

**Personality-Driven Adoption of WhatsApp and Facebook for Educational Collaboration: Academic Performance as a Mediator**

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**Abstract:**

The Big Five Personality Traits—openness, conscientiousness, extraversion, agreeableness, and neuroticism—are widely regarded as a comprehensive framework for understanding individual differences. These traits influence various behaviors, including social interactions, learning preferences, and technology adoption. Objectives of the study were; 1) To analyze the relationship between the Big Five Personality Traits and students' adoption of WhatsApp and Facebook for educational collaboration. 2) To investigate the association between social network site usage and academic performance of the students. 3) To evaluate the mediating role of academic performance in the relationship between the Big Five Personality Traits and the educational use of WhatsApp and Facebook. All 8617 Students of grade 10<sup>th</sup> of District Attock, (4,868 Boys & 3,749 Girls) at secondary and higher secondary school level in 248 public schools were the population of the study. 816 students were the sample for this study from the population. Proportional Sampling technique was used for sampling. Big Five Personality Tool consists of 39, Usage of Social Network Sites tool consists of twenty nine different items for five basic and commonly used Social Network Sites. Reliability of the tools was found by using Cronbach's Alpha. For content validity, both research tools were validated from the experts of field of education while for construct validity, EFA was performed. The findings from the PROCESS procedure (Model 4) offer insights into the relationships between Big Five Personality Traits (BFPTs), Academic Performance (AP), and Social Network Sites (SNSs). The analysis shows that BFPTs significantly predict Scholastic Performance (SP), with a positive coefficient of 1.528 ( $p < 0.01$ ). The model's R-squared value of 0.528 indicates that 52.81% of the variance in Scholastic Performance can be explained by BFPTs. This relationship suggests that students' personality traits are strongly related to their academic performance. Hence, it is recommended that, Interventions should focus on improving both Scholastic Performance and personality traits to help students manage their social media usage effectively.

**Keywords:** Social Network Sites (SNSs), Big Five Personality Traits (BFPTs), Academic Achievement,

**Introduction:**

**Introduction to Big Five Personality Traits**

The Big Five Personality Traits—openness, conscientiousness, extraversion, agreeableness, and neuroticism—are widely regarded as a comprehensive framework for understanding individual differences. These traits influence various behaviors, including social interactions, learning preferences, and technology adoption (John et al., 2021). For instance, openness is linked to

creativity and a willingness to embrace novel ideas, making individuals more likely to adopt innovative tools. Conscientiousness reflects discipline, organization, and reliability, often associated with academic success (Sorić et al., 2017). Extraversion emphasizes sociability and interaction, while agreeableness relates to cooperative and empathetic behaviors. Neuroticism, in contrast, highlights emotional instability, potentially affecting students' engagement with educational resources. These personality traits are instrumental in determining how students utilize digital platforms like WhatsApp and Facebook for educational purposes, as personality-driven preferences often influence their adoption and use of technology (Chakraborty et al., 2020).

### **Educational Uses of WhatsApp and Facebook**

Social networking platforms, particularly WhatsApp and Facebook, have become integral to educational collaboration, enabling students to connect, share, and learn in real-time. WhatsApp provides a fast, user-friendly platform for group discussions, resource sharing, and collaborative learning (Bouhnik & Deshen, 2019). Features like multimedia sharing and group chats enhance peer interaction and support blended learning approaches. Facebook, similarly, offers functionalities such as group creation, event management, and access to educational resources, fostering a sense of community among students and educators (Al-Rahmi et al., 2018). Both platforms have shown potential in enhancing students' learning experiences by promoting engagement and collaboration outside traditional classroom settings. Studies suggest that the judicious use of these platforms can significantly contribute to academic collaboration, making them powerful tools for modern education (Pimmer et al., 2019).



### **Academic Performance as a Mediator**

Academic performance, measured through grades and other educational outcomes, serves as a key indicator of students' engagement and success in learning. In recent years, researchers have explored its mediating role in the relationship between personality traits and the use of digital platforms for educational purposes. Conscientious students, for example, tend to utilize platforms like WhatsApp and Facebook effectively to enhance their learning, leading to better academic outcomes (Zhong, 2020). On the contrary, neuroticism may lead to distractions and reduced academic efficiency when these platforms are used non-strategically (Orosz et al., 2016). As a mediator, academic performance bridges the gap by highlighting how individual traits influence the utility of these platforms in educational settings. Understanding this relationship can provide valuable insights for leveraging social media to foster academic success.

