

PROBLEMATIC SOCIAL MEDIA USE AND DEPRESSIVE SYMPTOMS AMONG YOUNG ADULTS: MEDIATING ROLE OF UPWARD SOCIAL COMPARISON AND SELF-DISCREPANCY

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KEYWORDS

Problematic Social Media Use,
Upward Social Comparison,
Algorithm, Digital Mental Health

CITE THIS ARTICLE:

Usman, M., Zubair, A., & Arif, Z. (2026). Problematic social media use and depressive symptoms among young adults: mediating role of upward social comparison and self-discrepancy. *Pakistan Journal of Positive Psychology*, 3(3), 214-227.

ABSTRACT

The significant expansion of algorithm-driven social media platforms, particularly Instagram and TikTok, has raised growing concerns regarding their impact on young people's mental health. However, the psychological mechanisms through which problematic social media use (PSMU) contributes to depression remain insufficiently understood, particularly in non-Western contexts such as Pakistan. The present study examined whether upward social comparison and self-discrepancy sequentially mediate the relationship between PSMU and depression among Pakistani youth. Guided by Social Comparison Theory (Festinger, 1954), Self-Discrepancy Theory (Higgins, 1987), and the Cognitive Vulnerability-Stress Model, a cross-sectional quantitative survey was conducted among 377 Pakistani young adults aged 18-30 years recruited from universities, educational institutions, and community centers in Rawalpindi and Islamabad using purposive sampling. Participants completed the Bergen Social Media Addiction Scale (BSMAS; Andreassen et al., 2016), the Social Media-Adapted Iowa-Netherlands Comparison Orientation Measure (INCOM-SM; Gibbons & Buunk, 1999; adapted by Vogel et al., 2014), the Self-Discrepancy Index-Brief Version (SDI-B; Hardin & Larson, 2009), and the Sub-scale of Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995). Findings indicated that problematic social media use was positively associated with depressive symptoms. This relationship was partially explained through increased upward social comparison and self-discrepancy, supporting the proposed serial mediation model. The findings suggest that algorithm-driven social media environments may contribute to depression by encouraging unfavorable social comparisons and widening the perceived gap between individuals' actual and ideal selves. These results advance understanding of the psychological pathways linking problematic social media use to depression and highlight the importance of digital well-being initiatives, cognitive-based interventions, and youth-focused mental health policies within the Pakistani context.

I. INTRODUCTION

The rapid growth of social media has significantly transformed the daily lives of young adults worldwide. As of 2024, approximately 5.17 billion people use social media globally, with young adults aged 18-29 years representing the most active users, spending an average of more than five hours per day on platforms such as TikTok, Instagram,

Snapchat, and Facebook (Kemp, 2024). Although these platforms offer important benefits, including social connection, access to information, and opportunities for self-expression, growing evidence suggests that problematic and excessive use is associated with poorer psychological well-being, particularly depression (Coyne et al., 2020; Valkenburg et al., 2022). Consequently, understanding the relationship between social media use and mental health has become a major focus of contemporary psychological research. Depression is one of the leading causes of disability worldwide, affecting an estimated 280 million people (World Health Organization, 2023). Rates of depression among young adults have increased considerably over the past decade, coinciding with the rapid expansion of social media use (Twenge et al., 2018). While a direct causal relationship remains under investigation, increasing evidence suggests that certain patterns of social media use may contribute to depressive symptoms. However, much of the existing literature is based on Western populations, leaving limited evidence from lower- and middle-income countries such as Pakistan, where cultural values, social norms, and mental health resources differ substantially.

Social Media and Mental Health in Pakistan

Pakistan provides a particularly important context for examining the psychological effects of social media. The country has experienced rapid digital growth, with internet penetration reaching 54.4% and approximately 71.7 million active social media users by early 2024 (Kemp, 2024). Among young adults, Instagram, TikTok, and Facebook are the most widely used platforms, with TikTok experiencing remarkable growth between 2021 and 2023 (Pakistan Telecommunication Authority, 2023). This rapid expansion of social media use has occurred within a cultural and social environment that may increase young people's vulnerability to its psychological effects. At the same time, Pakistan faces significant mental health challenges. According to the World Health Organization (2022), nearly 44 million Pakistanis live with a mental health disorder, while access to mental health services remains severely limited, with approximately one psychiatrist serving every 500,000 people. Limited mental health literacy, persistent stigma, and inadequate access to professional psychological services further increase the burden on young people (Naqvi et al., 2020). In this context, excessive social media use may act as an important environmental stressor, contributing to poor mental health among Pakistani youth.

