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Impact of Social Media Usage and Cyberbullying on Adolescent Mental Health: The Mediating Role of Social Isolation in Pakistan

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ABSTRACT

This paper examines the relationship between social media use and mental health among Pakistani adolescents, focusing on the mediating role of social isolation. The study utilized a sample of 300 high school students to explore how the frequency and types of social media interactions, combined with exposure to cyberbullying, are associated with mental health outcomes. Utilizing a cross-sectional design and structural equation modeling, the results indicate that increased social media usage and exposure to cyberbullying correlate with deteriorating mental health outcomes. Furthermore, social isolation serves as a significant mediator in this relationship, implying that adolescents who experience heightened social isolation due to these factors are more likely to report poorer mental health. These findings underscore the urgent need for interventions that mitigate the adverse effects of social media and cyberbullying on adolescent mental health, emphasizing the development of socially connected and resilient youth. The study contributes to the growing body of literature on the psychosocial effects of digital interactions and offers valuable insights for policymakers, educators, and mental health practitioners in Pakistan. Recommendations include the implementation of educational programs that promote healthy social media use and the establishment of support systems for cyberbullying victims. Limitations of the study include its cross-sectional design, which limits causal inferences, and the reliance on self-reported data, which may introduce bias. Future research should consider longitudinal designs to better understand causal relationships and explore additional mediating factors.

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DOI: https://doi.org/10.61503/cissmp.v3i2.176

1.0 Introduction

Social media is now an essential and significant aspect of the lives of adolescents especially from the developing world including Pakistan (Ittefaq et al., 2022). However, the negative effects of using social media which include cyberbullying and the general effects on the psychological well-being of users have been seen as a major concern (Khalaf et al., 2023). The current research indicates that teenagers using social media excessively are likely to experience depression, anxiety, and even social isolation (Vidal et al., 2020). Studies have indicated that increased social media engagement is likely to have adverse effects on the mental health of people especially the female adolescents (Abi-Jaoude et al., 2020).

Another type of victimization namely cyberbullying has also been observed to cause a great deal of harm to the mental health of adolescents (Vidal et al., 2020). Cyberbullying is also an issue that affects many adolescents; unfortunately, such experiences increase the likelihood of the development of mental illnesses, including depression and anxiety (Vidal et al., 2020). Also, social isolation could act as a moderator between social media use, cyberbullying, and psychological well-being (Vidal et al., 2020). Such youths may be at a higher risk of suffering the ill effects inherent in using social media and cyber bullying; hence, worsening their mental health (Khalaf et al., 2023).

Although there are numerous studies available about the effects of SNS and cyberbullying on the adolescents mental health, still there is a dearth of literature that offers insights into the effects of Social media use and cyber bullying on adolescent mental health in the context of Pakistan(Naslund et al. , 2020). The analysis of these relations in Pakistan is important because of the special features of sociocultural context and active digitalization of the country. The current research therefore seeks to address this gap with the following research questions: What is the influence of social media usage and cyber bullying on Pakistani adolescent's mental health with reference to depression, anxiety and social isolation?

This study is important because it will help in understanding the mental health issues that various adolescents in Pakistan go through especially given that more of them are now active on social media. Hence, it is expected that the findings of the study will add valuable knowledge to the existing literature by identifying the peculiar problem areas and processes in the context of Pakistan. Furthermore, the findings of the study will raise awareness of the possible dangers of social networking sites and cyberbullying among policymakers, educators, and mental health workers to offer the necessary preventive measures and assistance for the youths.

2.0. Literature Review

2.1 Theoretical Framework

The Social Comparison Theory by Leon Festinger formulated in 1954 also offers a theoretical background for analysis of the effects of social media in adolescents' mental health. According to this theory, persons manage to know their worth within the social and personal realms by ranking themselves with other people. In the context of social media, adolescents are often presented with an unrealistic representation of their peers' lives, which leads to negative evaluation of the self and perceived inadequacy. Such a continual comparison can worsen symptoms of

depression and anxiety especially when adolescents view themselves as failing to meet these standards. In addition, the theory sheds light on why cyberbullying becomes worse when the victim is socially isolated since such adolescents cannot rely on support from friends to shield them from the effects of online bullying.

