

Digital Identity and Emotional Coping among Young Adults on Instagram and TikTok

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Abstract

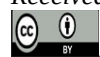
Social media platforms provide fertile ground for the construction of digital identities and are used to manage affective experiences among young adults. Yet, in the Pakistani context, research has largely overlooked psychological effects related to how young adults navigate such experiences. Social media use intensity, digitally expressed identity, emotional coping strategies, social comparison, and self-esteem were examined in this survey-based quantitative study involving $n = 265$ undergraduate university students from Karachi, Pakistan. Data were collected via a Google-based survey using five-point Likert-scale items and the Rosenberg Self-Esteem Scale (1965), with reverse scoring applied to five inversely worded items. Cronbach's alpha values ranged from .725 to .899, indicating acceptable to good reliability. Pearson correlation and regression analyses showed that social comparison was the strongest direct correlate of self-esteem ($r = -0.424$) and a significant predictor of the outcome ($R^2 = 0.180$, $p < .001$). A Baron and Kenny mediation analysis, supported by a Sobel test, revealed an inconsistent mediation (suppression) effect: digital identity expression exerted a significant positive direct effect on self-esteem, while also significantly increasing social comparison, which in turn suppressed self-esteem (indirect effect = -0.197 , Sobel $z = -6.41$, $p < .001$). Heavy social media users (more than 5 hours per day) reported comparatively higher social comparison and lower self-esteem scores. These findings suggest that young Pakistani social media users may experience less favorable psychological outcomes associated with intensive platform use, and recommend that educational institutions prioritize digital literacy and emotional wellbeing programs for university students.

Keywords: digital identity; emotional coping; social comparison; self-esteem; social media

Highlights

- Social comparison emerged as the strongest correlate of self-esteem among Pakistani young adults on Instagram and TikTok ($r = -0.424$, $p < .001$).
- Social comparison suppressed self-esteem via an inconsistent mediation (suppression) effect linking digital identity expression to self-esteem (indirect effect = -0.197 , Sobel $z = -6.41$, $p < .001$).
- Heavy social media use (>5 hours/day) was associated with elevated social comparison and comparatively lower self-esteem.

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- Findings support digital literacy and emotional wellbeing interventions for university students in Pakistan.
- Platform type significantly moderated the social comparison-self-esteem link ($b = 0.281$, $p = .021$), with a steeper negative association among Instagram users than TikTok users.

Introduction

Since there have been 5.17 billion social media users worldwide as of early 2024 it can be noted that it is extremely common in today's age especially among college age students, with popular apps such as Instagram and TikTok becoming a part of day-to-day life. It would be no surprise to note that Pakistan currently has 54.38 million social media users aged 18+ which accounted for 38.9 percent of their total adult population in 2024 (Qamar, A., & Ali, I., 2026). The potential psychological implications of such extensive use among young adults warrant closer examination.

Identity development and concept of the self are of extreme significance throughout this stage of young adulthood, where there is likely to be extensive identity exploration, social comparison, and emotion regulation mediated via the use of technological means (Erikson, 1968; Arnett, 2000). Social media platforms provide the means for self-expression through profile presentation, image editing, and curated performances of the self intended to impress an envisioned, unknown audience (Goffman, 1959; Zhao, Grasmuck, & Martin, 2008). This same environment exposes users to unlimited opportunities for comparison with others' perceived lives, or more precisely, others' curated self-portrayals (Festinger, 1954; Vogel et al., 2014).

The impact of social comparisons on self-esteem has been a major topic in empirical research within the context of Western countries, with metanalytic evidence suggesting that comparisons on social media (upward social comparison on Social network sites [Sns]) negatively impact self-esteem and positively impact depression, anxiety, and body dissatisfaction (Linardon et al., 2022; Valkenburg et al., 2022). Furthermore, Sns are often used as an outlet to handle emotions, such as distract people from stress, regulate emotional state, or seek approval from others through comments, likes, and similar feedback mechanisms.

However, many empirical research gaps exist. Existing work has been primarily carried out in the West, making it difficult to generalize to collectivistic cultures such as Pakistan, where social comparison pressures could be further enhanced due to expectations of the community (Zafar and Mobin, 2023). There is a paucity of research in considering digital identity expression as a separate and distinct antecedent variable to self-esteem and the outcomes of social comparison.