Depression Among Pakistani Youth

Depression is one of the most common mental health problems among Pakistani youth, with studies reporting depressive symptoms in approximately 28%-46% of university students (Ayub et al., 2021; Mirza & Jenkins, 2004). High rates of depression have been linked to academic pressure, financial uncertainty, family expectations, and increasing social media use (Naqvi et al., 2020). As young adults navigate important developmental stages involving identity formation, career planning, and social relationships, they may be particularly vulnerable to social comparison and negative self-evaluation (Arnett, 2000). These developmental challenges make Pakistani youth an important population for understanding the psychological pathways linking social media use to depression. Gender differences may further influence this relationship. Female students often report higher levels of depressive symptoms, partly due to greater social comparison related to appearance and social expectations (Batoool et al., 2021; Khan et al., 2022). At the same time, male youth may experience similar pressures related to career success, financial stability, and social status, which are also frequently reinforced through social media (Malik & Khan, 2023). Therefore, the present study included both male and female participants to better understand these psychological processes among Pakistani young adults.

Problematic Social Media Use

Recent research has shifted beyond measuring simple "screen time" to examining problematic social media use (PSMU), which refers to compulsive and excessive engagement that interferes with daily life (Andreassen, 2015; Kuss & Griffiths, 2017). Unlike frequent but healthy use, PSMU is characterized by symptoms such as loss of control, withdrawal, tolerance, and conflict, reflecting behavioral addiction (Andreassen et al., 2016). Studies suggest that between 5% and 15% of young adults' experience problematic social media use, with even higher rates reported among university students (Cheng et al., 2021). In Pakistan, approximately one in five university students has been found to exhibit problematic social media use (Abbas et al., 2019; Iqbal et al., 2021). Beyond depression, PSMU has also been associated with anxiety, loneliness, poor academic performance, sleep problems, and interpersonal difficulties (Kuss & Griffiths, 2017; Marino et al., 2018). A growing body of evidence consistently links problematic social media use with depression. Huang's (2022) meta-analysis of 226 studies confirmed that

individuals with higher levels of PSMU are more likely to report depressive symptoms than those with non-problematic use. Similar findings have been reported among Pakistani university students, where problematic social media use has been shown to predict higher levels of depression (Iqbal et al., 2021; Khan et al., 2022). Despite this consistent evidence, the psychological mechanisms through which PSMU contributes to depression remain insufficiently understood, particularly in the Pakistani cultural context.

Social Comparison Theory and Algorithmic Amplification

According to Social Comparison Theory (Festinger, 1954), individuals naturally evaluate themselves by comparing their abilities, achievements, and life circumstances with those of others, especially when objective standards are unavailable. While some comparisons can be motivating, frequent upward comparisons with individuals perceived as more successful or attractive often result in negative self-evaluation and emotional distress (Collins, 1996; Wills, 1981). Social media has intensified this process by exposing users to carefully curated and idealized representations of others' lives, making upward social comparison a routine part of everyday online experiences. Modern social media platforms further amplify these comparisons through recommendation algorithms designed to maximize user engagement. Platforms such as Instagram, TikTok, and Facebook prioritize highly attractive, aspirational, and emotionally engaging content, increasing users' exposure to idealized lifestyles and achievements (Bail et al., 2018; Burr et al., 2018). As a result, users are more likely to compare themselves with unrealistic standards, creating a "comparison trap" that has been linked to lower self-esteem and poorer psychological well-being (Vogel et al., 2014).

Algorithmic Social Media Exposure and Upward Social Comparison

The role of recommendation algorithms has further intensified upward social comparison on social media. Unlike traditional social interactions, platforms such as Instagram and TikTok use algorithms to prioritize highly engaging and aspirational content, increasing users' exposure to idealized lifestyles and achievements (Bail et al., 2018; Burr et al., 2018). Research has shown that algorithmically curated content is more likely to encourage upward social comparison and negative emotional responses than chronological or randomly presented content (Johnson & Knobloch-Westerwick, 2020; Luo et al., 2022). These findings suggest that the psychological effects of social media depend not only on the amount of time spent online but also on the type of content users are repeatedly exposed to. This issue is particularly relevant in Pakistan, where Instagram and TikTok are among the most popular social media platforms. Their emphasis on appearance, lifestyle, and social success may encourage young users to compare themselves with idealized images and unrealistic standards. Previous Pakistani studies have found that upward social comparison mediates the relationship between social media use and negative psychological outcomes, including lower self-esteem and depression (Batoool et al., 2021; Malik & Khan, 2023). Consistent with these findings, studies have shown that frequent upward social comparison on social media is associated with poorer self-evaluations and greater depressive symptoms (Appel et al., 2016; Vogel et al., 2014). Moreover, a comprehensive review by Valkenburg et al. (2022) identified social comparison as one of the strongest psychological mechanisms explaining the negative relationship between social media use and mental well-being.

