Review Journal of Social Psychology & Social Works

http://socialworksreview.com

ISSN-E: 3006-4724 Volume: 4
ISSN-P: 3006-4716 Issue: 2 (April – June, 2026)

Relationship between Problematic Mobile Phone Usage, Fear of Missing Out (Fomo), and Pubbing Behaviour among Late Adolescents

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Abstract

Problematic mobile phone use (PMPU), Fear of Missing Out (FoMO), and phubbing behavior have become the subject of concern in the context of the prevalence of smartphones among adolescents. To investigate the correlations between PMPU, FoMO and phubbing behaviour, and to determine the mediating effect of FoMO in relationship between PMPU and phubbing among late adolescents. The study was a cross-sectional correlational study carried out at Riphah international university, Islamabad, Pakistan, between January and December 2021. Convenience sampling was used to recruit 150 late adolescents (17-19 years). Standardized scales of PMPU, FoMO and phubbing behavior were used to collect the data. The statistical tests conducted were SPSS version 25, which consisted of Pearson correlation, multiple regression, and mediation analysis with bootstrapping (5000 samples) using Hayes PROCESS Macro (Model 4). Significant positive correlations were found between PMPU and FoMO ($r = 0.33$, $p < 0.01$), PMPU and phubbing ($r = 0.35$, $p < 0.01$), and FoMO and phubbing ($r = 0.79$, $p < 0.01$). The mediation analysis indicated that FoMO mediated the relationship between PMPU and phubbing (indirect effect = 0.187, 95% CI [0.121, 0.265]) with the direct effect becoming an insignificant value ($\beta = 0.10$), thus a full mediation effect. The relationship between PMPU and phubbing behavior among late adolescents is mediated by FoMO, which reflects its significance as a central psychological process that underlies the socially disruptive use of smartphones.

Keywords: Fear of Missing Out, Problematic Mobile Phone Usage, Late Adolescents, Phubbing, Smartphone Behavior

Introduction

The quick penetration of smartphones into our lives has dramatically changed the social interaction patterns, especially among late adolescents (Indrasvari et al., 2021; Oksman and Turtiainen, 2004). Smartphone adoption among young people in the world has sharply increased, and a significant proportion of them utilizes mobile devices to interact, socialize, entertain and study (Cha and Seo, 2018). With the growing use of the internet and smartphones in Pakistan, this has further enhanced the involvement of adolescents in the digital space. The increasing sensitivity to social judgement, identity formation, and peer affiliation characterise this stage of development, which makes adolescents particularly susceptible to the psychological and behavioural impacts of excessive digital consumption (Bibi et al., 2025). Although smartphones

are undoubtedly beneficial in terms of connectivity and access to information, their overuse or misuse has also become the subject of concern in terms of problematic mobile phone usage (PMPU) (Nawaz et al., 2024). PMPU is defined as the chronic and uncontrolled use of smartphones related to compulsive checking, less face-to-face communication, sleep problems, and poor psychosocial performance (Kalaitzaki et al., 2024). The adolescents are especially vulnerable because of their vulnerability to peer pressure and reward-based social feedback systems (Primi et al., 2024). One of the psychological factors associated with excessive smartphone usage is the so-called Fear of Missing Out (FoMO), which is a ubiquitous fear of missing out, presumably, on rewarding activities that others are engaged in (Li et al., 2022). FoMO promotes the continuous use of the Internet and strengthens the addiction to social media in order to feel valid and in order to feel a part of the community (Yang et al., 2021). The other related behavior is phubbing, or neglecting face-to-face communication in favor of using a mobile phone, causing communication breakdown and lower quality of relationships (Nazir, 2025; Shrivastav et al., 2025). Although there is an increased number of studies indicating PMPU, FoMO, and phubbing, a relationship between the three has not been studied extensively. Particularly, there is a lack of research on FoMO as a mediating variable between PMPU and phubbing behavior in the Pakistani context of late adolescents. To improve the comprehension of the psychological mechanisms involved in digital overuse and its effect on social interaction, it is necessary to address this gap.

Objective

To examine the relationship between PMPU, FoMO, and phubbing behavior, and to assess the mediating role of FoMO among late adolescents.