2.2 Empirical studies and hypothesis devolpement

There are research studies which have established a link between social media usage and poor mental health. In a study done by Primack et al., (2017), they established that there is a correlation between the amount of time spent on social media and the effects of depression and anxiety in adolescents. These effects can be regarded as negative outcomes of social comparison and the feelings of pressure that people experience while using social media. It has been found that the increased use of social network results in decreased self-esteem and increased levels of psychological problems among adolescents (Pew Research Center, 2018). These findings are especially important for Pakistani adolescents because the youths in this population may face other sociocultural stressors that amplify the impact of social media on their psychological well-being (Saleem et al., 2020).

On the same note, it can also be argued that social media leads to social isolation because it replaces the real-life communication reducing the actual face-to-face interactions. High users of social media may spend most of their time on the social networks rather than face-to-face interactions hence are likely to feel lonelier (Liu et al., 2021). For Pakistani adolescents, this issue is worsened by the scarcity of supportive offline networks and possible social ostracism when it comes to mental health problems and concerns, therefore, it is crucial to understand the way social media use influences their mental health outcomes.

H1: Higher levels of social media usage are associated with poorer mental health outcomes (depression, anxiety, and social isolation) among Pakistani adolescents.

Cyberbullying has therefore come out strongly as a mediator in the association between social media use and mental health consequences. There is high correlation between the incidence of cyberbullying and enhanced psychological issues such as depression and anxiety (Kowalski et al. , 2014). In today's generation, children and adolescents who are the recipients of cyber bullying suffer deeper emotional and psychological effects than those who are not subjected to such bullying (Sticca & Perren, 2013). This mediation effect is specific for the context of social media where the anonymity of the channels and the wide audience encourages and amplifies bullying.

Therefore, the effects of cyberbullying may be even more severe for Pakistani adolescents because they have a relatively few resources and access to services to seek help in case of online harassment (Younis et al., 2019). The cultural and social aspects of the Pakistani population may affect the perception and handling of cyberbullying; therefore, it is relevant to examine how it moderates the link between SMM use and mental health consequences in the Pakistan context. From the findings of this study, it is possible to inform the creation of prevention strategies that focus on eradicating cyberbullying while also reducing the impact of the phenomenon on mental health.

Hypothesis 2: Cyberbullying mediates the relationship between social media usage and

mental health outcomes among Pakistani adolescents.

Social isolation acts as a moderator in the association of social media use, cyberbullying, and psychological consequences. Studied shows that students who suffer from higher degrees of loneliness are likely to suffer from the effects of social networking sites and cyber bullying (Erickson & Schurer, 2019). When the person does not have a supportive social network, the negative experience from online harassment can increase the level of loneliness and depression (Holland & Tiggemann, 2016).

For the Pakistan adolescents, loneliness can be a major area of concern because cultural and societal norms may restrict the access to positive social relationships (Khan et al., 2021). It is therefore critical to explore how social isolation moderates these relations if one has to design support structures and interventions that can address the needs of youth from Pakistan. Reducing social isolation can assist in the reduction of the negative impact of social media and cyber bullying hence enhancing the wellbeing of adolescents in this area.

Hypothesis 3: Social isolation moderates the relationship between social media usage, cyberbullying, and mental health outcomes among Pakistani adolescents

3.0 Methodology

The current study aims to investigate the research questions regarding social media usage and cyberbullying on the mental health of Pakistani adolescents using a quantitative approach with a survey research design. The study focuses on adolescents aged 12 to 18 from Pakistani high schools; the sample is selected using stratified random sampling, which includes students from all major economic classes and provinces.

Data collection involved administering a structured questionnaire to participants to elicit basic demographic information, specifics of social media use, history of cyberbullying, social isolation, and mental health outcomes. Some of the questionnaire's questions were adapted from well-established questionnaires. The given frequency scale was used to assess the frequency of Internet use and time spent on social media. Cyberbullying experiences were assessed using questions that included both the experience of being a victim of bullying and the use of abusive behaviors toward others.

The data was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is useful for testing the relationship between multiple variables. Because PLS-SEM can examine both direct and indirect effects, the study hypothesized and compared the relationships between social media usage, cyberbullying, social isolation, and mental health outcomes. The moderation and mediation analysis were also used to determine how social isolation influenced the effects of social media use and cyberbullying on mental health.