Self-Discrepancy Theory and Its Relationship with Depressive Symptoms

Self-Discrepancy Theory (Higgins, 1987) explains how upward social comparison may lead to depression. The theory proposes that individuals compare their actual self with their ideal self, and when they perceive a large gap between the two, they are more likely to experience negative emotions such as sadness, disappointment, and depression. Social media can intensify this process by continuously exposing users to idealized images of others' appearance, achievements, relationships, and lifestyles, making the gap between the actual and ideal-self more noticeable (Ozimek et al., 2023). Unlike a single comparison experience, repeated exposure to idealized social media content may reinforce these negative self-evaluations over time, increasing vulnerability to depressive symptoms. As users repeatedly encounter unrealistic standards, they may develop a persistent sense of inadequacy and dissatisfaction with themselves. Empirical evidence supports this theoretical perspective. Studies have shown that self-discrepancy mediates the relationship between social media use and depression, with greater self-discrepancy associated with poorer psychological well-being (Humeau et al., 2022; Ozimek et al., 2023). Similarly, appearance-related self-discrepancy has been found to explain the association between TikTok use and body dissatisfaction among young women (Barber & Koo, 2023). Together, these findings suggest that self-

discrepancy is an important psychological mechanism through which problematic social media use may contribute to depression.

Cultural Context and Psychological Vulnerability in Pakistan

Cultural factors specific to the Pakistani context may substantially amplify the psychological impact of social media-related upward comparison and self-discrepancy. Pakistan is a predominantly collectivist society in which individual identity is tightly embedded within family and community structures, and in which social evaluation by significant others particularly family members constitute a primary source of self-worth (Triandis, 1995). This cultural framework creates conditions under which social comparison is not merely an individual psychological process but a socially enforced imperative: Pakistani youth are routinely evaluated by extended family networks on the basis of academic achievement, professional success, physical appearance, marital prospects, and social standing, often through direct explicit comparison with peers and cousins. The proliferation of social media platforms has introduced a powerful new arena in which these culturally embedded comparison processes are enacted and intensified. When Pakistani youth encounter on Instagram or TikTok the academic achievements, material possessions, romantic relationships, or physical attractiveness of peers whether local or global the resulting upward comparisons are experienced not merely as personal inadequacy but as potential failures relative to the collective expectations of family and community. Economic uncertainty further amplifies this dynamic: Pakistan's youth unemployment rate, estimated at approximately 16% in 2023 (Pakistan Bureau of Statistics, 2023), creates a structural context in which aspirational content depicting professional success and material affluence is particularly likely to generate acute self-discrepancy in young adults struggling to achieve economic independence. Gender norms add yet another layer of culturally specific vulnerability. Pakistani female youth navigate intense social media pressures related to physical appearance, skin tone, body weight, and feminine respectability all domains prominently displayed and evaluated on Instagram and TikTok within a cultural context that assigns considerable social value to conformity with conventional beauty standards (Khan et al., 2022). Male Pakistani youth, conversely, experience social comparison pressures related to economic achievement, physical strength, and social dominance that are increasingly mediated through social media representations of masculine success (Malik & Khan, 2023). These intersecting gender-specific pressures suggest that social media-related self-discrepancy may operate through somewhat distinct pathways for male and female Pakistani youth, a possibility that warrants examination in future research.

Theoretical Framework and Model Development

The present study proposes a theoretically integrated serial mediation model that synthesizes Social Comparison Theory (Festinger, 1954), Self-Discrepancy Theory (Higgins, 1987), and the Cognitive Vulnerability-Stress Model (Abramson et al., 1989) to specify the complete psychological pathway from PSMU to depression. The Cognitive Vulnerability-Stress Model posits that pre-existing cognitive vulnerabilities including negative self-schemas and ruminative tendencies interact with environmental stressors to precipitate depressive episodes. Within the present framework, self-discrepancy functions as a cognitive vulnerability that is progressively activated and amplified by the environmental stressor of algorithm-driven upward comparison exposure, ultimately generating depressive symptomatology consistent with the dejection-related emotional consequences predicted by Self-Discrepancy Theory. This serial mediation specification is theoretically superior to alternative single-mediator models for several converging reasons. First, it specifies the complete psychological mechanism from platform engagement through social information processing through self-evaluation to affective consequence rather than treating comparison or self-discrepancy as terminal outcomes. Second, it captures the causal ordering inherent in the theoretical frameworks: social comparison logically precedes and produces self-discrepancy, which in turn produces depression, a sequence that a single-mediator model cannot represent. Third, it allows the model to simultaneously test three theoretically distinct indirect pathways (through comparison alone, through self-discrepancy alone, and through the serial pathway), providing a more comprehensive account of the mechanisms through which PSMU affects depression. Fourth, recent serial mediation evidence supports the full sequential chain, with Zhao et al. (2023) demonstrating that passive social network use predicted depression through sequential mediation by social comparison and self-discrepancy in a Chinese sample, and Humeau et al. (2022) providing supporting evidence from a French Instagram sample.