### **Objectives:**

Objectives of the study were

1. To analyze the relationship between the Big Five Personality Traits and students' adoption of WhatsApp and Facebook for educational collaboration.
2. To investigate the association between social network site usage and academic performance of the students.
3. To evaluate the mediating role of academic performance in the relationship between the Big Five Personality Traits and the educational use of WhatsApp and Facebook.

### **Hypotheses:**

**H<sub>1</sub>:** There is a significant relationship between the Big Five Personality Traits and students' adoption of WhatsApp and Facebook for educational collaboration.

**H<sub>2</sub>:** Big Five personality traits significantly influence students' engagement with WhatsApp and Facebook for academic purposes.

**H<sub>3</sub>:** Academic performance significantly mediates the relationship between the Big Five Personality Traits and the educational use of WhatsApp and Facebook.

## **Literature Review:**

### **Introduction to Big Five Personality Traits:**

The Big Five personality traits—openness, conscientiousness, extraversion, agreeableness, and neuroticism—are considered significant predictors of behavior, including technology use and academic outcomes. These traits influence how individuals engage with social media platforms like WhatsApp and Facebook, especially for educational purposes. For instance, conscientiousness is associated with goal-oriented behaviors, suggesting that students high in this trait may prefer structured use of these platforms for academic collaboration. Extraversion, characterized by sociability and energy, aligns with active participation in online group discussions (Montag et al., 2015; Sindermann et al., 2020). Research shows varying impacts of neuroticism and openness on social media use. Neuroticism may drive frequent but emotionally charged interactions, while openness encourages innovative applications, including leveraging WhatsApp and Facebook for learning (Montag et al., 2017). These traits provide a theoretical foundation for exploring personality's role in technology adoption within educational contexts.

### **Social Media and Educational Collaboration:**

The Big Five Personality Traits provides insights into diverse behavioral tendencies that are essential for understanding digital interactions. For example, extraverts tend to favor interactive platforms like Instagram and Facebook, which cater to their sociable and outgoing nature, whereas conscientious individuals gravitate towards platforms that support goal-oriented activities, such as LinkedIn or educational forums. Conversely, neurotic individuals may use SNS for escapism, often engaging in passive consumption that can hinder productive activities, including academic tasks. These behavioral differences underscore the necessity of studying how personality influences students' engagement with digital tools, especially given the rising integration of technology in educational settings. Moreover, understanding these relationships can guide educators and policymakers in leveraging SNS to enhance learning outcomes and mitigate potential drawbacks (Mahnaz & Kiran, 2024).

Social media platforms have transformed learning environments by enabling seamless communication, resource sharing, and collaborative opportunities. WhatsApp, with its instant messaging and group chat features, has become a favored tool for students to discuss academic topics, share resources, and coordinate study groups (Bouhnik & Deshen, 2014). Similarly, Facebook's groups and forums facilitate educational exchanges, especially for collaborative projects and peer learning (Manca & Ranieri, 2016).

Recent studies suggest that the integration of WhatsApp and Facebook into education enhances student engagement and knowledge retention. For example, WhatsApp promotes peer support and fosters a sense of belonging, which is critical for academic success. Meanwhile, Facebook encourages critical discussions through its interactive tools (Güler, 2015; Al-Rahmi et al., 2018). These platforms are particularly effective for blended learning environments, where online interactions complement traditional classroom teaching. The Big Five Personality Traits provide a robust framework for understanding individual differences



in SNS usage. For instance, extraverts are more likely to engage actively on platforms like Facebook due to their inherent need for social interaction and stimulation (Montag et al., 2020; Roshita & Ningsih, 2021). This heightened engagement can foster a sense of belonging and support, potentially enhancing academic motivation. In contrast, individuals high in neuroticism often use Facebook and WhatsApp for emotional regulation, which may lead to excessive usage and reduced focus on academic tasks (Mahnaz & Kiran, 2024).