All of the research conducted in this study adhered to ethical standards in order to protect the participants' identities. Before enrolling in the study, both adolescents and their guardians provided written informed consent, and the study was carried out following a favorable review by an institutional review board. This methodological approach was designed to provide a detailed view of the effects of social media and cyberbullying on adolescent mental health in Pakistan, as well as potential interventions and policies that could benefit adolescents in the future.

4.0 Findings and Results

4.1 Measurement Model

Adolescent Mental Health, Cyber Bullying, Social Isolation, and Social Media Usage reliability metrics are presented in Table 4.1. Cronbach's Alpha values range from 0.705 to 0.8044, indicating acceptable to good internal consistency for all constructs that exceed the 0.7 threshold. The rho_A values, which are similar to Cronbach's Alpha, provide additional evidence of these constructs' reliability. The Composite Reliability values, which range from 0.7873 to 0.8596, all exceed the acceptable threshold of 0.7, indicating a high level of reliability. The Average Variance Extracted (AVE) values range from 0.5076 to 0.5185, all of which exceed the threshold of 0.5, indicating adequate convergent validity for each construct. Overall, the reliability analysis shows that the measurement model is strong, with constructs demonstrating both internal consistency and convergent validity.

Table 4.1: Reliability Analysis

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Adolescent Mental Health	0.7378	0.7763	0.8235	0.5099
Cyber Bullying	0.8044	0.837	0.8596	0.5142
Social Isolation	0.705	0.7242	0.7873	0.5076
Social Media Usage	0.769	0.7691	0.8427	0.5185

4.1.1 Validity Analysis

The Heterotrait-Monotrait ratio values for Adolescent Mental Health, Cyber Bullying, Social Isolation, and Social Media Usage are shown in Table 4.2. These HTMT values are less than the 0.85 threshold, indicating that the constructs are easily distinguishable from one another. Adolescent Mental Health and Cyber Bullying, for example, have HTMT values of 0.61, indicating a medium level of discriminant validity. The value between Adolescent Mental Health and Social Isolation is 0.557, indicating good discriminant validity. The correlation coefficient between Adolescent Mental Health and Social Media Usage is 0.4901, which supports the discriminant validity. Similarly, the values between Cyber Bullying and Social Isolation 0.6311 and Cyber Bullying and Social Media Usage 0.4299 indicate that the constructs are well separated. The correlation coefficient between Social Isolation and Social Media Usage is very low (0.4174), confirming that these constructs are also distinct. In general, HTMT values indicated that the constructs of the measurement model had good discriminant validity, which means they measure something different**.**

Table 4.2: Discriminate Validity (HTMT)

	Adolescent Mental Health	Cyber Bullying	Social Isolation	Social Media Usage
Adolescent Mental Health				
Cyber Bullying	0.61			
Social Isolation	0.557	0.6311		
Social Media Usage	0.4901	0.4299	0.4174	

4.1.2 Factor Loading

The factor loadings for the constructs Adolescent Mental Health, Cyber Bullying, Social Isolation, and Social Media Usage are displayed in Table 4.3. Most items have factor loadings that are significantly higher than the acceptable threshold of 0.4, indicating that the items are good indicators of their corresponding constructs. Adolescent mental health items range from 0.481 to 0.818, cyberbullying items from 0.4421 to 0.8382, social isolation items from 0.5514 to 0.7293, and social media use items from 0.6441 to 0.7783. Item AMH4 loads at 0.481, which is higher than 0.4 but significantly lower than other items, implying that it is not a strong indicator of its construct. In general, the factor loadings support the construct validity of the measurement model, with the majority of the items strongly representing their respective constructs.

Table 4.3: Factors Loading

	Adolescent Mental Health	Cyber Bullying	Social Isolation	Social Media Usage
AMH1	0.7835			
AMH2	0.818			
AMH3	0.7079			
AMH4	0.481			
AMH5	0.659			
CB1		0.4421		
CB2		0.6431		
CB3		0.828		
CB4		0.8382		
CB5		0.7738		
CB6		0.6997		
SI1			0.5514	
SI2			0.6721	
SI3			0.693	
SI4			0.6086	
SI5			0.7293	
SMU1				0.6441