Research Gaps and Study Rationale

Despite accumulating evidence for the individual associations among PSMU, social comparison, self-discrepancy, and depression, several significant research gaps remain that the present study is designed to address. First, no known study has tested the complete serial mediation model (PSMU → upward social comparison → self-discrepancy → depression) within a Pakistani youth sample. This gap is consequential because Pakistani cultural values, family structures, social comparison norms, and mental health service access patterns differ substantially from the Western and East Asian contexts in which existing serial mediation evidence has been generated. It cannot be assumed that mechanisms identified in German, French, or Chinese samples operate with equivalent strength or through identical cultural pathways in Pakistan. Second, prior social media and mental health research have insufficiently attended to the algorithmically amplified nature of contemporary social comparison experiences. Most existing studies measure generic social comparison orientation rather than exposure to the specific algorithm-driven upward comparison stimuli that characterize contemporary TikTok and Instagram use. The present study explicitly frames upward social comparison as a consequence of algorithmically curated content exposure, providing a more ecologically valid account of the comparison processes operative in contemporary social media environments. Third, existing Pakistani research on social media and mental health has predominantly employed small, single-institution convenience samples, limiting generalizability across the sociodemographic diversity of Pakistani urban youth. The present study addresses this limitation through purposive sampling across seven universities and four community centers in Rawalpindi and Islamabad, yielding a larger and more geographically diverse sample than prior Pakistani social media psychology studies. Fourth, the integration of self-discrepancy as a theoretically connecting mechanism between upward social comparison and depression an integration absent from prior Pakistani research represents a substantive theoretical contribution to the growing literature on social media and mental health in South Asian contexts.

Hypotheses

1. PSMU will positively predict upward social comparison and self-discrepancy.
2. Upward social comparison and self-discrepancy will serially mediate between PSMU and depression.
3. The proposed relationships among the study variables will remain significant after controlling for age and gender.

II. METHOD

A cross-sectional quantitative design was employed. Cross-sectional designs are widely accepted in social media psychology research for initial mediation modeling and are well-suited to testing sequential mediation hypotheses via bootstrap estimation (Hayes, 2022; Preacher & Hayes, 2008).

Participants

Participants were 377 Pakistani young adults (193 males, 184 females, *M* age = 22.9 years, *SD* = 3.41, range = 18-30) recruited from universities, educational institutes, and community youth centers in Rawalpindi and Islamabad. Eligibility required active social media use of at least one hour per day. Purposive sampling was used to maximize demographic and institutional diversity. Participants were recruited from seven universities and four community centers across both cities, who subsequently referred eligible peers a procedure well-suited to Pakistani research contexts where formal population registers are unavailable (Naderifar et al., 2017). Participants were included if they were (a) active social media users for at least one hour daily, and (b) able to respond in English. Exclusion criteria were: (a) a prior formal psychiatric diagnosis, (b) current pharmacological treatment for a mental health condition, or (c) more than 10% missing questionnaire data. A prior power analysis conducted in G*Power 3.1 (Faul et al., 2009) indicated a minimum sample of *N* = 138 for detecting a medium effect size ($f^2 = .15$) at $\alpha = .05$ with 80% power across five predictors; serial mediation guidelines recommend a minimum of *N* = 200 for reliable bootstrap intervals (Fritz & MacKinnon, 2007; Hayes, 2022). Of 415 questionnaires distributed, 392 were returned (94.5% response rate); 15 were excluded for incomplete data, yielding a final analytic sample of *N* = 377 well exceeding recommended thresholds.

Measures

[I] Bergen Social Media Addiction Scale. PSMU was assessed using the Bergen Social Media Addiction Scale (BSMAS; Andreassen et al., 2016), a six-item measure using a five-point Likert scale (1 = *Very rarely* to 5 = *Very often*) assessing the six components of behavioral addiction including salience, tolerance, mood modification, withdrawal, relapse, and conflict. The BSMAS has demonstrated strong psychometric properties across international samples including South Asian populations (Andreassen et al., 2016; Iqbal et al., 2021). In the present sample, the scale demonstrated excellent internal consistency ($\alpha = .87$), and participants reported moderate average levels of problematic social media engagement ($M = 3.47$, $SD = 0.81$), with a near-normal score distribution (skewness = 0.24). **[II] Iowa-Netherlands Comparison Orientation Measure.** Upward social comparison on social media was assessed using a 10-item adapted version of the Iowa-Netherlands Comparison Orientation Measure (INCOM-SM; Gibbons & Buunk, 1999; adapted by Vogel et al., 2014), with items modified to specifically reference social media comparison experiences (e.g., "I often compare how my life looks on social media with the lives of others I see on these platforms") on a five-point Likert scale (1 = *Disagree strongly* to 5 = *Agree strongly*). The scale yielded good internal consistency in the present sample ($\alpha = .84$), with participants reporting moderately elevated upward comparison tendencies ($M = 3.61$, $SD = 0.76$), the highest mean score observed across all study variables, and an approximately normal score distribution (skewness = 0.18).