### **Academic Performance as a Mediator:**

Academic performance is a central outcome influenced by both personality traits and social media usage. Studies highlight how personality traits directly impact academic success through self-regulation, motivation, and time management skills. Conscientiousness, for example, positively correlates with academic performances, while neuroticism often negatively affects performance due to stress and poor emotional regulation (McElroy & Lubich, 2020). In the context of social media use, platforms like WhatsApp and Facebook can mediate the relationship between personality traits and academic outcomes. For instance, conscientious students may use WhatsApp strategically for task management and peer collaboration, enhancing their performance. On the other hand, students high in extraversion might benefit from the social aspects of Facebook, which can indirectly improve their academic engagement (Brailovskaia & Margraf, 2016). Such mediating effects underscore the nuanced role of academic performance in linking personality-driven social media use to educational outcomes. The interplay between the Big Five personality traits, the adoption of WhatsApp and Facebook for educational purposes and academic performance offers a rich area for research. Understanding these dynamics can inform educators and policymakers on effectively integrating social media tools into learning environments, optimizing both individual and collective academic success.

A growing body of research has explored the impact of **Facebook** and **WhatsApp** usage on Scholastic Performance, revealing both positive and negative effects. Studies suggest that students with high **conscientiousness** and **extraversion** benefit from using **WhatsApp** and **Facebook** for academic purposes, such as group collaborations and academic discussions, which contribute to better academic engagement and performance (Mahnaz & Sidra, 2024). However, students high in **neuroticism** and low in **conscientiousness** are more prone to distractions from **Facebook** and **WhatsApp**, leading to negative academic outcomes due to excessive time spent on non-academic content (Mahnaz & Sidra, 2024).

### **Theoretical Framework:**

The Uses and Gratifications Theory (UGT) is highly relevant to understanding the impact of WhatsApp and Facebook usage on scholastic performance among secondary school students. UGT posits that individuals actively select media and technologies based on their needs and desires, seeking gratifications such as social interaction, information acquisition, entertainment, or emotional support. This theory helps explain why students use platforms like WhatsApp and Facebook, as they may be motivated by both academic and social needs, such as staying connected with peers, sharing study materials, or participating in academic discussions. In the context of this study, UGT can provide insights into how students use WhatsApp and Facebook for academic purposes, such as group study sessions, access to educational resources, and communication with teachers or classmates. These gratifications, driven by specific needs related to Scholastic Performance, might positively influence scholastic performance. For instance, students who use WhatsApp for collaborative study groups may experience enhanced academic engagement (Whelan et al., 2020), while those who use Facebook for educational content or group discussions may see improvements in academic performance as well (Mahnaz & Sidra, 2024). However, UGT also suggests that excessive use of Facebook for recreational purposes, such as socializing or

entertainment, could detract from academic focus, potentially leading to negative impacts on scholastic performance. The theory suggests that students' personalities, as reflected in the Big Five traits, may influence their media choices and usage patterns, with conscientious students more likely to use WhatsApp and Facebook for academic purposes, while others may engage with these platforms for social and emotional needs, which could interfere with their academic goals (Mahnaz & Sidra, 2024).

### **Research Methodology:**

**Research Design:** This study used a mixed methods approach, combining qualitative methods with quantitative analysis, to investigate the Personality-Driven Adoption of WhatsApp and Facebook for Educational Collaboration: Academic Performance as a Mediator. The utilization of a triangulation design in mixed methods research is warranted due to the inherent limitations present in all research approaches.

**Population:** All 8617 Students of grade 10th of District Attock, (4,868 Boys & 3,749 Girls) at secondary level in 248 public schools were the population of the study.

**Sample and Sampling Technique:** Sample of the study consists of 816 students from the population. Proportional Sampling technique was used for sampling. In this methodology, the sample size of each stratum is determined in direct proportion to the population size of the overall stratum population. This implies that every sample within each stratum is selected using an identical sampling percentage.

**Research Instruments:** Two different types of self developed research tools were used to achieve the objectives of the study.

**Research Tool No. 1:** Big Five Personality Traits Tool (BFPTs) Big Five Personality Tool consist of 39 items for five different factors which are basically the Big Five personality Traits i.e., Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism.

**Research Tool No. 2:** Usage of Social Network Sites (USNSs) Usage of Social Network Sites tool consists of twenty-nine different items for five basic and commonly used Social Network Sites.

**Reliability of the Tools:** Reliability of the tools was found by using Cronbach's Alpha. The internal consistency of the items of variables was "Excellent" and overall reliability of the tool was "Good".

**Validity of the Research Tools: Content Validity:** The research instrument used for this study was improved by the consistent guidelines and input of five different experts in the field of educational research. Their views and observations were obtained for judging validity of the instrument.

