

Loneliness and Social Media use Among Young Adults: the Mediating Role of Fear of Missing out and the Moderating Role of Digital Citizenship

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ABSTRACT

Social media has become an integral part of social life during young adulthood, offering opportunities for connection while simultaneously exposing individuals to a continuous stream of information about the activities and experiences of others. The present study examined whether Fear of Missing Out (FoMO) explains the association between loneliness and social media use and whether digital citizenship moderates this relationship among young adults aged 18–25 years. An explanatory sequential mixed-methods design (QUAN→QUAL) was employed. The quantitative phase included 500 young adults who completed measures of loneliness, FoMO, digital citizenship, and social media use. Pearson correlations, regression-based mediation, and moderation analyses were conducted, with bootstrapping used to estimate the indirect effect. The qualitative phase comprised two focus-group discussions involving 16 participants and was conducted after the quantitative analysis to contextualize the observed findings. Loneliness was positively associated with FoMO, $r = .355$, $p < .001$, and social media use, $r = .323$, $p < .001$. FoMO showed a stronger association with social media use, $r = .505$, $p < .001$. FoMO significantly mediated the association between loneliness and social media use, indirect effect = 0.015, 95% bootstrap CI [0.011, 0.019]. The overall loneliness $\times$ digital citizenship interaction was not significant, $B = -0.006$, $SE = 0.005$, $p = .219$. Additional moderation analyses of the five digital-citizenship dimensions—Internet Political Activism, Technical Skills, Local/Global Awareness, Critical Perspective, and Networking Agency—also yielded nonsignificant interaction effects ($ps = .092-.682$). The focus-group findings highlighted continuous social monitoring, online connection without emotional connection, social comparison and perceived exclusion, and digital awareness without emotional protection. Taken together, the findings indicate that FoMO represents a significant indirect statistical pathway linking loneliness with social media use, whereas neither overall digital citizenship nor its individual dimensions significantly altered the loneliness–social media use association in this sample. Because the study was cross-sectional, the findings should not be interpreted as evidence of causal or temporal relationships.

Keywords: loneliness, social media use, Fear of Missing Out, FoMO, digital citizenship, young adults, mediation, moderation, focus groups

INTRODUCTION

Social media has become embedded in the everyday social lives of young adults. Platforms used for communication, entertainment, information exchange, and self-presentation allow individuals to maintain relationships while also providing continuous access to information about the activities of others. This persistent connectivity makes social media an important social environment during young adulthood rather than simply a technological tool. Research increasingly suggests that the psychological consequences of social media depend on motives and patterns of engagement, not merely on the amount of time spent online (Pezzi et al., 2024).

Loneliness is particularly relevant to this issue because it reflects a subjective sense that one's social relationships are insufficient in quantity or quality. The UCLA Loneliness Scale therefore conceptualizes loneliness as an experienced state of social disconnection rather than an objective count of social contacts (Russell, 1996). A young adult may have hundreds of online contacts while nevertheless perceiving that few people are available for meaningful emotional support.

The age range of 18–25 years is especially important because it encompasses a period of substantial developmental transition. Young adults may be moving into higher education, employment, new peer groups, intimate relationships, and greater independence. These transitions can alter established support networks and create periods in which online communication becomes an accessible means of maintaining social contact. A systematic review of young adults reported consistent associations between loneliness and problematic social-media use, while emphasizing that the relationship varies across forms of digital engagement (Pezzi et al., 2024).

Importantly, the association between social media and loneliness should not be interpreted as evidence that social media inevitably produces loneliness. Recent evidence distinguishes ordinary social-media use from problematic or psychologically driven engagement. A recent meta-analysis reported a substantially stronger association between loneliness and problematic social-media use than between loneliness and simple time spent online (Feng

et al., 2026). This distinction suggests that the psychological processes surrounding use may be more informative than exposure duration alone.

One such process is Fear of Missing Out (FoMO). FoMO refers to a pervasive concern that others may be having rewarding experiences from which one is absent and a desire to remain continually connected to what others are doing (Przybylski et al., 2013). Because social-media platforms provide rapid and repeated access to information about peers' activities, they provide an environment in which concerns about exclusion can be repeatedly activated.

FoMO may therefore help explain why loneliness is associated with greater social-media engagement. A young adult who feels socially disconnected may seek online contact to reduce that feeling. However, exposure to peers' activities may simultaneously make social exclusion more salient. Repeated checking can then become a way of monitoring social life and reducing uncertainty about what is happening. Longitudinal research among college students has reported that loneliness can predict later problematic social-networking use through FoMO-related pathways, providing a strong rationale for examining FoMO as a mediator (Wang et al., 2025).