[III] Self-Discrepancy Index Brief Version. Self-discrepancy was assessed using the Self-Discrepancy Index-Brief Version (SDI-B; Hardin & Larson, 2009), a 12-item measure assessing the perceived distance between respondents' actual self and their ideal self across attributes such as intelligence, attractiveness, and success, rated on five-point scales for both self-states; discrepancy scores reflect mean absolute deviations between actual and ideal ratings. The SDI-B demonstrated good internal consistency in the present sample ($\alpha = .83$), with participants reporting moderate levels of actual-ideal self-discrepancy ($M = 3.38$, $SD = 0.79$), and a distribution approximating normality (skewness = 0.31). **[IV] DASS-21.** Depressive symptoms were assessed using the Depression subscale of the Depression Anxiety Stress Scales-21 (DASS-21; Lovibond & Lovibond, 1995). The subscale consists of seven items measuring depressive symptoms experienced over the past week on a 4-point Likert scale ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time). Higher scores indicate greater depressive symptom severity. The DASS-21 has demonstrated good reliability and validity across diverse cultural settings, including Pakistan (Aslam et al., 2020; Lovibond & Lovibond, 1995). In the present study, the Depression subscale showed excellent internal consistency (Cronbach's $\alpha = .89$). Participants reported moderate levels of depressive symptoms ($M = 3.29$, $SD = 0.88$), and the distribution of scores was approximately normal (skewness = 0.27), supporting the suitability of the measure for subsequent statistical analyses.

Procedure

Data were collected using a structured, self-administered questionnaire distributed to eligible participants across selected universities, educational institutions, and community youth centers in Rawalpindi and Islamabad. Prior to data collection, permission was obtained from the relevant institutional authorities. Potential participants were informed about the purpose of the study and screened according to the inclusion and exclusion criteria. Individuals who met the eligibility requirements and voluntarily agreed to participate completed the questionnaire in supervised group sessions consisting of approximately 10-30 participants. Research assistants remained available throughout the sessions to clarify instructions while ensuring that participants completed the questionnaires independently. The questionnaire booklet included standardized measures of problematic social media use, upward social comparison, self-discrepancy, demographic information, and depression. Completion of the survey required approximately 20-25 minutes. All questionnaires were reviewed for completeness immediately after collection, and cases with substantial missing data were excluded from the final analysis. Before participation, all respondents received a detailed participant information sheet explaining the objectives, procedures, potential benefits, and minimal risks associated with the study. Written informed consent was obtained from every participant prior to data collection. Participation was entirely voluntary, and participants were informed of their right to decline participation or withdraw from the study at any stage without penalty or adverse consequences. To protect participants' privacy, no personally identifiable information was collected, and all responses were treated with strict confidentiality. The collected data were used solely for academic research purposes and reported only in aggregated form to ensure participant anonymity. Additionally, participants who experienced

discomfort while responding to questions related to mental health were encouraged to seek appropriate psychological support services if needed.

III. RESULTS

Bivariate Correlations

Pearson correlation coefficients were computed to examine pairwise associations among study variables. As presented in Table 1, all variables were significantly and positively intercorrelated ($p < .001$). PSMU demonstrated the strongest bivariate association with upward social comparison ($r = .54$), followed by self-discrepancy ($r = .49$) and depression ($r = .51$). Self-discrepancy showed the strongest bivariate association with depression ($r = .61$). These correlations are consistent with the hypothesized model and support the conceptual logic of the mediation pathways.

Table I: Pearson Intercorrelations Among Study Variables (N = 377)

Variables	1	2	3	4
1. Problematic Social Media Use	--			
2. Upward Social Comparison	.54**	--		
3. Self-Discrepancy	.49**	.58**	--	
4. Depression	.51**	.57**	.61**	--

** $p < .001$

Table 2 presents the regression results for the proposed serial mediation model. The findings showed that problematic social media use significantly predicted upward social comparison, indicating that greater engagement in problematic social media use was associated with increased tendencies to compare oneself with others. Problematic social media use and upward social comparison also significantly predicted self-discrepancy, suggesting that individuals who engaged more frequently in upward social comparison experienced a greater gap between their actual and ideal selves. Furthermore, problematic social media use, upward social comparison, and self-discrepancy each significantly predicted depression. The findings indicate that upward social comparison and self-discrepancy partially explained the relationship between problematic social media use and depression, while problematic social media use continued to have a direct effect on depressive symptoms. Among the predictors, self-discrepancy emerged as the strongest contributor to depression, highlighting the importance of negative self-evaluation in explaining how problematic social media use affects psychological well-being. Finally, age and gender did not significantly influence the proposed relationships, suggesting that the observed effects were consistent across demographic groups.