**Construct Validity:** Construct validity refers to the extent to which a measurement tool accurately represents the theoretical construct it is intended to measure. In other words, it assesses whether the instrument truly measures the abstract concept or trait it claims to evaluate. Construct validity is crucial in research because it ensures that the results obtained from a tool reflect the underlying theoretical concept rather than other variables or biases.

**Exploratory Factor Analysis (EFA):** Exploratory Factor Analysis (EFA) is a statistical technique used to assess construct validity by examining the underlying structure of a set of observed variables. It identifies how closely related items group together to represent different dimensions

or factors of a theoretical construct. EFA is particularly useful in the early stages of research to determine whether the items on a questionnaire or survey align with the expected theoretical framework.

Table 1: KMO and Bartlett's Test

KMO and Bartlett's Test		
<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</b>		<b>.896</b>
<b>Bartlett's Test of Sphericity</b>	Approx. Chi-Square	30021.346
	Df	630
	Sig.	.000

The KMO and Bartlett's Test results for the Big Five Personality Traits (BFPTs) indicate strong suitability for factor analysis. The KMO value of 0.896 reflects excellent sampling adequacy, suggesting that the data has sufficient inter-item correlations for identifying underlying factors. Additionally, Bartlett's Test of Sphericity is highly significant ( $p < 0.001$ ), indicating that the correlation matrix is not an identity matrix and that meaningful relationships exist among the items. Together, these results confirm that the dataset is appropriate for Exploratory Factor Analysis (EFA), supporting the instrument's construct validity by ensuring that the BFPTs tool reliably captures the intended personality traits.

### Factor Analysis of Usage of Social Network Sites (USNSs)

Table 2: KMO and Bartlett's Test Result of USNSs

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.868
Bartlett's Test of Sphericity	Approx. Chi-Square	36885.894
	Df	406
	Sig.	.000

The KMO and Bartlett's Test results indicate that the data is suitable for Exploratory Factor Analysis (EFA). The KMO value of 0.868 suggests that the sampling adequacy is good, as values above 0.6 are considered acceptable for factor analysis, with values closer to 1.0 being excellent. The Bartlett's Test of Sphericity shows a Chi-Square value of 36,885.894, with 406 degrees of freedom and a significant p-value of 0.000. This result confirms that the correlation matrix is not an identity matrix and that there are significant correlations between the variables, validating the use of factor analysis to explore the underlying structure of the data.

### Data Analysis Technique

#### Co-efficient of Correlation

The correlation coefficient is a quantitative indicator of correlation, which denotes a statistical association between two variables. The variables under consideration might be represented as two columns inside a specific dataset consisting of observations, commonly referred to as a sample. Alternatively, they can be regarded as two components of a multivariate random variable that follows a known distribution.

Table 3: Demographic information of the students

Category	Frequency	Percentage
Male	461	56.49
Female	355	43.51
Age 12 to 14 (years)	204	25
Age 15 to 17 (years)	597	73.16
Above 17 years	15	1.84



The demographic data shows that among the participants, 56.49% (461 students) are male, while 43.51% (355 students) are female, indicating a slightly higher male representation. Regarding age distribution, the majority of students, 73.16% (597 students), fall within the 15 to 17-year-old age range. Additionally, 25% (204 students) are aged 12 to 14, and a small proportion, 1.84% (15 students), are above 17 years. This distribution highlights that the study predominantly involves mid-to-late adolescents, providing a representative sample of secondary school students in District Attock.

**Hypothesis H1: There is a significant relationship between the Big Five Personality Traits and students' adoption of WhatsApp and Facebook for educational collaboration.**

Table 4: Correlation of Usage of SNSs and BFPTs of The Students

Correlations			
		Social_Network_Sites	Big_Five_Personality_Traits
Social_Network_Sites	Pearson Correlation	1	.452**
	Sig. (2-tailed)		.000
	N	816	816
Big_Five_Personality_Traits	Pearson Correlation	.452**	1
	Sig. (2-tailed)	.000	
	N	816	816

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis indicates a statistically significant positive relationship between social network site usage and Big Five personality traits, with a Pearson correlation coefficient of 0.452. This correlation is significant at the 0.01 level ( $p < 0.01$ ), suggesting that as the use of social network sites increases, there is a moderate positive association with Big Five personality traits. The sample size for this analysis is 816, ensuring robust results. This finding implies that personality traits may influence or be influenced by social media usage patterns among secondary school students.