Literature Review

The fast-growing development of smartphone technology has radically transformed the social behavior patterns, especially among teenagers and young adults. The recent conceptualization of problematic mobile phone use (PMPU) is a maladaptive and compulsive behavior, which manifests itself through excessive and poorly managed use that disrupts daily functioning (Primi et al., 2024). In contrast with the previous perceptions that only identified frequency of use, PMPU is seen as a multidimensional construct with impaired self-regulation, reward-seeking behavior and emotional dependence. The vulnerability of adolescents is particularly high because of emotional reactivity and high dependence on peer validation (Honu-Mensah, 2025). PMPU is always associated with negative psychological effects, such as anxiety, depression, sleeping disorders, and low academic achievements (Martynenko et al., 2024). These results indicate that PMPU is an indicator of underlying emotional dysregulation as opposed to mere behavioral excess. In line with this, recent research has shown that problematic smartphone use is predictive of emotional instability, social anxiety, and decreased academic engagement (Yang et al., 2019), as well as a predictor of compulsive checking and impaired offline functioning (Elhai et al., 2018). Fear of Missing Out (FoMO) has become a significant psychological reason behind overusing smartphones. FoMO can be defined as an ongoing worry about missing worthwhile activities, which encourages constant connectivity on the internet (Enginkaya and Sağlam, 2025). It is actively perceived as a mental-motivation mechanism that contributes to the checking habit and digital addiction. FoMO is always strongly related to overuse of smartphones and social media, and the evidence indicates that it is a predictor and maintains problematic smartphone and social media use (Wang et al., 2023). A primary behavioral outcome of overuse of smartphones is phubbing or the act of disregarding face-to-face communication to focus on their mobile phones. It has been found out that phubbing has a negative impact on relationship satisfaction,

quality of communication, and interpersonal trust and is linked to loneliness and social exclusion (Yam, 2023). Recent results also suggest that smartphone addiction is a strong predictor of phubbing and decreased relationship satisfaction (Erzen & Tasdemir, 2025). PMPU and phubbing are observed to be closely related, as increased smartphone dependency results in more phubbing tendencies as a result of checking habits and decreased self-control. Nevertheless, there is new evidence that this interaction is mediated by FoMO, which answers how the overuse of smartphones is converted into socially disruptive behavior (Mujtaba et al., 2025). This view is consistent with the Compensatory Internet Use Theory, PMPU serves as the behavioral antecedent, FoMO is the psychological process, and phubbing is the behavioral consequence (Eze et al., 2026). The cross-cultural study confirms that PMPU, FoMO and phubbing are interrelated, but these can vary based on sociocultural influences. In South Asian societies, such as Pakistan, the rising smartphone penetration has raised alarm over the issue of digital dependency among young people (Tariq & Rana, 2025). Although this is the case, very few studies have been studied on these constructs in an integrated mediation framework. Thus, there is a strong necessity of a study that investigates a combined model of mediation where FoMO will describe the association between PMPU and phubbing habit among young adults at the end of adolescence in a Pakistani cultural background.

Conceptual Framework

The Compensatory Internet Use Theory is the theoretical basis of this study because the author assumes that people use digital technologies excessively to manage negative emotions, have a response to psychological discomfort, and address the unmet needs in the social sphere. In this context, problematic mobile phone use (PMPU) is theorized as a maladaptive behavior pattern, which enhances the dependency on online interaction and vulnerability to social exclusion. The youngsters of higher age (late adolescents) are especially vulnerable because of the increased peer orientation, social comparison, and the desire to belong and be validated with the help of digital communication. The research hypothesis is that PMPU is an independent variable that directly and indirectly affects phubbing behavior via FoMO. The overuse of smartphones is likely to raise FoMO by raising the desire to monitor social activities constantly and worry about being deprived of enriching experiences. FoMO, in its turn, fosters phubbing because it redirects the focus on offline communication towards the digital one. Therefore, FoMO is an important cognitive-emotional process between PMPU and socially disruptive behavior, which offers a holistic understanding of interpersonal disruption among late adolescents in the Pakistani context (figure 1).

