

PROBLEMATIC FACEBOOK USE, AGGRESSION, AND ACADEMIC PROCRASTINATION AMONG MEDICAL STUDENTS

Original Research

Shah Jahan Ashraf^{1*}, Pulwasha Anwar², Rafia Tuz Zahra³, Aurang Zaib Ashraf Shami⁴, Madiha Kashif⁵, Jahangir Ashraf⁶, Rashida Sadaqat⁷, Zainab Manzoor⁸

¹Research Assistant, Government College Women University, Faisalabad, Pakistan.

²Ph.D. Student, Department of Psychology, Institute of Social Sciences, Bursa Uludağ University, Bursa, Turkey.

³MSc Psychology, Specialities in Applied Psychology / Research Methodology, Wah Cantt, Pakistan.

⁴Internationally Accredited NLP Life & Business Coach; CEO (11COACHES), Gulberg-III, Lahore, Pakistan.

⁵MBA (Management), Consultant at 11Coaches, Gulberg-III, Lahore, Pakistan.

⁶M.Phil Scholar, Department of Mass Communication, Government College University, Faisalabad, Pakistan.

⁷Clinical Psychologist, 11Coaches, Gulberg-III, Lahore, Pakistan.

⁸Clinical Psychologist, Alumni of Riphah International University, Sargodha, Pakistan.

Corresponding Author: Shah Jahan Ashraf, Research Assistant, Government College Women University, Faisalabad, Pakistan, shahjahan_ashraf@yahoo.com

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ABSTRACT

Background: Problematic use of social media has become a growing concern among young adults, with strong evidence linking it to aggression and academic procrastination. Excessive Facebook use, in particular, disrupts emotional regulation and impairs academic functioning. Despite substantial international research, limited evidence exists from Pakistan exploring how problematic Facebook use contributes to procrastination through aggression, especially among medical students whose academic demands are exceptionally rigorous. Addressing this gap is essential to better understand the psychological mechanisms underlying academic underperformance in this population.

Objective: The study aimed to investigate the relationship between problematic Facebook use and academic procrastination, while testing the mediating role of aggression among Pakistani medical students aged 18 to 35 years.

Methods: A cross-sectional correlational design was adopted, and purposive sampling recruited 200 medical students. The Bergen Social Media Addiction Scale (BSMAS; $\alpha = 0.80$) measured problematic Facebook use, the Academic Procrastination Scale–Short Form (APS-SF; $\alpha = 0.87$) assessed procrastination, and the Buss and Perry Aggression Questionnaire (BPAQ; $\alpha = 0.89$) measured aggression. Ethical approval was secured in line with APA guidelines, and written informed consent was obtained. Data were analyzed using SPSS version 26, and Hayes' PROCESS Macro 4.2 (Model 4) was applied for mediation analysis.

Results: The mean age of participants was 24.50 years ($SD = 3.02$). Men accounted for 55.5% and women for 44.5% of the sample, with 55.5% from middle socioeconomic status. Problematic Facebook use was strongly correlated with aggression ($r = 0.71, p < .05$) and academic procrastination ($r = 0.90, p < .05$). Aggression also correlated with procrastination ($r = 0.34, p < .01$). Regression showed problematic Facebook use significantly predicted aggression ($\beta = 1.06, p < .001$) and procrastination ($\beta = 0.88, p < .001$). Aggression independently predicted procrastination ($\beta = 0.07, p < .001$). Mediation analysis revealed aggression partially mediated the relationship, with a significant indirect effect (Effect = 0.02, 95% CI = 0.009–0.06).

Conclusion: Problematic Facebook use significantly impairs academic performance among medical students, both directly through procrastination and indirectly via heightened aggression. These findings underscore the urgent need for awareness campaigns, digital literacy initiatives, and counseling interventions to foster healthier online engagement and reduce aggression-driven academic delays.

Keywords: Academic Procrastination, Aggression, Facebook, Medical Students, Pakistan, Social Media, Young Adults.