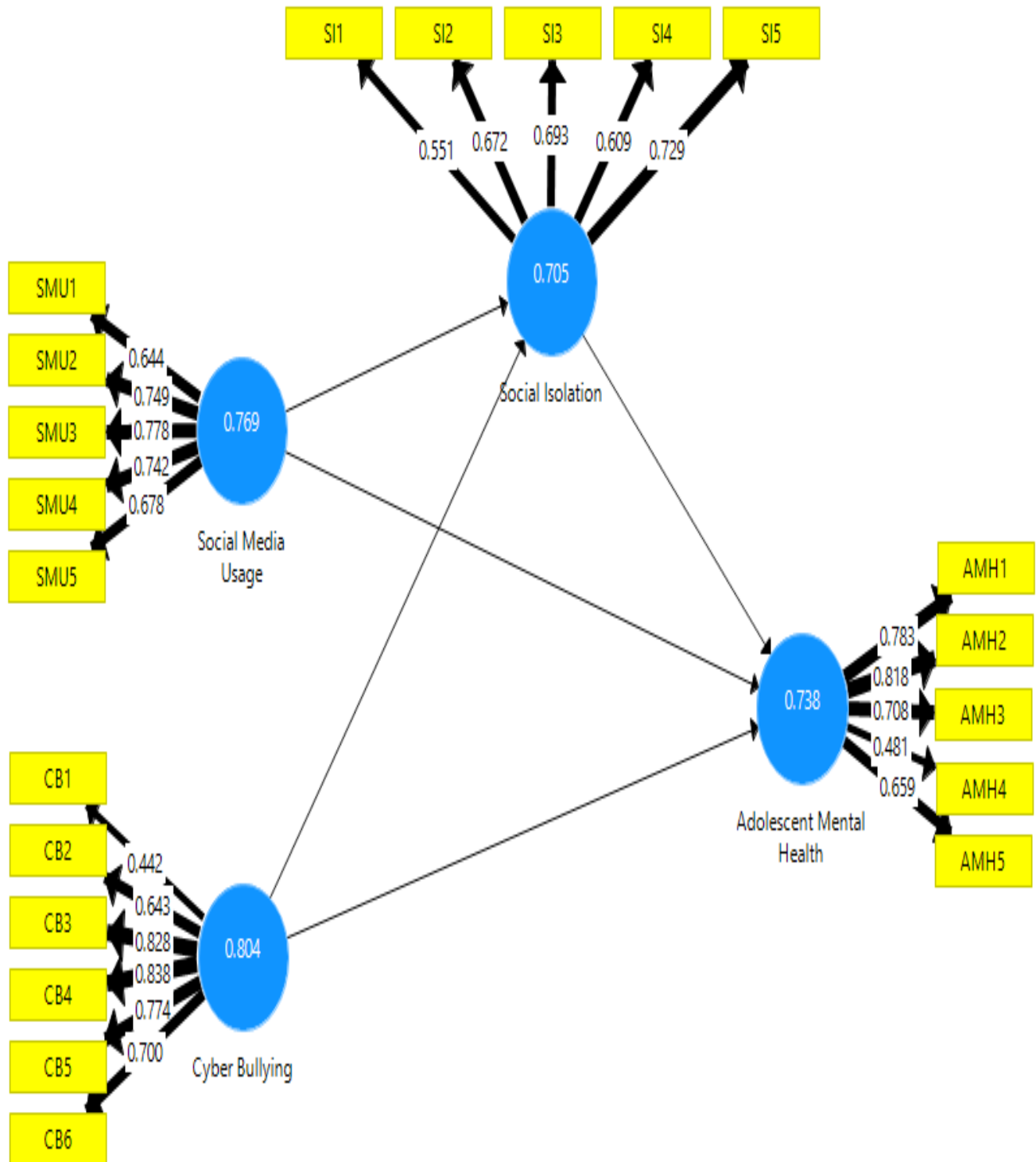|	
SMU2	0.7494
SMU3	0.7783
SMU4	0.7418
SMU5	0.6782

Figure 4.1: Reliability Analysis

4.2 Structural Equational Model

The results of the structural equation model show relationships between constructs. Adolescent Mental Health and Social Isolation are both significantly impacted by Cyber Bullying. Adolescent Mental Health is also significantly impacted by social isolation. Adolescent Mental Health and Social Isolation are both significantly impacted by Social Media Usage and Adolescent Mental Health. High t-values and low p-values confirm the significance of Cyber Bullying and Social Media Usage as predictors of Adolescent Mental Health and Social Isolation.