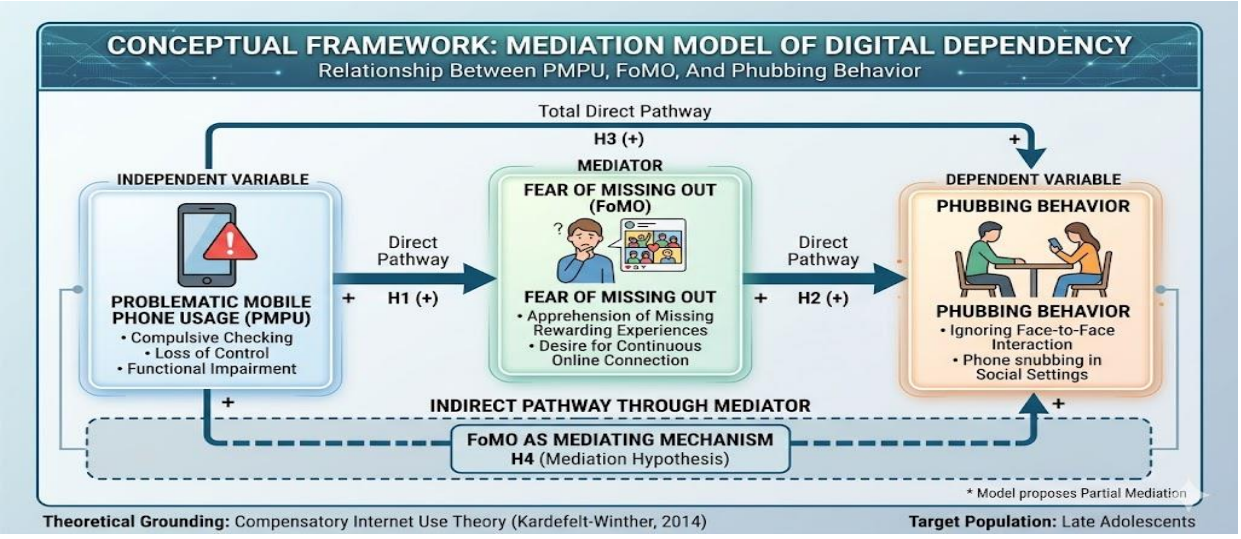


Figure 1: Conceptual mediation model illustrating the direct and indirect relationship between PMPU, FoMO, and phubbing behavior among late adolescents.

Research Hypotheses

H1: FoMO has a positive relationship with problematic mobile phone use among late adolescents.
H2: FoMO is positively associated with phubbing behavior among late adolescents.
H3: PMPU is positively associated with phubbing behavior among late adolescents.
H4: FoMO is an intermediating variable between problematic use of mobile phones and phubbing behavior among late adolescents.

Methodology

Study Design and Setting

The current research used a quantitative cross-sectional correlational design to test the connection between problematic mobile phone use, FoMO, and phubbing behavior and the mediating effect of FoMO between late adolescents. This was a suitable design to test associations at one point in time manipulating neither the variables nor time. The research was carried out in the Riphah International University where the data were gathered between January 2021 and December 2021 with the institutional permission being obtained. The survey method adopted online was found to be efficient in data collection and wider accessibility of the survey across the participants.

Inclusion and Exclusion Criteria

The population of the study included the late adolescents of the age group of 17-19 years studying in colleges and universities of Islamabad and Rawalpindi and they were regular users of mobile phones. Those who failed to meet age criteria, non-users and incomplete responses were eliminated. Participants were recruited using a convenience sampling method, depending on availability and willingness.

Sample Size Determination

The last sample size was 150 individuals. The sample was selected because it was feasible and there was access to the respondents in the target population and because it was consistent with other similar studies conducted on the same topic using smartphones to examine the behavioral patterns of adolescents. This sample was deemed to be adequate to perform correlational and mediation analyses.

Study Instruments / Measures

PMPU was assessed using the 30-item PMPU questionnaire, covering dangerous use, financial problems, and dependence, with responses on a Likert scale and reported reliability ranging from $\alpha = .67$ to .89. FoMO was measured using the 10-item scale, rated on a 5-point Likert scale, demonstrating good reliability ($\alpha = 0.81$). Phubbing behavior was assessed using the 10-item, comprising communication disturbance and phone obsession dimensions, rated on a 5-point scale, with strong reliability ($\alpha = .87$ and .85, respectively).