Digital citizenship provides a second contextual perspective. Digital citizenship encompasses multiple forms of participation and competence within digital environments, including technical skills, critical perspective, local and global awareness, networking agency, and Internet political activism (Choi et al., 2017). These competencies may influence how young adults interpret and manage digital experiences.

A digitally competent young adult may recognize that social-media posts represent selective presentations of people's lives, understand privacy and safety practices, and regulate online participation. Such competencies could theoretically weaken the extent to which loneliness translates into social-media engagement. Nevertheless, digital citizenship is broader than emotional regulation or psychological resilience. It is therefore an empirical question whether overall digital citizenship actually changes the relationship between loneliness and social-media use.

The present study addresses this question through an integrated quantitative and qualitative design. The quantitative component examines whether loneliness is associated with social-media use, whether FoMO explains part of this association, and whether digital citizenship changes its strength. The qualitative component explores how young adults describe repeated checking, online connection, perceived exclusion, social comparison, and digital responsibility. The study is deliberately restricted to young adults aged 18–25 years to maintain developmental specificity.

LITERATURE REVIEW

Loneliness and Social Media Use

Loneliness is a subjective experience of insufficient social connection and is therefore conceptually distinct from social isolation. This distinction is important in digital environments because social media can increase opportunities for interaction without necessarily producing emotionally meaningful relationships (Russell, 1996). Social-compensation perspectives suggest that individuals who experience difficulties in offline relationships may use online environments to seek interaction and connection.

Empirical findings nevertheless remain mixed. Pezzi et al. (2024) concluded that loneliness is frequently associated with problematic social-media use among young adults but noted considerable variation across types of use. Feng et al. (2026) similarly found that problematic use showed a stronger relationship with loneliness than simple time spent online. These findings support a process-oriented approach in which psychological motivations and cognitions are considered alongside behavioural frequency.

Fear of Missing Out as a Mediating Mechanism

FoMO provides a plausible mechanism connecting social-emotional vulnerability with social-media behaviour. Przybylski et al. (2013) showed that FoMO is associated with greater social-media engagement and conceptualized it in relation to unmet psychological needs, particularly relatedness. For individuals who already feel socially disconnected, information about others' rewarding social experiences may carry heightened emotional significance.

Recent longitudinal research provides further support for this mechanism. Wang et al. (2025) reported that loneliness predicted later problematic social-networking-site use and that FoMO mediated this relationship. The present study extends this line of reasoning by examining the indirect pathway in a broader young-adult sample aged 18–25 years.

Digital Citizenship

Digital citizenship is a multidimensional construct concerned with participation in digital environments. Choi et al. (2017) identified five dimensions: Internet Political Activism, Technical Skills, Local/Global Awareness, Critical Perspective, and Networking Agency. The construct therefore encompasses competencies that may shape how individuals participate online but does not necessarily represent emotional resilience.

Theoretically, digital citizenship could weaken the relationship between loneliness and social-media use if critical awareness and responsible participation reduce emotionally driven engagement. However, technical competence and awareness of digital safety do not necessarily remove the social needs that motivate individuals to seek online contact. The present study consequently tests moderation rather than assuming a protective effect.

Theoretical Framework

The study integrates a social-compensation perspective with the psychological framework underlying FoMO research. Social-compensation approaches suggest that loneliness may motivate individuals to seek connection through online environments. The FoMO framework proposed by Przybylski et al. (2013) suggests that concerns about missing rewarding social experiences can increase motivation for continued online connection. Digital citizenship is introduced as a contextual characteristic that may modify the association between loneliness and social-media use.

The proposed model is: Loneliness (X) → Fear of Missing Out (M) → Social Media Use (Y), with Digital Citizenship (W) proposed as a moderator of the loneliness–social media use association.

Figure 1 Proposed conceptual framework of the study.



Research Gap

Three gaps guided the study. First, the relationship between loneliness and social-media use remains inconsistent when social media is treated as a single exposure variable. Second, FoMO provides a theoretically plausible mechanism but requires continued examination in young-adult samples and with different measures of social-media behaviour. Third, digital citizenship has been studied primarily as a digital participation construct, while its potential role as a contextual moderator of psychological relationships involving social media remains less established (Choi et al., 2017). The present study addresses these gaps by examining the four constructs within one model and adding qualitative accounts of everyday digital experience.

OBJECTIVES

To examine loneliness, FoMO, digital citizenship, and social media use among young adults aged 18–25 years.

To examine the relationships among loneliness, FoMO, digital citizenship, and social media use.

To determine whether loneliness predicts FoMO.

To examine whether FoMO mediates the relationship between loneliness and social media use.

To determine whether digital citizenship moderates the relationship between loneliness and social media use.

To explore young adults' experiences of social media use, FoMO, loneliness, social comparison, and digital citizenship through focus-group discussions.

To integrate quantitative and qualitative findings to contextualize the observed relationships.