INTRODUCTION

The rapid advancement of digital technologies has transformed human life, with the smartphone emerging as a central force in reshaping communication, education, and business. These devices have enabled individuals to connect across the globe, foster online relationships, and access vast amounts of information instantly (1). However, the proliferation of social media platforms has introduced challenges alongside these benefits. Problematic social media use has been strongly associated with declining psychological well-being, aggression, and academic procrastination, as these platforms can become addictive and exert detrimental effects on mental health and daily functioning (2–4). Among young adults, the widespread integration of social media into everyday routines has raised growing concerns about digital aggression and academic underperformance (5). Medical students represent a particularly vulnerable population, as their academic environment demands consistent effort, discipline, and concentration. Recent research conducted in Peshawar revealed that over 80% of medical students exhibited signs of social media addiction, with males, hostel residents, and Android users reporting higher levels of use. Importantly, social media addiction demonstrated a strong correlation with academic procrastination, explaining nearly one-third of the variance between the two variables (6,7). These findings emphasize the pressing need to better understand how problematic engagement with platforms like Facebook influences both academic and psychological outcomes.

Facebook, as one of the most widely used platforms, exemplifies the dual nature of social media. While it facilitates communication, education, and business, excessive use has been linked to impaired daily functioning across academic, occupational, and personal domains (8,9). Previous studies have demonstrated that problematic Facebook use is significantly associated with aggression, manifesting as irritability, hostility, and heightened stress among youth, including medical students (10–12). Cultural and regional studies further highlight that excessive Facebook use fosters bullying behaviors, gendered harassment, and online exclusion, amplifying emotional distress and negatively affecting academic performance (13,14). Academic procrastination, defined as the tendency to delay or postpone academic tasks despite awareness of negative consequences, has consistently been linked to problematic social media use (15). For example, recent evidence from Vietnam confirmed that students with higher levels of Facebook addiction reported greater academic procrastination, suggesting that social media use directly interferes with task engagement and productivity (16). Despite these insights, little is known about the mechanisms through which problematic Facebook use leads to procrastination, particularly the potential mediating role of aggression. Addressing this knowledge gap is vital, as aggression may act as a critical pathway linking Facebook addiction to academic procrastination in medical students. Understanding this relationship not only contributes to theoretical knowledge but also offers practical implications for intervention and support strategies. Therefore, the present study aims to examine the mediating role of aggression in the relationship between problematic Facebook use and academic procrastination among medical students, with the objective of providing evidence-based recommendations to mitigate these risks and improve academic and psychological outcomes.

METHODS

The study employed a cross-sectional correlational design to investigate the relationship between problematic social media use, aggression, and academic procrastination among young adults. A purposive sampling technique was used to recruit 200 medical students aged between 18 and 35 years, both male and female, from medical colleges across Pakistan. The inclusion criteria specified that participants must be enrolled in a recognized medical college, within the defined age range, and willing to provide informed consent. Students with a history of diagnosed psychiatric illness, or those unwilling to complete the questionnaires, were excluded to minimize potential confounding factors and ensure data validity. Three standardized and psychometrically reliable instruments were administered. Problematic social media use was assessed using the Bergen Social Media Addiction Scale (BSMAS), a six-item Likert scale ranging from 1 (very rarely) to 5 (very often), originally developed by Andreassen, which has reported internal consistency of 0.80. Academic procrastination was measured with the Academic Procrastination Scale–Short Form (APS-SF), a five-item Likert scale from 1 (strongly disagree) to 5 (strongly agree), with an internal consistency of 0.87 (17). Aggression was measured using the Buss and Perry Aggression Questionnaire (BPAQ), consisting of 29 items rated on a five-point scale ranging from 1 (extremely uncharacteristic) to 5 (extremely characteristic), with an overall reliability of 0.89 (18). These tools were selected for their wide use in psychological research and their demonstrated validity and reliability.