**Hypothesis H2: Big Five personality traits significantly influence students' engagement with WhatsApp and Facebook for academic purposes.**

Table 5: Correlation of Usage of SNSs and Academic performance of the students

Correlations			
		Social_Network_Sites	Academic_Achievement
Social_Network_Sites	Pearson Correlation	1	.566**
	Sig. (2-tailed)		.000
	N	816	816
Academic_Achievement	Pearson Correlation	.566**	1
	Sig. (2-tailed)	.000	
	N	816	816

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis reveals a statistically significant positive relationship between social network site usage and Academic Performance, with a Pearson correlation coefficient of 0.566. This correlation is significant at the 0.01 level ( $p < 0.01$ ), indicating a moderate to strong positive association. The sample size for this analysis is 816, which strengthens the reliability of the result. This finding suggests that increased social network site usage is associated with higher Academic performance, possibly reflecting the role of social media in facilitating learning, collaboration, and academic engagement among secondary school students.

The correlation analysis indicates a statistically significant positive relationship between Academic performance and Big Five personality traits, with a Pearson correlation coefficient of 0.727. This correlation is significant at the 0.01 level ( $p < 0.01$ ), suggesting a strong positive association. With a sample size of 816, the results are robust and reliable. This finding implies that students exhibiting higher levels of the Big Five personality traits, such as conscientiousness, openness, and agreeableness, tend to achieve better academic outcomes. This strong correlation highlights the important role personality traits play in influencing academic performance among secondary school students.

**Hypothesis H3: Academic performance significantly mediates the relationship between the Big Five Personality Traits and the educational use of WhatsApp and Facebook.**

Table 6: Mediation of Academic performance Result (IBM SPSS 25)

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**Run MATRIX procedure:**

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\*\*\*\*\* PROCESS Procedure for SPSS Version 4.2 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D [www.afhayes.com](http://www.afhayes.com)  
 Documentation available in Hayes (2022) [www.guilford.com/p/hayes3](http://www.guilford.com/p/hayes3)

\*\*\*\*\*

Model: **4**  
 Y: **SNSs**  
 X: **BFPTs**  
 M: **SP**

Sample Size: 816

\*\*\*\*\*

OUTCOME VARIABLE:  
 AA

Model Summary

R	R-sq	MSE	F	df1	df2	P
<b>.7267</b>	<b>.5281</b>	.8557	910.8552	1.0000	814.0000	.000

Model

	Coeff	Se	T	P	LLCI	ULCI
<b>constant</b>	-2.0119	.1615	-12.4599	.0000	-2.3288	-1.6949
<b>BFPTs</b>	1.5280	.0506	30.1804	.0000	1.4286	1.6274

\*\*\*\*\*

OUTCOME VARIABLE:  
 SNSs

Model Summary

R	R-sq	MSE	F	df1	df2	P
<b>.5694</b>	<b>.3243</b>	.4946	195.0736	2.0000	813.0000	.0000

Model

	Coeff	Se	t	p	LLCI	ULCI
<b>Constant</b>	2.2607	.1340	16.8756	.0000	1.9977	2.5236
<b>BFPTs</b>	.1158	.0560	2.0659	.0392	.0058	.2257
<b>SP</b>	.3196	.0266	11.9934	.0000	.2673	.3719

\*\*\*\*\*

	TOTAL	EFFECT	MODEL

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OUTCOME VARIABLE:  
 SNSs

**Model Summary**

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R	R-sq	MSE	F	df1	df2	P
<b>.4525</b>	<b>.2047</b>	.5814	209.5361	1.0000	814.0000	.0000
<b>Model</b>						
	Coeff	Se	T	p	LLCI	ULCI
<b>Constant</b>	1.6177	.1331	12.1537	.0000	1.3564	1.8789
<b>BFPTs</b>	.6041	.0417	14.4754	.0000	.5222	.6860
***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****						
Total effect of X on Y						
	Effect	Se	T	p	LLCI	ULCI
	.6041	.0417	14.4754	.0000	.5222	.6860
Direct effect of X on Y						
	Effect	Se	T	p	LLCI	ULCI
	.1158	.0560	2.0659	.0392	.0058	.2257
Indirect effect(s) of X on Y:						
	Effect	BootSE	BootLLCI		BootULCI	
<b>SP</b>	.4884	.0438	.4042		.5771	
***** ANALYSIS NOTES AND ERRORS *****						
Level of confidence for all confidence intervals in output: 95.0000						
Number of bootstrap samples for percentile bootstrap confidence intervals: 5000						
----- END MATRIX -----						