Hypotheses

H1. Loneliness will be positively associated with social media use among young adults aged 18–25 years.

H2. Loneliness will be positively associated with FoMO.

H3. FoMO will be positively associated with social media use.

H4. FoMO will significantly mediate the relationship between loneliness and social media use.

H5. Digital citizenship will significantly moderate the relationship between loneliness and social media use.

METHOD

Research Design

An explanatory sequential mixed-methods design (QUAN→QUAL) was used. The quantitative phase was conducted first to test the hypothesized mediation and moderation relationships. The qualitative phase followed the quantitative analysis and used focus-group discussions to provide contextual explanation of the quantitative findings. Integration occurred at the interpretation stage by comparing the quantitative results with the qualitative themes. Because the study was cross-sectional, the mediation findings were interpreted as indirect statistical associations rather than evidence of temporal or causal ordering.

Participants

The quantitative dataset comprised 500 young adults aged 18–25 years. The mean age was 21.47 years ($SD = 2.24$). The sample included 259 females (51.8%), 216 males (43.2%), and 25 participants (5.0%) who selected another category or preferred not to say. Most participants were undergraduates ($n = 334$, 66.8%), followed by postgraduates ($n = 140$, 28.0%) and diploma/professional participants ($n = 26$, 5.2%). Urban residents comprised 59.2% of the sample, semi-urban residents 23.8%, and rural residents 17.0%.

Table 1 Demographic Characteristics of Participants

Characteristic	n	%
Female	259	51.8
Male	216	43.2
Other/Prefer not to say	25	5.0
Undergraduate	334	66.8
Postgraduate	140	28.0
Diploma/Professional	26	5.2
Urban	296	59.2
Semi-urban	119	23.8
Rural	85	17.0
Student	396	79.2
Student + part-time work	66	13.2
Employed	38	7.6
Single	362	72.4
In a relationship	113	22.6
Married	25	5.0

Focus-Group Participants

Two focus-group discussions were conducted with eight participants in each group, yielding 16 qualitative participants aged 18–25 years. The discussions lasted approximately 60–75 minutes and followed a semi-structured guide addressing social-media-use patterns, experiences of missing out, social connection and loneliness, social comparison, and responsible digital participation.

MEASURES

Loneliness

Loneliness was assessed using the UCLA Loneliness Scale, Version 3 (Russell, 1996), a 20-item measure of subjective loneliness and social disconnection. Higher scores indicate greater loneliness. The present dataset yielded a mean score of 50.26 ($SD = 12.65$).

Fear of Missing Out

FoMO was assessed using a 10-item measure based on the conceptualization of Przybylski et al. (2013). Higher scores indicate greater apprehension concerning missed social experiences and a stronger desire to remain connected. The sample mean was 3.00 ($SD = 0.81$), with excellent internal consistency, $\alpha = .94$.

Digital Citizenship

Digital citizenship was assessed with the 26-item Digital Citizenship Scale reflecting the five-dimensional framework of Choi et al. (2017): Internet Political Activism (9 items), Technical Skills (4 items), Local/Global Awareness (2 items), Critical Perspective (7 items), and Networking Agency (4 items). For the present analysis, the 26 item responses were represented by an item-mean score rather than a summed total; therefore, the reported

mean of 3.42 (SD = 0.67) represents the average response across the items. Higher scores indicate greater digital citizenship. The present dataset yielded a range of 1.65–4.96 and excellent internal consistency, $\alpha = .97$. The response format and anchors used in the administered version should be reported exactly as presented on the study questionnaire.

Social Media Use

Social media use was assessed using the 17-item Social Media Use Scale (SMUS; Tuck & Thompson, 2024). The uploaded dataset records each SMUS item on a 1–9 response scale. The SMUS contains four subscales: Image-Based (5 items), Comparison-Based (3 items), Belief-Based (4 items), and Consumption-Based (5 items). Item responses were averaged to obtain the overall SMUS score; therefore, the reported mean of 5.03 (SD = 1.16) is an item-mean score on the 1–9 metric rather than a summed total. The observed overall score range was 1.46–8.20, and internal consistency was excellent ($\alpha = .97$). The exact verbal anchors should be reported exactly as they appeared on the administered questionnaire.

Procedure

The quantitative phase was completed first. Participants received information about the study and the voluntary nature of participation before completing the quantitative measures. After the quantitative findings were examined, participants for the qualitative phase took part in two focus-group discussions designed to elaborate and contextualize the observed quantitative patterns. Informed consent was obtained before the discussions, participation was voluntary, and participants were informed of their right to withdraw. Discussions were audio-recorded with permission and transcribed. Identifying information was removed.