Studies that take a comparative approach looking at whether distinct platform factors (Instagram and TikTok) will provide unique moderation effects to such psychological mechanisms are also minimal.

This study aims to address these empirical gaps by considering, among university students in Karachi, Pakistan, the associations between social media intensity, digital identity expression, emotional coping, social comparison, and self-esteem, guided by Social Comparison Theory (Festinger, 1954), Goffman's (1959) dramaturgy theory and Uses and Gratifications Theory (Katz, Blumler and Gurevitch, 1973).

Research Objectives

This study aims to : (1) determine the relationships between intensity of social media use, expression of digital identity, emotional coping, social comparison, and self-esteem ; (2) test whether social comparison mediates the influence of digital identity expression and coping on self-esteem ; (3) investigate whether platform type moderates the social comparison-self-esteem influence; and (4) identify demographic disparities based on gender, age and use frequency.

Literature Review

Social Comparison Theory and Social Media

Festinger's (1954) Social Comparison Theory indicates that people have an innate tendency to compare their capabilities and thoughts by means of interacting with the individuals surrounding them. This predisposition is exacerbated systemically by social media sites, which provide a steady, algorithmic stream of other people's idealized accomplishments, looks and lifestyles (Vogel et al., 2014). Research consistently demonstrates that social comparison on social networking sites is negatively associated with self-esteem and subjective well-being (Jiang & Ngien, 2020; Valkenburg et al., 2022). Upward social comparisons—comparisons with those perceived as superior—are particularly prevalent in social media contexts and reliably associated with lower self-esteem, depressive symptoms, and body dissatisfaction (Linardon et al., 2022; Pedalino & Camerini, 2022). In the Pakistani context, Qamar and Ali (2026) found that Instagram use strongly predicted decreased self-esteem ($\beta = -0.661$, $p < .001$) among 515 university students in Islamabad, mediated by social comparison.

Digital Identity Expression and Self-Presentation

The concept of digital identity expression draws on Goffman's (1959) dramaturgical framework, which conceptualizes social interaction as a theatrical performance where individuals manage the impressions they convey to audiences. Applied to social media, users engage in strategic self-presentation by selectively curating content, editing photographs, and crafting profiles that project idealized self-images (Zhao et al., 2008; Marwick & boyd, 2011). Zhao et al. (2008) demonstrated that individuals construct anchored digital identities that emphasize social affiliations and aspirational self-images. Research confirms that the pressure to maintain idealized online personas is associated with increased anxiety, social comparison, and identity-related distress (Leary & Kowalski, 1990; Schreurs & Vandenbosch, 2021). On platforms such as Instagram and TikTok, visual-centric content combined with public metrics of validation intensifies both the motivation for impression management and the psychological costs of perceived inadequacy (Pedalino & Camerini, 2022; Herman et al., 2024).

Emotional Coping Through Social Media

Uses and Gratifications Theory (Katz et al., 1973) frames media use as an active, goal-directed behavior in which individuals select media to fulfill specific psychological needs. Applied to social media, this framework illuminates the emotional regulatory functions that platforms serve. Research indicates that individuals frequently turn to social media as a coping mechanism for stress, loneliness, and negative affect, seeking distraction and mood enhancement through relatable content (Keles et al., 2020; Raza et al., 2022). However, emotion-focused social media cop-

ing is associated with paradoxical outcomes: while individuals seek comfort online, exposure to curated portrayals of others may trigger upward social comparisons, thereby exacerbating negative emotional states (Shahid, Yousaf, & Munir, 2024). This dynamic creates a "social media spiral" in which emotional coping behaviors fuel comparison tendencies that ultimately undermine self-esteem.

Self-Esteem, Platform Differences, and the Pakistani Context

Self-esteem, defined as a person's overall subjective evaluation of their own worth (Rosenberg, 1965), has emerged as the most consistently examined psychological outcome in social media research. Meta-analytic evidence indicates that social media use is associated with lower self-esteem across adolescent and young adult populations (Saiphoo et al., 2020; Liu & Baumeister, 2016). Platform-specific effects have begun to attract attention: Instagram, with its visual emphasis and public approval metrics, has been particularly implicated in self-esteem decrements (Alfonso-Fuertes et al., 2023; Schmuck et al., 2019), while TikTok similarly exposes users to algorithmically amplified aspirational content (Ibn Auf et al., 2023). In Pakistan, Zafar and Mobin (2023) documented significant associations between social media usage patterns and mental health outcomes among youth, while Iqbal, Iftikhar, and Hussain (2024) found that heavy social media use predicted poorer psychological well-being among university students.