Prior to data collection, approval was obtained from the Institutional Review Board (IRB). The study adhered strictly to the ethical principles outlined in the APA 7 code of conduct. Participants were fully briefed about the purpose of the study and were informed of their rights, including the voluntary nature of participation and the ability to withdraw at any point without consequences. Written informed consent was obtained before the administration of the questionnaires. Confidentiality and anonymity were maintained by coding responses, and no identifying information was disclosed at any stage. The consent form also clarified that the study posed no physical or psychological harm. Data collection was conducted in a structured environment where participants first completed a demographic questionnaire, followed by the BSMAS, APS-SF, and BPAQ in a single sitting to minimize bias arising from external distractions. All data were entered and analyzed using SPSS version 26. Descriptive statistics were applied to summarize demographic and baseline characteristics. Pearson correlation analysis was employed to determine the relationships between variables, and regression analysis was conducted to examine the predictive role of social media addiction on academic procrastination and aggression. The significance level was set at $p < 0.05$.

RESULTS

The study included 200 medical students with a mean age of 24.50 years ($SD = 3.02$), reflecting a relatively young adult population. In terms of gender distribution, men represented a slight majority with 111 participants (55.5%), while women accounted for 89 participants (45.5%). Regarding socioeconomic status, the highest proportion of participants were from the middle class (111; 55.5%), followed by the upper class (74; 37%) and the lower class (16; 8%). Descriptive statistics demonstrated that the mean score for problematic Facebook use was 16.70 ($SD = 4.25$), for aggression 80.57 ($SD = 16.75$), and for academic procrastination 14.41 ($SD = 4.19$). Correlation analysis revealed a strong positive association between problematic Facebook use and aggression ($r = 0.71$, $p < .05$), as well as a very strong positive relationship between problematic Facebook use and academic procrastination ($r = 0.90$, $p < .05$). Aggression was also positively correlated with academic procrastination ($r = 0.34$, $p < .01$). Mediation analysis further demonstrated that problematic Facebook use significantly predicted aggression ($\beta = 1.06$, $SE = 0.26$, $p < .001$), indicating that higher Facebook addiction scores were associated with greater levels of aggression. Problematic Facebook use also had a significant direct effect on academic procrastination ($\beta = 0.88$, $SE = 0.03$, $p < .001$). In addition, aggression significantly predicted academic procrastination ($\beta = 0.07$, $SE = 0.007$, $p < .001$). The overall regression model was significant for aggression ($R^2 = 0.07$, $F = 15.64$, $p < .001$) and academic procrastination ($R^2 = 0.81$, $F = 860$, $p < .001$). The bootstrapped indirect effect confirmed that aggression mediated the relationship between problematic Facebook use and academic procrastination, with a significant effect size (Effect = 0.02, Boot SE = 0.01, 95% CI = 0.009–0.06). This result highlights that problematic Facebook use contributed to academic procrastination both directly and indirectly through aggression.

Table 1: Characteristics of Participants (N=200)

Characteristics	<i>F</i>	%	<i>M</i>	<i>SD</i>
Age			24.50	3.02
Gender				
Men	111	55.5		
Women	89	45.5		
Socioeconomic Status				
Lower Class	16	8		
Middle Class	111	88		
Upper Class	74	37		

Note. *f*=Frequency, %= Percentage, *M*= Mean, *SD*= Standard Deviation.

2: Relationship of Problematic Facebook Use and Aggression (N=200)

Variables	1	2	3	<i>M</i>	<i>SD</i>
1.Problematic Facebook Use	-	.71*	.90*	16.70	4.25
2.Agression		-	.34**	80.57	16.75
3.Academic Procrastination			-	14.41	4.19

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

Table 3: Mediation Analysis (N=200).