Data Collection Procedure

The process of data collection ensued once the Department of Psychology of Riphah International University gave formal consent. A convenience sampling method was used to recruit the participants in different colleges and universities in Islamabad and Rawalpindi. The

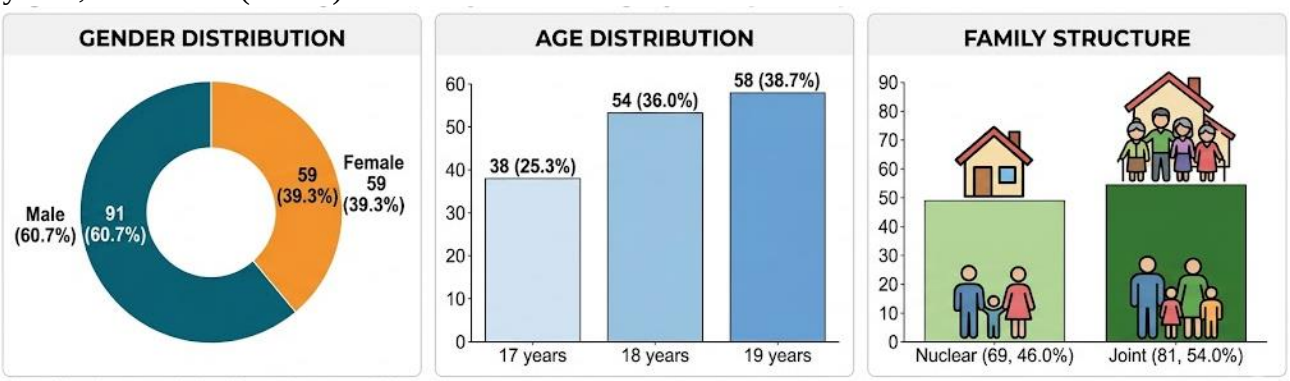
online questionnaire survey was sent to the eligible participants after clarification on the purpose, objectives and the importance of the study. Informed consent was taken before participating and the respondents were assured of confidentiality and anonymity. They were also told that this was voluntary and that they could pull out at any time without reprisal. Questionnaires that were finished were gathered and filtered in terms of completeness prior to analysis.

Statistical Analysis

The data were analyzed with SPSS version 25. Descriptive statistics (means, standard deviations and frequencies) were calculated and inferential statistics were done using Pearson correlation and multiple regression to determine relationships between variables. Hayes PROCESS Macro (Model 4) with bootstrapping (5000 resamples) was used to measure the indirect effect of FoMO in the relationship between problematic use of mobile phones and phubbing behavior.

Results

Figure 2 illustrates the population composition of the 150 respondents. There were 91 males (60.7%) and 59 females (39.3%) in the sample meaning that there were more male respondents. In terms of age, 38.7% were 19 years old, 36.0% were 18 years old, and 25.3% were 17 years old. With respect to family setup, 54.0% (n = 81) of the respondents were in a joint family system, and 46.0% (n = 69) were in nuclear families.



Note: All values are derived from the same 150 participants.

Figure 2: Frequency and Percentage of Demographic Variables

The main study variables provide the descriptive statistics as shown in Table 1. Problematic Mobile Usage (PMPU) had a mean of 79.09 (SD = 13.05) and a range of scores between 47 and 116 indicating moderate variability. FoMO had a mean score of 34.57 (SD = 9.76), ranging from 10 to 48, while Phubbing behavior showed a mean of 34.61 (SD = 9.52), with scores between 10 and 50. The value of skewness and kurtosis of all variables was within acceptable ranges (±2), which means that the variables were distributed normally.