Table II: Regression Coefficients for all Pathways in the Serial Mediation Model (N = 377)

Predictor	M1: USC		M2: Self-Discrepancy		DV: Depression	
	B (SE)	β	B (SE)	β	B (SE)	β
Gender	.08 (.07)	.06	.06 (.07)	.05	.11 (.08)	.08
Age	-.03 (.02)	-.07	-.02 (.02)	-.05	-.04 (.02)	-.09
PSMU	.43 (.06)***	.38	.37 (.07)***	.31	.18 (.07)*	.17
USC	-	-	.46 (.07)***	.41	.24 (.07)**	.22
SD	-	-	-	-	.31(.07)***	.29
R ²	.21		.38		.47	
F	33.14*		45.27*		52.86*	

Serial Mediation Analysis

The serial mediation analysis supported all study hypotheses. Problematic social media use was positively associated with upward social comparison and self-discrepancy. In turn, both upward social comparison and self-discrepancy were associated with higher levels of depression. Furthermore, problematic social media use

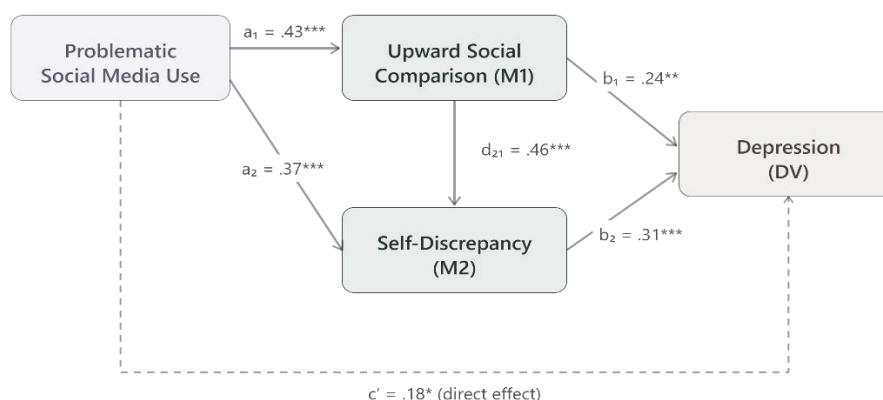
continued to predict depression even after accounting for the mediating variables, indicating that upward social comparison and self-discrepancy partially explained this relationship. Overall, the findings support the proposed serial mediation model, suggesting that problematic social media use contributes to depression both directly and indirectly through increased social comparison and self-discrepancy. Table 3 and Figure 1 present the results of the serial mediation analysis. Problematic social media use was positively associated with upward social comparison and self-discrepancy. Upward social comparison also positively predicted self-discrepancy, suggesting that greater comparison with others increases the gap between individuals' actual and ideal selves. Furthermore, problematic social media use, upward social comparison, and self-discrepancy were all positively associated with depression. The findings support the proposed serial mediation model, indicating that problematic social media use contributes to depression both directly and indirectly through increased upward social comparison and self-discrepancy. Overall, the results provide support for the hypothesized relationships among the study variables.

Table III: Path Coefficients from Serial Mediation Analysis (PROCESS Model 4, N = 377)

Pathway	<i>B</i>	SE	β	<i>t</i>	<i>p</i>	95% CI
<i>M1: Upward Social Comparison (Outcome)</i>						
PSMU → USC (<i>a</i> ₁)	.43	.06	.38	7.11	< .001	[.31, .55]
<i>M2: Self-Discrepancy (Outcome)</i>						
PSMU → SD (<i>a</i> ₂)	.37	.07	.31	5.62	< .001	[.24, .51]
USC → SD (<i>d</i> ₂₁)	.46	.07	.41	6.74	< .001	[.32, .60]
<i>Depression (Outcome)</i>						
PSMU → Dep (<i>c'</i>)	.18	.07	.17	2.58	.010	[.04, .32]
USC → Dep (<i>b</i> ₁)	.24	.07	.22	3.47	.001	[.10, .38]
SD → Dep (<i>b</i> ₂)	.31	.07	.29	4.51	< .001	[.18, .45]

Note. PSMU = Problematic Social Media Use; USC = Upward Social Comparison; SD = Self-Discrepancy; Dep = Depression.

Figure 1



* $p < .05$ ** $p < .01$ *** $p < .001$ Dashed line = direct effect after controlling for mediators

Table 4 shows that Female participants reported significantly higher levels of problematic social media use, upward social comparison, self-discrepancy, and depression relative to their male counterparts across all four variables, with all differences reaching statistical significance. Effect sizes, as indexed by Cohen's *d*, ranged from small to small-to-medium ($d = .24$ to $.36$), suggesting that while statistically reliable, the magnitude of gender differences was modest rather than large, indicating that both male and female Pakistani youth are meaningfully

affected by the psychological processes under investigation, albeit to somewhat differing degrees. The most pronounced gender difference was observed for depression ($d = .36$), followed by upward social comparison ($d = .33$) and self-discrepancy ($d = .32$), a pattern consistent with prior Pakistani research documenting elevated depressive symptomatology and heightened social comparison sensitivity among female university students relative to males, attributed partly to intensified appearance-related and social performance pressures enacted through Instagram and TikTok within a cultural context that assigns considerable evaluative weight to female conformity with idealized beauty and behavioral standards (Batoool et al., 2021; Khan et al., 2022). The gender difference in PSMU, while significant and consistent with emerging evidence of elevated problematic engagement among female social media users in South Asian contexts (Iqbal et al., 2021), yielded the smallest effect size ($d = .24$), suggesting that compulsive platform engagement unlike its downstream psychological consequences may be comparably prevalent across gender groups among Pakistani urban youth. Importantly, given that gender yielded no significant effects in the primary regression equations when entered as a covariate, these bivariate gender differences do not confound the hypothesized mediation pathways, but rather suggest that the serial mediation process through which PSMU leads to depression via upward social comparison and self-discrepancy operates consistently across both male and female participants, with gender influencing the baseline levels of these variables rather than the structural relationships among them.