Methodology

Research Design and Participants

This study adopted a quantitative, cross-sectional survey design. Data were collected through a structured self-report questionnaire administered online via Google Forms. The target population comprised university students in Karachi who used Instagram, TikTok, or both platforms. A total of 266 responses were received; 265 met the inclusion criterion of voluntary informed consent. The final analytical sample comprised $n = 265$ participants (Female = 135, 50.9%; Male = 130, 49.1%; Age: 18–22 years = 81 [30.6%]; 23–26 years = 103 [38.9%]; 27–30 years = 34 [12.8%]; 30+ years = 47 [17.7%]). Regarding platform preference, 162 (61.1%) used Instagram exclusively, 82 (30.9%) used both platforms, and 21 (7.9%) used TikTok exclusively. Sampling was conducted using convenience and snowball sampling via university networks and social media channels. The sample-size target was approximately $n = 290$, based on Hair, Black, Babin, and Anderson's (2010) recommended minimum of ten respondents per scale item across the study's 29 items.

Measures

Social Media Usage Intensity was assessed using five items ($\alpha = 0.824$) adapted from the Social Media Use Integration Scale (Ellison, Steinfield, & Lampe, 2007), measuring frequency and intensity of engagement (e.g., "I use social media several times a day"). Digital Identity Expression was measured with five investigator-developed items ($\alpha = 0.789$) grounded in Goffman's (1959) impression management framework (e.g., "I carefully choose what I post to create a certain image"; "My profile reflects how I want others to see me"). Emotional Coping was assessed with four items ($\alpha = 0.833$) measuring emotion-regulated social media use (e.g., "I use social media to distract myself when stressed"). Social Comparison was measured with five items ($\alpha = 0.899$) adapted from Vogel et al. (2014) and Festinger's (1954) framework (e.g., "I sometimes feel infe-

rior after seeing others' achievements online"). Self-Esteem was assessed using the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), a ten-item instrument ($\alpha = 0.725$) with five reverse-scored items (formula: $6 - \text{raw score}$). All items were rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Data Analysis

Data were analyzed using descriptive statistics, Pearson product-moment correlations, simple regression, moderated multiple regression (for the platform interaction test), and Baron and Kenny's (1986) causal steps mediation analysis supplemented by the Sobel (1982) test. Reliability was assessed using Cronbach's alpha. All scale scores were computed as item means after reverse scoring where applicable.

Results and Discussion

Descriptive Statistics and Reliability

Table 1 presents descriptive statistics and reliability coefficients. Social Media Usage Intensity ($M = 3.32$, $SD = 1.00$), Digital Identity Expression ($M = 3.42$, $SD = 0.97$), and Emotional Coping ($M = 3.53$, $SD = 0.99$) all recorded means above the scale midpoint. Social Comparison ($M = 2.62$, $SD = 1.14$) was below the midpoint, and Self-Esteem ($M = 3.44$, $SD = 0.71$) was above. All Cronbach's alpha values exceeded 0.70 (George & Mallery, 2003), ranging from $\alpha = 0.725$ to $\alpha = 0.899$, confirming adequate internal consistency. These results are consistent with comparable studies in Pakistani university contexts (Qamar & Ali, 2026), suggesting the measures capture the intended constructs reliably. The comparatively lower alpha for the Rosenberg Self-Esteem Scale ($\alpha = 0.725$) is consistent with a widely reported pattern in translated and non-Western applications of the RSES, where the scale's five reverse-coded items are prone to response inconsistency and can attenuate overall internal consistency estimates.

Table 1: Descriptive Statistics and Reliability Coefficients ($N = 265$)

Construct	Items	M	SD	α	Interpretation
Social Media Usage Intensity	5	3.32	1.00	0.824	Good
Digital Identity Expression	5	3.42	0.97	0.789	Acceptable
Emotional Coping	4	3.53	0.99	0.833	Good
Social Comparison	5	2.62	1.14	0.899	Good
Self-Esteem (RSES)	10	3.44	0.71	0.725	Acceptable

Note. M = mean; SD = standard deviation; α = Cronbach's alpha; RSES = Rosenberg Self-Esteem Scale. $\alpha \geq 0.70$ = Acceptable; $\alpha \geq 0.80$ = Good (George & Mallery, 2003).