Table 4.5 describes the mediation effects of the model. Cyber Bullying has a significant mediating effect on the path from Adolescent Mental Health to Adolescent Social Isolation. Similarly, the path from Social Media Usage to Adolescent Mental Health through Social Isolation is significant ($\beta = 0.0259$, p = 0.0216). These mediation analyses provide some evidence that cyberbullying, social media use, and social isolation partially mediate the relationships related to adolescent mental health; thus, the significance of social isolation in these pathways is demonstrated.

Table 4.4 Structural Equational Model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Cyber Bullying -> Adolescent Mental Health	0.3458	0.3394	0.0505	6.8492	0
Cyber Bullying -> Social Isolation	0.5616	0.55	0.0244	22.974	0
Social Isolation -> Adolescent Mental Health	0.1728	0.1866	0.0487	3.5453	0.0053
Social Media Usage -> Adolescent Mental Health	0.1952	0.2094	0.0422	4.6284	0.0009
Social Media Usage -> Social Isolation	0.1498	0.171	0.0403	3.7135	0.004

Table 4.5: Mediation Analysis

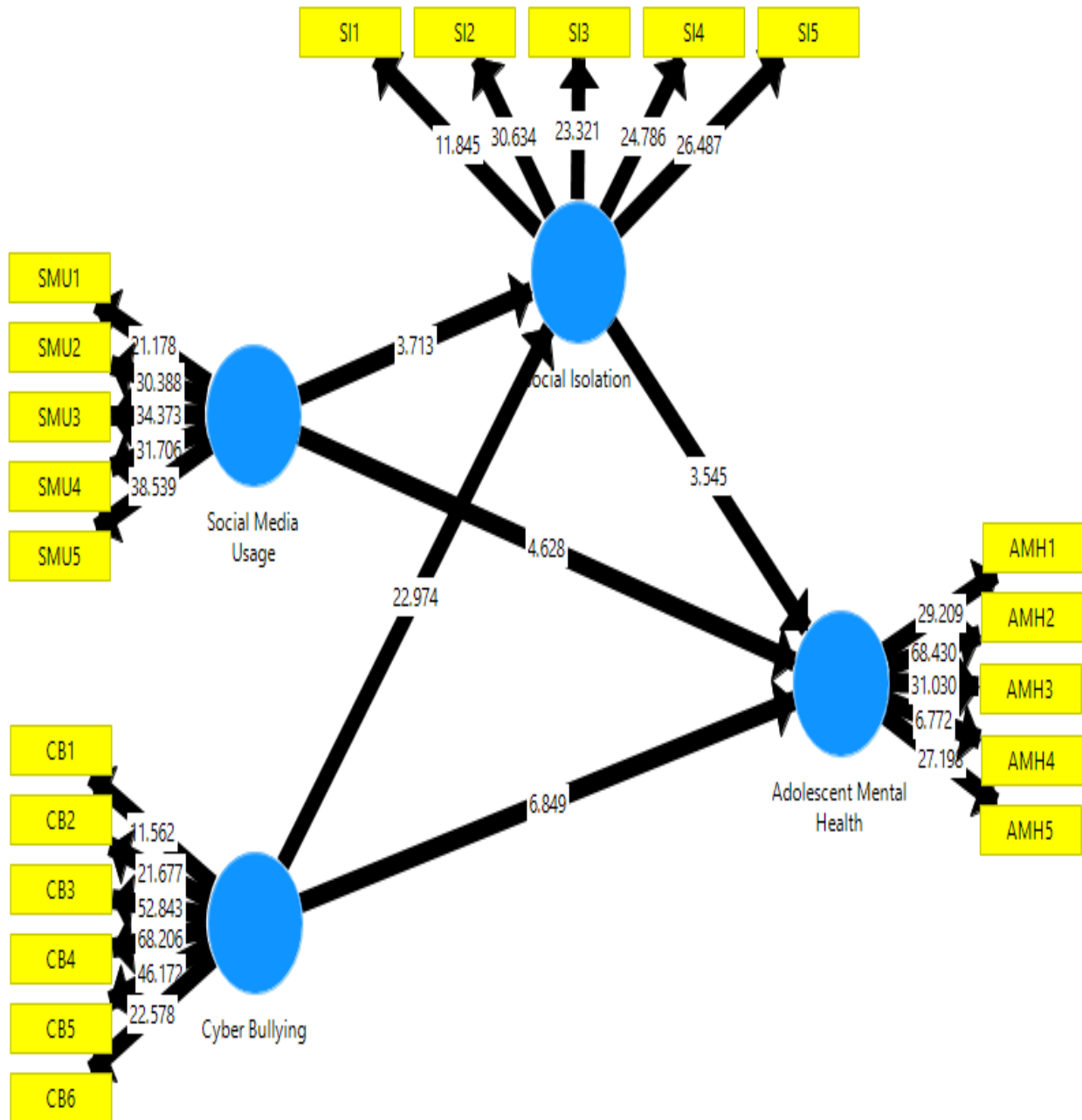|	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Cyber Bullying -> Social Isolation -> Adolescent Mental Health	0.097	0.1021	0.0253	3.8344	0.0033
Social Media Usage -> Social Isolation -> Adolescent Mental Health	0.0259	0.0316	0.0095	2.7189	0.0216