Antecedents	Consequences							
	Aggression (M)				AP (Y)			
		β	SE	P		β	SE	P
PFU (X)	a	1.06	.26	<.001	c'	.88	.03	<.001
Aggression (M)	-				B	.07	.007	<.001
Constant	I	62.76	4.64	<.001	I	16.51	2.48	<.001
	$R^2= .07, F=15.64$				$R^2=.81, F=860$			
	*** $P<.001$				*** $P<.001$			

Note. *** $p<.001$, PFU= Problematic Facebook Use, AP= Academic Procrastination

Table 4: Indirect Effect

Indirect Path	Effect	Boot SE	LLCI	ULCI
Aggression	.02	.01	.009	.06

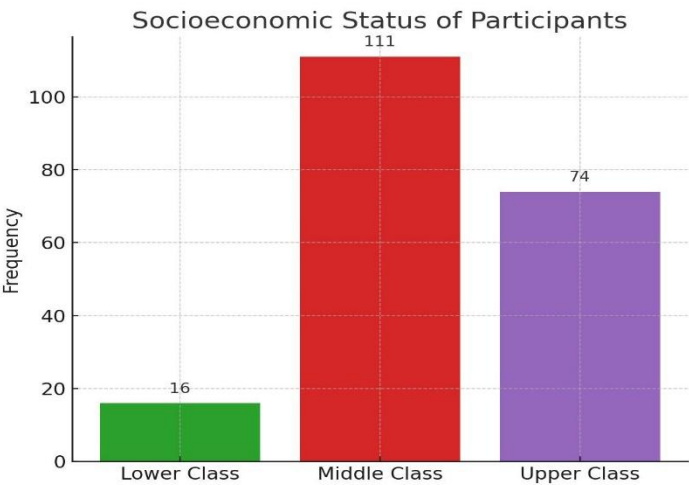


Figure 1 Socioeconomic Status of Participants

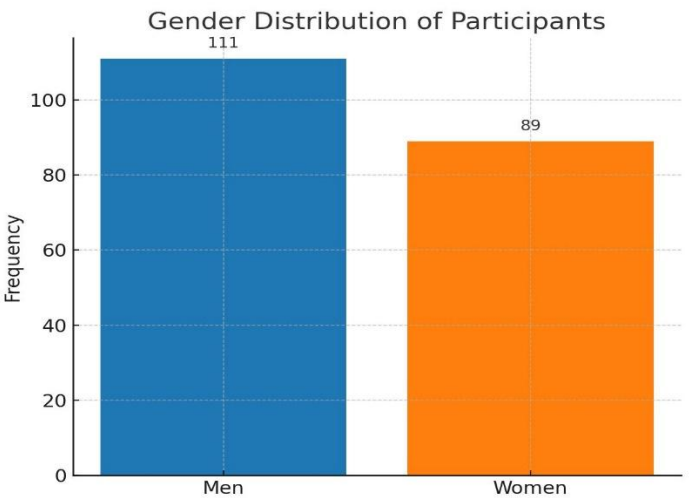


Figure 2 Gender Distribution of Participants

DISCUSSION

The present study explored the relationship between problematic Facebook use, aggression, and academic procrastination among Pakistani medical students, with a particular focus on the mediating role of aggression. The findings demonstrated that problematic Facebook use was strongly and positively associated with both aggression and academic procrastination. Furthermore, aggression itself was positively linked to procrastination and was found to mediate the relationship between problematic Facebook use and academic procrastination. These outcomes provide important insights into the psychological mechanisms underlying the adverse effects of excessive social media engagement. The results are consistent with previous research showing that problematic social media use contributes to heightened aggression and emotional dysregulation. Similar findings have highlighted how overuse of digital platforms fosters irritability, hostility, and negative affect, which in turn impair academic functioning (19,20). Within the Pakistani context, digital illiteracy, anonymity provided by fake accounts, and insecurities prevalent among young adults appear to intensify aggressive tendencies during online interactions. Such behaviors are not restricted to the digital environment, as they spill over into academic settings, further aggravating procrastination and weakening academic performance. These findings align with cognitive-behavioral models of problematic technology use, which propose that maladaptive patterns of engagement with social media amplify negative emotions such as anger and frustration, undermining self-regulation and displacing academic effort (21-23). The current study extends these models by empirically establishing aggression as a mediator, highlighting a dual pathway through which problematic Facebook use impairs

academic functioning. The direct pathway reflects how excessive use consumes time and attention, while the indirect pathway demonstrates how it fuels emotional and behavioral disturbances that further obstruct task completion.