The mediation analysis using the PROCESS macro (Model 4) highlights significant relationships between Big Five personality traits (BFPTs), social network site (SNS) usage, and Academic performance (SP) as a mediating variable. The results show that Big Five personality traits have a strong, positive impact on Academic performance, with a coefficient of 1.5280 ( $p < 0.001$ ). This indicates that higher levels of personality traits, such as conscientiousness, openness, and agreeableness, are associated with improved academic performance. The model explains 52.81% of the variance in Academic performance, suggesting that personality traits play a significant role in determining students' academic outcomes. Academic performance, in turn, significantly predicts SNS usage, with a coefficient of 0.3196 ( $p < 0.001$ ). This finding implies that students with higher Academic performance are more likely to engage in social network sites, possibly for educational purposes, social interaction, or information gathering. While the direct effect of Big Five personality traits on SNS usage is smaller (0.1158,  $p = 0.0392$ ), it remains statistically significant, indicating that personality traits have a modest but direct influence on social media use. However, the stronger pathway is through Academic performance, which acts as a mediator. The total effect of personality traits on SNS usage is 0.6041, combining both direct and indirect effects. The indirect effect through Academic performance is substantial (0.4884), with a 95% confidence interval ranging from 0.4042 to 0.5771, confirming its significance. This suggests that Academic performance largely explains how personality traits influence social network site usage. In summary, the mediation analysis underscores the importance of Academic performance as a critical intermediary, demonstrating that the impact of personality traits on SNS usage is primarily channeled through students' academic performance.

### Findings:

#### **Objective 1: To analyze the relationship between the Big Five Personality Traits and students' adoption of WhatsApp and Facebook for educational collaboration.**

The findings for Objective 1 indicate a statistically significant positive relationship between the Big Five Personality Traits and students' social media preferences. The Pearson correlation coefficient is 0.452, which suggests a moderate positive association between these variables. This correlation is significant at the 0.01 level ( $p < 0.01$ ), meaning there is a very low probability that

this result is due to chance. With a sample size of 816, the data demonstrates that students with certain personality traits—such as openness, conscientiousness, or extraversion—tend to prefer and engage with social media platforms more frequently. This relationship highlights the potential influence of personality characteristics on social media behavior, suggesting that individual differences in personality may shape the ways in which students interact with social networks. This finding underscores the relevance of personality traits in understanding social media preferences among secondary school students.

**Objective 2: To investigate the association between social network site usage and academic performance of the students.**

The correlation analysis indicates a statistically significant positive relationship between social network site usage and academic performance. The Pearson correlation coefficient is 0.566, suggesting a moderate to strong positive association between these two variables. This correlation is significant at the 0.01 level ( $p < 0.01$ ), meaning that the result is highly unlikely to have occurred by chance. With a sample size of 816, these findings indicate that students who engage more frequently with social network sites tend to have higher academic performance. This suggests that social media use, potentially through educational content, peer interactions, or engagement in academic discussions, may have a positive impact on students' academic outcomes. However, further analysis would be necessary to explore the nature of this relationship and the underlying factors driving this correlation.

**Objective 3: To evaluate the mediating role of academic performance in the relationship between the Big Five Personality Traits and the educational use of WhatsApp and Facebook.**

The findings from the PROCESS procedure (Model 4) offer insights into the relationships between Big Five Personality Traits (BFPTs), Academic performance (AA), and Social Network Sites (SNSs). The analysis shows that BFPTs significantly predict Academic performance (AA), with a positive coefficient of 1.528 ( $p < 0.01$ ). The model's R-squared value of 0.528 indicates that 52.81% of the variance in academic achievement can be explained by BFPTs. This relationship suggests that students' personality traits are strongly related to their academic performance. Furthermore, the analysis reveals that both BFPTs and AA significantly contribute to SNS usage, with a total effect coefficient of 0.6041 ( $p < 0.01$ ). The direct effect of BFPTs on SNS usage is 0.1158 ( $p = 0.0392$ ), and the indirect effect via AA is 0.4884 (bootstrapped 95% confidence interval: 0.4042, 0.5771). This indicates that BFPTs influence SNS usage directly and indirectly through academic achievement. The total, direct, and indirect effects emphasize the complex interplay between personality traits, academic achievement, and social media engagement. In summary, personality traits impact SNS usage both directly and through academic performance, suggesting the importance of considering these factors when analyzing students' online behaviors.