Correlation Analysis

Table 2 presents the Pearson correlation matrix. Social Comparison was significantly and negatively correlated with Self-Esteem ($r = -0.424$, $p < .001$), constituting the strongest bivariate relationship in the model. Social Media Usage Intensity was significantly correlated with Digital Identity Expression ($r = 0.539$) and Emotional Coping ($r = 0.560$). Digital Identity Expression showed significant correlations with Emotional Coping ($r = 0.518$) and Social Comparison ($r = 0.468$). Emotional Coping was significantly correlated with Social Comparison ($r = 0.380$).

These findings align with existing research demonstrating that higher social media engagement fosters social comparison behaviors that ultimately undermine self-esteem (Jiang & Ngien, 2020; Valkenburg et al., 2022). Direct correlations between digital engagement constructs and Self-Esteem were non-significant ($|r| < 0.10$), suggesting effects operate indirectly through Social Comparison.

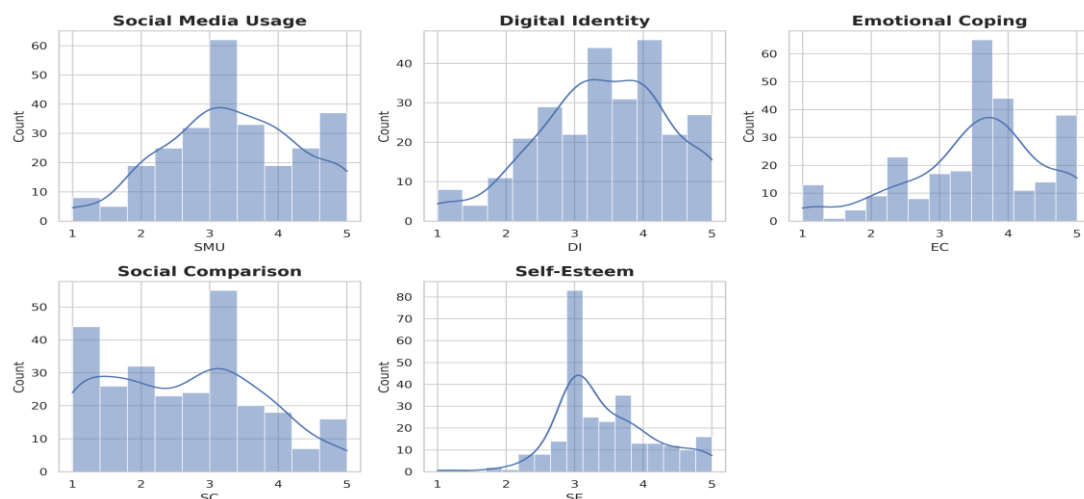


Figure 1. Distribution of Composite Study Variables (SMU = Social Media Usage; DI = Digital Identity; EC = Emotional Coping; SC = Social Comparison; SE = Self-Esteem).

Table 2: Pearson Correlation Matrix (N = 265)

Variable	1	2	3	4	5
1. Social Media Usage Intensity	—				
2. Digital Identity Expression	.539***	—			
3. Emotional Coping	.560***	.518***	—		
4. Social Comparison	.379***	.468***	.380***	—	
5. Self-Esteem	.091	.059	.033	-.424***	—

Note. *** $p < .001$.

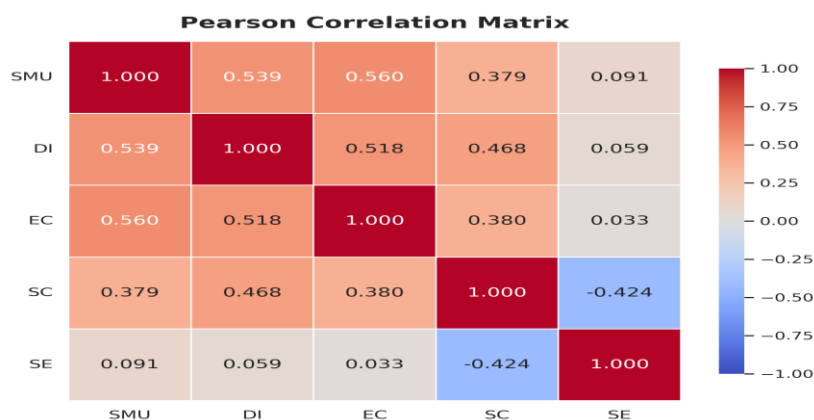


Figure 2. Pearson Correlation Matrix among Study Variables (N = 265).