Table 1: Descriptive Statistics of Study Variables

Scale	N	M	SD	Min	Max	Skewness	Kurtosis
Problematic Mobile Usage	150	79.09	13.05	47	116	0.400	-0.137
FoMO	150	34.57	9.76	10	48	-0.890	-0.376
Phubbing	150	34.61	9.52	10	50	-1.093	0.232

Table 2 shows significant positive correlations among the main variables. PMPU was positively associated with FoMO ($r = .33$, $p < .01$) and phubbing ($r = .35$, $p < .01$). FoMO also showed a strong positive relationship with phubbing behavior ($r = .79$, $p < .01$), indicating that higher

FoMO is associated with increased phubbing. All PMPU subscales were significantly correlated with the total PMPU score (e.g., Dangerous Use r = .81, Dependence r = .73, Financial Problems r = .94, p < .01). Additionally, strong inter-correlations were observed among subscales and outcome variables, with phubbing strongly related to its dimensions, Communication Disturbance (r = .93) and Phone Obsession (r = .91), both significant at p < .01. The reliability of all scales was acceptable, with Cronbach's alpha values ranging from .61 to .90 across subscales.

Table 2: Correlation Matrix of Study Variables and Subscales of PMPU

Variables	α	1 PMPU	2 Dangerous	3 Dependence	4 Prohibited	5 Financial	6 FoMO	7 Phubbing	8 Communication	9 Obsession
PMPU	.90	—	.81**	.73**	.48**	.94**	.33**	.35**	.33**	.32**
Dangerous	.71		—	.51**	.13	.74**	.49**	.47**	.49**	.38**
Dependence	.61			—	.27**	.55**	.13**	.14**	.10	.14**
Prohibited Use	.47				—	-.32**	-.27**	-.26**	-.31	-.15**
Financial	.87					—	.42**	.45*	.44*	.39*
FoMO	.88						—	.79**	.78**	.67**
Phubbing	.89							—	.93**	.91**
Communication	.80								—	.71**
Obsession	.80									—

Note: *p < .05, **p < .01*

Figure 3 presents multiple regression analyses examining the predictive relationships among PMPU, FoMO, and phubbing behavior. In Model 1, PMPU significantly predicted phubbing behavior (B = 0.257, β = 0.35, SE = 0.056), explaining 12% of the variance (R^2 = .12). In Model 2, PMPU subscales predicted FoMO, with Dangerous Use (β = 0.50, R^2 = .25) and Financial Problems (β = 0.43, R^2 = .18) showing stronger effects, while Dependence showed a weak association (β = 0.13, R^2 = .02). Similarly, in Model 3, PMPU subscales predicted phubbing, where Dangerous Use (β = 0.47, R^2 = .22) and Financial Problems (β = 0.45, R^2 = .21) were stronger predictors compared to Dependence (β = 0.14, R^2 = .02). In Model 4, PMPU significantly predicted communication disturbance (B = 0.13, β = 0.33, R^2 = .19), whereas FoMO demonstrated a much stronger effect (B = 0.44, β = 0.78, R^2 = .61). In Model 5, PMPU also predicted phone obsession (B = 0.11, β = 0.32, R^2 = .10), while FoMO again showed a stronger predictive effect (B = 0.33, β = 0.67, R^2 = .45). Overall, results indicate that both PMPU and FoMO significantly predict phubbing-related behaviors, with FoMO consistently emerging as the stronger predictor across models.