Table IV: Independent Samples t-Test Comparing Men and Women Participants on Study Variables (N = 377)

	Men (n = 193)		Women (n = 184)				
Variables	M	SD	M	SD	t	p	Cohen's d
Problematic Social Media Use	3.38	0.84	3.57	0.77	-2.31	.021	0.24
Upward Social Comparison	3.49	0.79	3.74	0.71	-3.18	.002	0.33
Self-Discrepancy	3.26	0.82	3.51	0.75	-3.07	.002	0.32
Depression	3.14	0.91	3.45	0.83	-3.46	.001	0.36

IV. DISCUSSION

The present study examined a theoretically integrated serial mediation model in which upward social comparison and self-discrepancy sequentially mediated the relationship between problematic social media use and depression among Pakistani youth residing in Rawalpindi and Islamabad. Findings provided support for H1 and H2. H3 was not supported: age was not significantly associated with problematic social media use, upward social comparison, self-discrepancy, or depression in the present sample. These findings constitute the empirical test of this complete serial mediation chain within a Pakistani urban youth sample and make several substantive contributions to the cyberpsychology, social media, and mental health literatures by integrating algorithmic amplification, cultural context, and sequential self-evaluative processes into a single coherent explanatory framework. Consistent with Social Comparison Theory (Festinger, 1954), problematic social media use was positively associated with upward social comparison. This finding aligns closely with Johnson and Knobloch-Westerwick (2020), who demonstrated that algorithmically curated feeds on platforms such as TikTok and Instagram systematically increase users' exposure to upward comparison targets by prioritizing idealized, aspirational content over ordinary posts. Because heavy or compulsive users spend proportionally more time within these algorithmically shaped environments, they are exposed to a denser stream of curated, favorable self-presentations from others, making unfavorable self-other comparisons more frequent and less avoidable (Vogel et al., 2014). This pattern has also been documented specifically within Pakistani samples: Khan et al. (2022) found that Instagram use predicted appearance-related social comparison and psychological distress among Pakistani university students, and Batoool et al. (2021) similarly linked Facebook engagement to heightened social comparison among Pakistani youth. The convergence of the present findings with this local evidence base suggests that the comparison-amplifying properties of algorithmically driven platforms operate similarly across Western and South Asian user populations, despite differing cultural norms around self-presentation.

The findings further showed that upward social comparison was positively associated with self-discrepancy, supporting Self-Discrepancy Theory (Higgins, 1987). Continuous exposure to idealized online content may widen

the gap between individuals' actual and ideal selves, and repeated comparison against unrealistic standards can progressively deepen dissatisfaction with one's own achievements, appearance, or social standing. This mechanism echoes recent European findings by Humeau et al. (2022) and Ozimek et al. (2023), who each demonstrated that self-discrepancy statistically mediates the relationship between passive or comparison-driven social media use and depressive symptoms. A parallel process has been reported for appearance-specific comparisons: Barber and Koo (2023) found that TikTok use predicted body dissatisfaction specifically through appearance-based self-discrepancy. That the present findings replicate this mechanism in a Pakistani sample where idealized standards on social media may intersect with distinct, collectivist-oriented benchmarks of success such as family reputation and academic or career achievement (Triandis, 1995) suggests self-discrepancy may be a culturally generalizable pathway even though the specific content of the "ideal self" being compared against likely differs across cultural contexts. Self-discrepancy, in turn, emerged as a significant predictor of depression, indicating that negative self-evaluation plays a central role in explaining how problematic social media use affects mental health. Within the Pakistani cultural context, where academic achievement, family expectations, and social status are strongly emphasized, falling short of internalized or socially reinforced standards may carry particular psychological weight. This interpretation is directly supported by Bano and Munir (2020), who found that social comparison mediated the relationship between self-esteem and depression among Pakistani university students, and is consistent with broader evidence that psychiatric morbidity, including depressive symptomatology, is substantial among urban Pakistani populations (Husain et al., 2007; Naqvi et al., 2020).