Regression Analysis

Simple regression analyses predicting Self-Esteem confirmed Social Comparison as the dominant predictor ($b = -0.263$, $R^2 = 0.180$, $p < .001$), consistent with Social Comparison Theory (Festinger, 1954) and prior empirical work in similar contexts (Qamar & Ali, 2026). Social Media Usage Intensity accounted for negligible variance in Self-Esteem ($R^2 = 0.008$). Digital Identity Expression ($R^2 = 0.003$) and Emotional Coping ($R^2 = 0.001$) showed near-zero direct predictive effects, consistent with the hypothesized indirect mediation pathway.

Mediation Analysis

Mediation analysis followed the Baron and Kenny (1986) four-step causal steps procedure, supplemented by the Sobel (1982) test, with Digital Identity Expression as the independent variable, Social Comparison as the mediator, and Self-Esteem as the dependent variable. Full results are presented in Table 3.

Step 1: The total effect of Digital Identity Expression on Self-Esteem was non-significant ($b = 0.043$, $p = .336$). Step 2: Digital Identity Expression significantly predicted Social Comparison (path a : $b = 0.548$, $t = 8.58$, $p < .001$). Step 3: Social Comparison was a significant negative predictor of Self-Esteem when controlling for Digital Identity Expression (path b : $b = -0.359$, $t = -9.65$, $p < .001$), while Digital Identity Expression became a significant positive predictor (path c' : $b = 0.240$, $p < .001$). The Sobel test confirmed a significant indirect effect (indirect = -0.197 , Sobel $z = -6.41$, $p < .001$). The overall model was significant ($R^2 = 0.265$, $F(2, 262) = 47.15$, $p < .001$).

This pattern constitutes an inconsistent mediation or suppression effect (MacKinnon, Fairchild, & Fritz, 2007): digital identity expression shows a positive direct association with self-esteem—reflecting the self-affirmative function of identity curation documented by Toma and Hancock (2013)—and is simultaneously associated with increases in social comparison, which in turn is associated with lower self-esteem. The very behaviors through which young adults seek to affirm positive identities online may, by exposing them to competitive social referents, paradoxically erode the self-esteem they seek to enhance. To fully address Research Objective 2, two parallel single-mediator models were tested with Social Comparison as the mediator: the Digital Identity Expression model reported above, and a second model with Emotional Coping as the independent variable, which yielded a similarly significant indirect effect (indirect = -0.138 , Sobel $z = -5.28$, $p < .001$), consistent with the "social media spiral" conceptualization (Shahid et al., 2024).

Table 3: Baron and Kenny Mediation Analysis Results ($N = 265$)

Path	b	SE	t	p	Indirect Effect	Sobel z
Path a: Digital Identity Expression → Social Comparison	0.548	0.064	8.58	< .001		
Path b: Social Comparison → Self-Esteem (controlling DIE)	-0.359	0.037	-9.65	< .001		
Path c': Digital Identity → Self-Esteem (controlling SC)	0.240	0.044	5.50	< .001		
Indirect effect (DIE → SC → SE)					-0.197	-6.41***
Path a: Emotional Coping → So-	0.435	0.065	6.67	< .001		

cial Comparison

Indirect effect (EC → SC → SE)	-0.138	-5.28***
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Note. DIE = Digital Identity Expression; EC = Emotional Coping; SC = Social Comparison; SE = Self-Esteem. *b* = unstandardized regression coefficient. *** $p < .001$.