The study also offers theoretical and practical implications. Theoretically, it adds to the body of literature in social media psychology by clarifying the mediating role of aggression in the association between problematic Facebook use and procrastination. It also reinforces the application of self-regulation theory and the displacement hypothesis, both of which explain how digital overuse drains emotional and cognitive resources that could otherwise be allocated to constructive academic pursuits (24). From a practical standpoint, the findings emphasize the importance of promoting digital literacy among university students, as responsible use of social media may mitigate the risk of psychological and academic consequences. Interventions designed by university counselors that target anger management, stress regulation, and time management skills may be effective in reducing both aggression and procrastination (25). Furthermore, awareness campaigns can play an essential role in highlighting the subtle but harmful ways in which excessive Facebook use can hinder academic performance and psychological health. Despite these strengths, certain limitations must be acknowledged. The cross-sectional design prevented causal inferences, as the temporal sequence of problematic Facebook use, aggression, and procrastination could not be firmly established. The reliance on self-report questionnaires increased the possibility of social desirability bias and subjective misreporting. The study was also limited to medical students in Pakistan, which restricts generalizability to other academic disciplines, professions, or cultural contexts. In addition, only aggression was tested as a mediator, while other relevant psychological variables such as anxiety, depression, sleep disturbances, and self-esteem were not examined. These omissions represent important avenues for future research.

Recommendations for subsequent investigations include the use of longitudinal or experimental designs to clarify causality and strengthen the robustness of findings. Expanding the scope to include mediators and moderators such as self-control, academic motivation, and gender differences would deepen the understanding of the mechanisms underlying social media’s influence on academic behavior. Research could also extend to non-medical students, working professionals, and adolescents, broadening the contextual and cultural scope of these findings. Furthermore, mixed-methods approaches combining quantitative measures with qualitative interviews may capture nuanced experiences that remain hidden in self-report data. Intervention-based research, including mindfulness training, digital detox programs, and structured time management workshops, could provide actionable strategies for mitigating the psychological and academic impact of problematic Facebook use. In conclusion, the study highlighted that problematic Facebook use impairs academic functioning not only by directly increasing procrastination but also by indirectly influencing it through heightened aggression. This dual mechanism underscores the importance of addressing both behavioral patterns of social media engagement and the emotional consequences they elicit. Strengthening digital literacy, emotional regulation, and academic resilience among university students emerges as a necessary priority in mitigating the adverse outcomes of excessive social media use.

CONCLUSION

The study concluded that problematic Facebook use negatively influences academic functioning among medical students, both directly by fostering procrastination and indirectly by amplifying aggression, which further undermines self-regulation. These findings highlight the dual psychological and behavioral pathways through which excessive social media engagement affects students, emphasizing the need for preventive strategies within academic settings. The research contributes to a clearer understanding of the mechanisms linking social media overuse, aggression, and procrastination, offering valuable implications for developing digital literacy initiatives, counseling interventions, and awareness programs that encourage healthier online habits and stronger academic resilience.

AUTHOR CONTRIBUTION

Author	Contribution
Shah Jahan Ashraf*	Substantial Contribution to study design, analysis, acquisition of Data
	Manuscript Writing
	Has given Final Approval of the version to be published
Pulwasha Anwar	Substantial Contribution to study design, acquisition and interpretation of Data
	Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Rafia Tuz Zahra	Substantial Contribution to acquisition and interpretation of Data
	Has given Final Approval of the version to be published

Author	Contribution
Aurang Zaib Ashraf Shami	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Madiha Kashif	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Jahangir Ashraf	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Rashida Sadaqat	Contributed to study concept and Data collection Has given Final Approval of the version to be published
Zainab Manzoor	Writing - Review & Editing, Assistance with Data Curation

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