**Discussion:**

The findings indicate a statistically significant moderate positive relationship ( $r = 0.452$ ) between Big Five Personality Traits and students' social media preferences, suggesting that students' personality characteristics influence their social media usage. Research supports this relationship, indicating that personality traits, particularly extraversion, openness, and conscientiousness, significantly affect social media usage patterns. For example, a study by Błachnio et al. (2015) found that extraverted individuals are more likely to use social media platforms for social interaction, while those high in openness tend to explore more diverse content. Additionally, a study by Satici et al. (2021) revealed that conscientiousness was linked to a more purposeful use of social media for educational purposes. Furthermore, the research by Reinecke et al. (2020) confirmed that personality traits, including neuroticism, are associated with greater use of social media as an emotional coping mechanism. These findings support the hypothesis that personality

traits shape social media preferences in students, highlighting the relevance of individual differences in understanding social media behavior. The correlation analysis revealed a strong positive relationship ( $r = 0.727$ ) between Big Five Personality Traits and academic achievement, indicating that students with higher levels of traits such as conscientiousness, openness, and agreeableness tend to perform better academically. This finding aligns with several studies in educational psychology. For example, a study by Poropat (2014) demonstrated that conscientiousness, in particular, has a strong predictive value for academic performance due to its association with diligence, self-discipline, and goal-directed behavior. Similarly, studies by Chamorro-Premuzic et al. (2017) and Duckworth et al. (2019) reinforced that conscientiousness and openness are key personality traits that positively influence academic success, suggesting that personality can play a critical role in determining students' motivation and approach to learning. These studies emphasize the importance of considering personality traits in the academic development of students, as they contribute to both motivation and performance outcomes. The correlation analysis revealed a moderate positive relationship ( $r = 0.566$ ) between academic achievement and social network site usage. This result suggests that students who engage more with social media may have higher academic performance. This finding is consistent with recent research on the impact of social media on students' educational outcomes. A study by Junco (2015) found that social media use could be positively related to academic performance, especially when students engage with academic content or interact with peers on educational platforms. Similarly, the research by Al-Rahmi et al. (2020) showed that social media usage, especially for collaborative learning, enhances students' academic engagement and performance. On the other hand, the study by Kuss and Griffiths (2017) highlighted that while social media can have positive effects on academic achievement, excessive usage might have detrimental effects. Therefore, the relationship between social media and academic performance is complex and requires further investigation to understand the underlying mechanisms. The findings from the PROCESS procedure revealed that academic achievement significantly mediates the relationship between Big Five Personality Traits and social network site usage. The results suggest that personality traits influence social media usage both directly and indirectly through academic achievement. Several studies have supported the mediating role of academic achievement in the relationship between personality traits and behavior. For instance, a study by Kuss and Griffiths (2017) highlighted those conscientious students, who are more likely to perform well academically, tend to use social media in more structured and purposeful ways. Similarly, the research by Hurst et al. (2020) found that academic achievement can enhance students' self-regulation, which in turn affects their online behaviors, including social media usage. Additionally, a study by Zhang et al. (2021) found that students with higher academic success tend to use social media for educational purposes, thus reinforcing the mediating effect of academic achievement in the relationship between personality and social media use. These findings suggest that personality traits influence social media behavior both directly and through the academic success that enhances students' capacity to engage with social media in productive ways.

### **Recommendations:**

1. Educators should consider students' personality traits when designing social media-related programs to encourage healthy engagement and optimize learning experiences.
2. Programs that enhance traits like conscientiousness and openness should be implemented to support academic success and student motivation.
3. Social media can be leveraged to promote educational content and peer collaboration, enhancing academic achievement through structured use.
4. Interventions should focus on improving both academic achievement and personality traits to help students manage their social media usage effectively.

### Future Study Recommendations:

1. A longitudinal approach could capture changes in personality traits, SNS usage patterns, and Academic Performance over time. This design would help identify long-term effects of SNS use on academic and personality development, providing deeper insights into how these variables interact.
2. Exploring additional mediating or moderating variables, such as parental guidance, academic support, or extracurricular involvement, could give a more nuanced understanding of factors that might influence or enhance the effects of SNS usage on Academic Performance and personality traits.

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