve existing relationships, rather than seeking out new connections, leading to beneficial impacts on social connectedness, social & emotional support (Winstone et al., 2021). Similar studies suggest that adolescents with smartphone addiction are more strongly linked to online relationships (Lee, 2009).

The third hypothesis of the study proposed that there would be significant gender differences in smartphone addiction, online social connectedness, and online relationships among young adults. The results reveal no significant gender differences in these variables. However, mean scores for men were higher across all three variables. The smartphone addiction, online social connectedness and online relationships compared to women. This finding aligns with previous research indicating that men are more susceptible to the social media addiction than women (Shahid et al., 2024). Similarly, a study conducted at a Southern Spanish university found that men scored significantly higher on social networking site use, suggesting a greater propensity for addiction and online relationship (Aparicio et al., 2020; Casale et al., 2024). Additionally, this knowledge can guide the development of programs aimed at improving online social connectedness, promoting healthier smartphone use habits, improving young adults' overall social well-being. Another explanation for our findings could be that, in the men-dominated society like Pakistan, men have more access to smartphones and the internet, leading them to form online relationships more frequently as physical relationships are often rare and socially taboo.

CONCLUSION

This study investigated relationship between smartphone addiction and online relationships in young adults in Pakistan, with online social connectedness as mediator. While smartphone addiction significantly impacted the formation and maintenance of online relationships, the role of online social connectedness as the mediator was partial and not statistically significant. Thus, gender differences were not significant, though men reported slightly higher scores on smartphone addiction and online relationships, possibly due to the greater access in a men-dominated society. Thus, this study highlights the dual nature of smartphones: they facilitate connectivity and relationship-building online, yet excessive use can weaken quality of these connections. In addition, these findings emphasize the need for balanced smartphone use and further exploration of the impact of digital behaviors on social relationships in diverse cultural contexts.

These findings emphasize importance of addressing smartphone addiction through proactive strategies, such as digital literacy programs, mental health awareness, and policy interventions

in workplaces and universities to ensure the responsible smartphone use and awareness of the potential adverse effects of the online relationships. Therefore, such measures could promote healthy smartphone use while encouraging individuals to foster meaningful, balanced social interactions in both virtual and real-world contexts. The first limitation of this study is that it focused exclusively on young adults, which restricts the generalizability of the findings. Future studies should reflect wider range of age groups to provide a broader perspective. The sample size of 110 participants was relatively small, limiting the generalizability of results; thus, future research should aim to include larger sample. The study used a purposive sampling strategy, which poses a limitation; adopting the stratified sampling strategy is recommended for future research.

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