Figure 4.2 Structural Equational Model

5.0 Discussion and Conclusion

This study reveals an alarming link between social media use and poor mental health in Pakistani adolescents, emphasizing a complex digital relationship with psychological well-being. The current study found that higher levels of social media use are significantly associated with higher levels of depression, anxiety, and social isolation. These findings are consistent with previous research, which has shown that excessive use of social media typically leads to negative self-perceptions and decreases the likelihood of face-to-face interaction, exacerbating mental health challenges. The findings of this study are especially relevant in

Pakistan, where adolescents' rapidly increasing social media use combines with unique socio-cultural elements, exacerbating the negative impact on mental health.

Cyberbullying was discovered to be a significant mediator in the negative relationship between social media usage and mental health outcomes. To that end, studies have shown that adolescents who are victims of or at risk of cyberbullying are more likely to report higher levels of depression and anxiety, supporting the theory that online harassment has far-reaching psychological consequences. The mediating role of cyberbullying explains how negative online interactions exacerbate the mental health issues associated with high social media engagement in this study. This finding is critical for understanding the specific mechanisms by which social media contributes to mental health issues, especially in a cultural context where the prevalence of cyberbullying may be underestimated.

This has resulted in a moderate identification of social isolation in terms of how social media use and cyberbullying affect mental health outcomes. Adolescents who feel socially isolated are more vulnerable to the negative effects of social media and cyberbullying. It implies that, in the absence of supportive social networks, online interactions exacerbate their negative effects; thus, interventions to improve adolescent mental health must address social isolation. In this way, the moderating role of social isolation necessitates the creation of environments that foster meaningful offline connections in order to mitigate the potentially negative impact of social media.

The current study highlights critical findings about the relationship between social media use, cyberbullying, and the mental health outcomes of Pakistani adolescents. Based on the observed significant associations and mediating effects, targeted interventions should focus on reducing harmful online behaviors while also promoting supportive offline relationships. In this regard, the identification of one of the important mediators, such as cyberbullying, and a major moderator, social isolation, makes the current study relevant in understanding how social media affects adolescents' mental health.

This study recommended the development of school-based anti-cyberbullying programs as well as mental health support systems to address the psychopathological effects of online harassment. Furthermore, community-based initiatives could be encouraged to facilitate offline social interactions, thereby reducing social isolation and its associated mental health risks. Policymakers and educators should work together to develop curricula and resources for mental health education, not only in schools but also for students and their families.

This study adds to the literature by focusing on an adolescent population in Pakistan and investigating how these distinct dynamics of social media usage, cyberbullying, and mental health emerge. The study is extremely valuable in highlighting the significant contributions of cyberbullying and social isolation to developing culturally appropriate interventions and policies for improving adolescent mental health in today's digital age. It contributes to a larger literature base concerning the interplay between digital environments and psychological well-being and lays the groundwork for future research in related settings.

Samia Zafar: Topic Selection, Problem Identification and Theoretical Framework
Ayesha Allah Ditta: Data Analysis, Supervision and Drafting

Iqra Sultana: Data Collection, Idea Refinement

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest in this article's research, authorship, and publication.

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