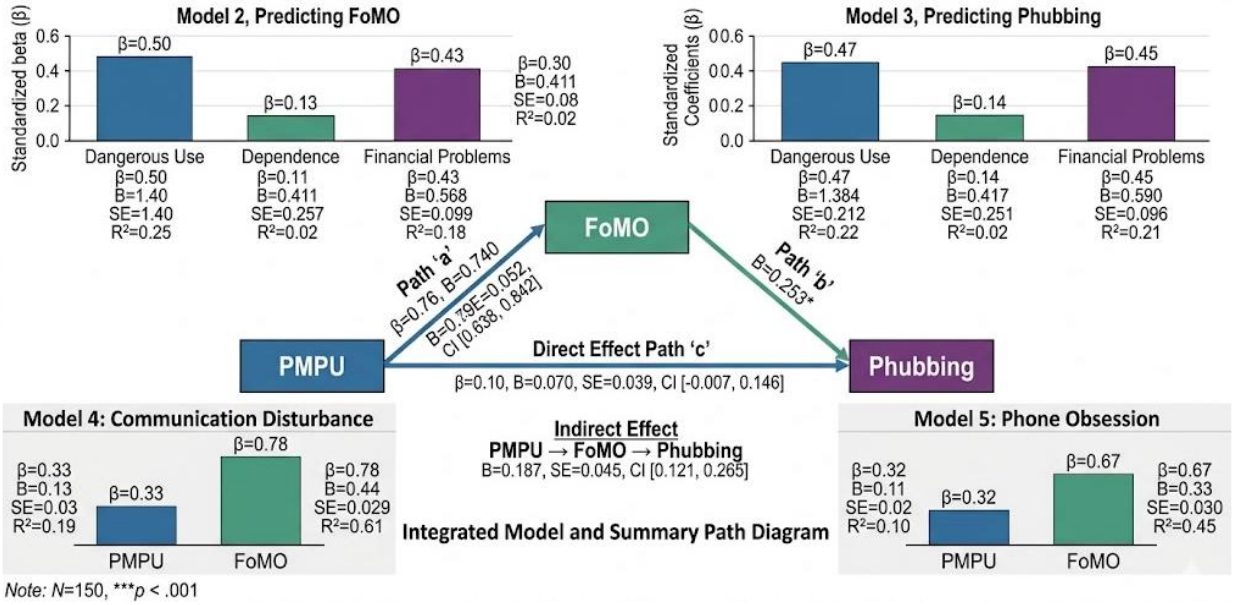


Figure 3: Multiple Regression Analysis of Problematic Mobile Phone Use (PMPU), FoMO, and Phubbing Behavior among Late Adolescents

Table 3 shows the mediation analysis (Hayes PROCESS Model 4) examining FoMO as a mediator between PMPU and phubbing behavior. The total effect of PMPU on phubbing was significant (B = 0.257, β = 0.35, 95% CI [0.146, 0.368]). When FoMO was included, the direct effect became non-significant (B = 0.070, β = 0.10, 95% CI [-0.007, 0.146]). The indirect effect through FoMO was significant (B = 0.187, 95% CI [0.121, 0.265]), indicating mediation. PMPU significantly predicted FoMO (B = 0.740, β = 0.76), and FoMO significantly predicted phubbing (B = 0.253). Overall, FoMO significantly mediated the relationship between PMPU and phubbing.

Table 3: Mediation Analysis (Hayes PROCESS Model 4) — FoMO as Mediator between PMPU and Phubbing

Effect / Path	Predictor → Outcome	B	SE	β	t	95% CI
Total Effect (c)	PMPU → Phubbing	0.257	0.056	0.35	—	[0.146, 0.368]
Direct Effect (c′)	PMPU → Phubbing (controlling FoMO)	0.070	0.039	0.10	—	[-0.007, 0.146]
Indirect Effect (a × b)	PMPU → FoMO → Phubbing	0.187	0.045	—	—	[0.121, 0.265]
Path a	PMPU → FoMO	0.740	0.052	0.76	—	[0.638, 0.842]
Path b	FoMO → Phubbing (controlling PMPU)	0.253	—	—	—	—

Note: Indirect effect tested using bootstrapping (5000 samples). CI = Confidence Interval.
*p < .05, **p < .01, ***p < .001*

Summary of Hypothesis Testing

The results supported all four hypotheses. H1 showed that PMPU was significantly associated with FoMO (r = .33, p < .01) and significantly predicted FoMO. H2 indicated that FoMO was strongly associated with phubbing (r = .79, p < .01) and significantly predicted phubbing

behavior. H3 revealed that PMPU was significantly associated with phubbing ($r = .35$, $p < .01$) and significantly predicted it. H4 was also supported, as mediation analysis (Hayes PROCESS Model 4) confirmed that FoMO significantly mediated the relationship between PMPU and phubbing, indicating a full mediation effect.