The results also confirmed the proposed serial mediation pathway: problematic social media use appears to increase depression by encouraging upward social comparison, which subsequently widens self-discrepancy and elevates depressive symptoms. This sequential process extends prior meta-analytic and review evidence showing that problematic social media use is reliably associated with poorer mental health outcomes (Huang, 2022; Marino et al., 2018) and that passive, comparison-oriented engagement in particular predicts depressive symptoms (Lup et al., 2023). Within Pakistan specifically, Iqbal et al. (2021) previously demonstrated a direct association between problematic social media use and depression among university students; the present study builds on this by clarifying two of the specific psychological mechanisms upward comparison and self-discrepancy through which that direct association is at least partly transmitted, rather than simply confirming that the association exists. Although the mediators explained a substantial portion of the relationship between problematic social media use and depression, a direct association remained, indicating partial rather than full mediation. This residual direct effect suggests that other mechanisms not captured in the present model also contribute to depressive symptoms among heavy social media users. Plausible candidates identified in prior research include sleep disruption from late-night use (Scott et al., 2019), cyberbullying exposure (Kowalski et al., 2019), and the broader dysfunctional motivational patterns including compulsive checking and fear of missing out documented in qualitative work with adolescent social media users (Throuvala et al., 2019). Future research incorporating these variables alongside the present serial mediation framework could clarify how much of the total effect of problematic social media use on depression they jointly account for.

Age was not significantly related to problematic social media use, upward social comparison, self-discrepancy, or depression in this sample. This null finding suggests that the psychological mechanisms examined here may operate comparably across the 18-30 age range studied; however, this range is relatively narrow, and prior work suggests developmental sensitivity to social comparison processes may be more pronounced earlier in adolescence, when self-concept is less stable. This possibility could not be tested here and remains an important direction for future research using a wider or adolescent-inclusive age range. Taken together, these findings extend previous Pakistani research beyond simple bivariate associations between social media use and depression by identifying the sequential psychological mechanism upward comparison followed by self-discrepancy through which this relationship substantially operates. From an applied standpoint, interventions that build resilience against self-discrepant thinking, such as self-compassion-based programs shown to reduce distress in other clinical and non-clinical populations (Neff & Germer, 2013), may hold promise for mitigating the psychological costs of problematic social media use, as might community-based counselling models that have proven feasible for delivering mental health support in resource-limited South Asian settings (Patel et al., 2018). At a structural level, ongoing regulatory efforts targeting algorithmic amplification, such as the European Union's Digital Services Act (European Commission, 2022), point toward platform-level accountability as a complementary avenue to

individual-level intervention, though such regulatory approaches remain largely absent in the Pakistani policy context.

Limitations

The findings of this study should be interpreted in light of several limitations. First, the cross-sectional design does not permit causal inferences regarding the relationships among problematic social media use, upward social comparison, self-discrepancy, and depression. Second, the use of self-report measures may have introduced response and common method biases. Third, the purposive sample of urban Pakistani youth from Rawalpindi and Islamabad limits the generalizability of the findings to other populations and settings. Additionally, the study focused on social media use as a single construct without examining platform-specific differences or other potentially relevant psychological factors. Future research should employ longitudinal or experimental designs, include more diverse and representative samples, investigate additional mediating and moderating variables (e.g., self-esteem, resilience, fear of missing out, and social support), and compare different social media platforms to further clarify the mechanisms linking problematic social media use with depression.

Implications

The present study contributes to the growing literature on social media and mental health by identifying upward social comparison and self-discrepancy as important psychological processes linking problematic social media use with depression among Pakistani youth. These findings suggest that mental health professionals, university counselors, and educators should consider exploring not only the amount of time young people spend on social media but also how they engage with online content and how it influences their self-perceptions. Understanding these underlying cognitive processes may help inform future assessment and psychoeducational efforts aimed at promoting healthier patterns of social media use. The findings also have implications for higher education institutions and mental health awareness initiatives in Pakistan. Universities may benefit from incorporating digital well-being and social media literacy into student support programs, with particular emphasis on helping students recognize unrealistic online portrayals and the potential impact of frequent social comparison on psychological well-being. Increasing awareness of these issues may encourage healthier online behaviors and support students in developing more balanced perspectives toward social media content. Finally, the study provides a foundation for future research on social media and mental health in Pakistan. Longitudinal and experimental studies are needed to establish causal relationships among problematic social media use, upward social comparison, self-discrepancy, and depression. Future research should also examine additional psychological and contextual factors, such as fear of missing out (FoMO), self-esteem, emotion regulation, resilience, and social support, as well as explore these relationships across different age groups, regions, and cultural settings to improve the generalizability of the findings.

V. CONCLUSION

The present study demonstrates that problematic social media use is associated with higher levels of depression among Pakistani youth, with this relationship being partially explained by upward social comparison and self-discrepancy. These findings highlight the importance of understanding the psychological processes through which social media influences mental health. By integrating Social Comparison Theory and Self-Discrepancy Theory, this study contributes to the growing literature on social media and depression within the Pakistani context. Future research should build on these findings using longitudinal and experimental designs to further clarify these relationships and inform evidence-based strategies for promoting digital well-being among young adults.

Disclosure Statement

No potential conflict of interest was reported by the author.

Funding

The author received no funding from any organizations.

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