Group Comparisons

Males reported higher Social Comparison ($M = 2.795$) than females ($M = 2.443$), while females reported slightly higher Self-Esteem ($M = 3.499$ vs. $M = 3.370$). This gender difference in social comparison—counter to findings in appearance-focused Western research—may reflect the salience of achievement- and status-based comparisons among Pakistani males (Linardon et al., 2022). Age-based differences indicated that Self-Esteem was lowest among the youngest cohort (18–22 years: $M = 3.301$) and highest among 27–30-year-olds ($M = 3.594$), consistent with developmental evidence that early adulthood is a period of heightened identity vulnerability (Arnett, 2000). Heavy users (5+ hours daily) reported the highest Social Comparison ($M = 3.245$) and lowest Self-Esteem ($M = 3.235$) across all usage groups, showing a pattern of higher social comparison and lower self-esteem among heavier users, consistent with prior research (Keles et al., 2020). Platform comparisons revealed that users engaging with both Instagram and TikTok simultaneously reported the highest Social Comparison ($M = 2.885$) and lowest Self-Esteem ($M = 3.404$), suggesting that multi-platform engagement may compound exposure to social comparison stimuli. To formally test the moderating role of platform type proposed in Research Objective 3, a moderated regression analysis (Self-Esteem regressed on Social Comparison, Platform, and their interaction) was conducted comparing single-platform Instagram ($n = 162$) and TikTok ($n = 21$) users. Participants reporting exclusive Instagram or exclusive TikTok use were included; participants using both platforms ($n = 82$) were excluded from this specific test because they could not be assigned uniquely to either platform. The interaction term was statistically significant ($b = 0.281$, $p = .021$), indicating that the negative association between social comparison and self-esteem was steeper for Instagram users (simple slope $b = -0.272$) than for TikTok users (simple slope $b \approx 0.009$, non-significant). The observed pattern suggests a potentially stronger negative association between social comparison and self-esteem among exclusive Instagram users; however, the small TikTok-only subsample ($n = 21$) substantially limits confidence in this platform comparison and warrants replication with a larger, more balanced sample.

Limitations

The cross-sectional design precludes causal inference; longitudinal designs are needed to establish directionality. Convenience sampling limits generalizability beyond Karachi-based university students. The Baron and Kenny (1986) procedure is less robust than bootstrapping approaches (Preacher & Hayes, 2008); future research should replicate findings using the PROCESS macro. All data were self-reported, introducing potential social desirability bias.

Implications

Theoretically, this study extends Social Comparison Theory (Festinger, 1954) to a collectivist, non-Western digital context, providing evidence of an inconsistent mediation pattern—a positive direct association coupled with a negative indirect association through social comparison—linking digitally expressed identity to self-esteem. Practically, universities and higher education

institutions in Pakistan should incorporate digital literacy curricula that build students' critical awareness of curated online self-presentation, alongside accessible counselling services that address the psychological costs of habitual social comparison. For policymakers and platform designers, the findings support awareness campaigns and platform-level interventions (e.g., usage-time prompts, comparison-reduction features) targeted at heavy and multi-platform users, who exhibited the greatest psychological risk. Parents and educators can also play a preventive role by encouraging balanced, intentional social media use rather than passive, comparison-driven engagement among young adults.

Conclusion

This study offers empirical support that social comparison is a primary psychological process associated with self-esteem among Pakistani university students in the context of social media usage. The analysis indicated a significant indirect association between digital identity expression and self-esteem through social comparison, reflecting an inconsistent mediation pattern: digital identity expression showed a positive direct association with self-esteem, while simultaneously being associated with increases in social comparison, which in turn was associated with lower self-esteem. Heavy social media users and multi-platform users showed comparatively less favorable self-reported outcomes in this sample. These findings highlight the need for targeted digital literacy interventions in Pakistani higher education settings that equip students with critical awareness of curated online portrayals, alongside counselling resources addressing the psychological costs of social comparison.

Author's Contribution

Nasir Hussain

Conceptualization, Methodology, Formal Analysis, Investigation

Salman Khan Mahsud

Data Curation, Writing Original Draft, Writing Review & Editing,

Rohail Rahat

Visualization, Project Administration:

Conflicts of Interest

The author declares no conflict of interest.

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Data Availability Statement

The anonymized dataset, codebook, computational notebook, and analysis scripts supporting the findings of this study are openly available in a GitHub repository at <https://github.com/nasirhussain92/social-media-digital-identity-jmh>, archived on Zenodo under <https://doi.org/10.5281/zenodo.21925532>, under a CC BY 4.0 license (dataset) and MIT license (code).

Use of Generative AI

The author used Claude (Anthropic) to assist in preparing the reproducibility notebook and analysis scripts, generating the descriptive and correlation figures from the study data, and formatting the manuscript for journal submission. Generative AI was not used to design the study, collect or fabricate data, or generate the manuscript's substantive text, interpretations, or conclusions. All

AI-assisted outputs, including code, figures, and formatting, were reviewed and verified by the author for accuracy prior to submission.

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