Discussion

The current research investigated the correlation between late adolescents and PMPU, FoMO, and phubbing behavior. The results showed that there were strong positive relationships between all the variables with a positive correlation between PMPU and FoMO ($r = .33$, $p < .01$) and phubbing ($r = .35$, $p < .01$). These outcomes are consistent with the existing literature that suggests that emotional and behavioral dysregulation is strongly connected with excessive smartphone use. Indicatively, Servidio et al., (2022) also had similar positive correlations between problematic smartphone use and psychological distress, as posited that maladaptive phone use is linked with more emotional vulnerability and compulsive use behavior. In the current study, FoMO was significantly positively correlated with phubbing behavior ($r = .79$, $p < .01$) and thus, adolescents with a higher FoMO propensity are more prone to the socially disruptive use of their phones. This agrees with the earlier research study, who established FoMO a noteworthy predictor of problematic smartphone use and social media dependency, highlighting its importance as a motivational force of perpetual internet use (Gezgin et al., 2025). Also, Matthes et al., (2023) found FoMO enhances continuous smartphone observation behavior in adolescents, which further supports the notion that FoMO perpetuates compulsive digital interaction patterns.

The current research also reported that PMPU was a significant predictor of phubbing behavior ($r = .35$, $p < .01$) which means that excessive mobile phone use is a direct cause of decreased interpersonal interaction. This is in line with the results obtained by Safdar Bajwa et al. (2023), who have found that smartphone addiction is a strong predictor of phubbing behavior and a negative indicator of relationship satisfaction among university students. The results of these studies indicate that obsessive smartphone behavior impairs attention control in social interactions and makes people focus more on virtual interaction than face-to-face communication.

Regression analysis also indicated FoMO was a more potent predictor of phubbing ($\beta = 0.78$) than PMPU ($\beta = 0.35$). This implies that emotional-cognitive processes can have a greater effect than behavioral usage alone. The same tendencies have been reported by Geng et al, (2021) who discovered that FoMO and loneliness mediated the connection between perceived phubbing and problematic smartphone use in a sequential manner, indicating the psychological richness of FoMO in digital dependency mechanisms. The mediation analysis in the present research revealed that FoMO played a significant role in mediating the relationship between PMPU and phubbing (indirect effect = 0.187, 95% CI [0.121, 0.265]) but the direct effect was no longer significant (7 = 0.10). It shows complete mediation meaning that PMPU affects phubbing mainly via FoMO. In line with this, Butt and Arshad (2021) also discovered that FoMO is a mediating central variable between psychological needs and phubbing behavior, which supports its contribution to the outcomes of digital overuse. In general, the high mediation effect is consistent with the Compensatory Internet Use Theory, which states that people develop excessive digital behavior to manage emotional discomfort. Elhai et al., (2018) also reported similar evidence and highlighted the fact that FoMO mediates between smartphone dependency and maladaptive social behavior. The results of all the studies are consistent and point to the fact that FoMO is not

a mere correlational factor related to PMPU but a key psychological factor in the conversion of smartphone excessive use into phubbing behavior among adolescents.

Study Strengths and Limitations

A number of strengths are also associated with this study, such as the fact that a theoretically-based mediation model, which relies on Compensatory Internet Use Theory, has been used to enable a thorough investigation of the psychological mechanism that connects PMPU, FoMO, and phubbing behavior. Validated and reliable standardized tools (PMPU Questionnaire, FoMO Scale, and Phubbing Scale) contribute to the high level of methodological rigor and internal validity of the results. Also, the mediation analysis is enhanced by the fact that Hayes PROCESS Macro was used with bootstrapping (5000 samples). Nevertheless, the study has limitations due to its cross-sectional design, limiting causal conclusions between variables. The convenience sampling technique and the limited sample size (n = 150) of sampled institutions in Islamabad and Rawalpindi restricts the generalization to the general adolescent population in Pakistan. In addition, the use of self-report data can lead to social desirability and recall bias, which can compromise the validity of data. The future studies must take into account longitudinal designs using bigger and more differentiated samples to determine the causal pathways as more decisively.

Conclusion

The findings of this study demonstrate that problematic mobile phone use is significantly associated with both Fear of Missing Out and phubbing behavior among late adolescents. FoMO showed a strong positive relationship with phubbing and emerged as a significant mediator in the relationship between PMPU and phubbing behavior. Importantly, the direct effect of PMPU on phubbing became non-significant after including FoMO, indicating a full mediation effect. These results suggest that FoMO acts as a critical cognitive-emotional mechanism through which excessive smartphone use translates into reduced face-to-face interaction and increased phubbing behavior. Addressing FoMO may therefore be essential in interventions aimed at reducing problematic smartphone use and improving interpersonal communication among adolescents.

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