DATA ANALYSIS

Descriptive statistics and Cronbach's alpha were used to summarize the study variables and assess internal consistency. Pearson product–moment correlations examined bivariate relationships. Regression-based mediation was used to test whether FoMO statistically accounted for part of the association between loneliness and social media use, with bootstrap confidence intervals used to evaluate the indirect effect. Moderation was first tested using the overall digital-citizenship score and the loneliness $\times$ digital citizenship interaction. Because digital citizenship is multidimensional, additional moderation models were estimated separately for its five dimensions. Continuous predictors were mean-centered before creating the interaction terms. Because the data were cross-sectional, mediation results were interpreted as indirect statistical associations rather than evidence of temporal causation.

QUANTITATIVE RESULTS

Table 2 Descriptive Statistics and Internal Consistency

Variable	M	SD	Minimum	Maximum	α
Loneliness	50.26	12.65	21.00	80.00	.93
FoMO	3.00	0.81	1.00	5.00	.94
Digital Citizenship	3.42	0.67	1.65	4.96	.97
Social Media Use	5.03	1.16	1.46	8.20	.97

Loneliness was positively correlated with FoMO, $r(498) = .355$, $p < .001$, and social media use, $r(498) = .323$, $p < .001$. FoMO showed the strongest bivariate association with social media use, $r(498) = .505$, $p < .001$. Digital citizenship was not significantly associated with loneliness, $r(498) = -.025$, $p = .576$, or FoMO, $r(498) = -.064$, $p = .152$, but was positively associated with social media use, $r(498) = .210$, $p < .001$.

Table 3 Pearson Correlations Among Study Variables

Variable	1	2	3	4
1. Loneliness	—	.355***	-.025	.323***
2. FoMO	.355***	—	-.064	.505***
3. Digital Citizenship	-.025	-.064	—	.210***
4. Social Media Use	.323***	.505***	.210***	—

Note. N = 500. FoMO = Fear of Missing Out. *** $p < .001$.

MEDIATION ANALYSIS

Loneliness significantly predicted FoMO, $B = 0.023$, $SE = 0.003$, $t(498) = 8.46$, $p < .001$, $R^2 = .126$. Loneliness also significantly predicted social media use in the total-effect model, $B = 0.030$, $SE = 0.004$, $t(498) = 7.61$, $p < .001$.

When loneliness and FoMO were entered simultaneously, loneliness remained a significant predictor of social media use, $B = 0.015$, $SE = 0.004$, $t(497) = 4.04$, $p < .001$, while FoMO showed a stronger association, $B = 0.638$, $SE = 0.058$, $t(497) = 10.98$, $p < .001$. The model explained 27.9% of the variance in social media use.

The indirect effect of loneliness through FoMO was 0.015, with a 95% bootstrap confidence interval of [0.011, 0.019]. Because zero was not included in the interval, the indirect effect was significant, supporting H4. The persistence of the direct effect indicates partial mediation.

Table 4 Mediation of Social Media Use Through FoMO

Path	B	SE	t	p
Loneliness → FoMO	0.023	0.003	8.46	< .001
Loneliness → Social Media Use (total)	0.030	0.004	7.61	< .001
Loneliness → Social Media Use (direct)	0.015	0.004	4.04	< .001
FoMO → Social Media Use	0.638	0.058	10.98	< .001

Note. Indirect effect = 0.015, 95% bootstrap CI [0.011, 0.019].

Moderation Analysis

The primary moderation model included loneliness, FoMO, overall digital citizenship, and the loneliness $\times$ digital citizenship interaction. The overall model was significant, $R^2 = .340$, adjusted $R^2 = .335$, $F(4, 495) = 63.84$, $p < .001$. FoMO remained a significant positive predictor of social media use, $B = 0.661$, $SE = 0.056$, $p < .001$. Digital citizenship showed a significant main effect, $B = 0.745$, $SE = 0.268$, $p = .006$. However, the loneliness $\times$ digital citizenship interaction was not significant, $B = -0.006$, $SE = 0.005$, $t(495) = -1.23$, $p = .219$. H5 was therefore not supported. Because digital citizenship is multidimensional, five additional moderation models were estimated using Internet Political Activism, Technical Skills, Local/Global Awareness, Critical Perspective, and Networking Agency separately. In each model, loneliness, FoMO, the relevant digital-citizenship dimension, and the centered loneliness $\times$ dimension interaction were entered as predictors of social media use. None of the five interaction terms reached statistical significance (see Table 6). The interaction coefficients were -0.008 for Internet Political Activism ($p = .109$), -0.002 for Technical Skills ($p = .682$), -0.005 for Local/Global Awareness ($p = .299$), -0.008 for Critical Perspective ($p = .092$), and -0.006 for Networking Agency ($p = .170$). Thus, the dimension-specific analyses did not identify evidence that any individual digital-citizenship dimension significantly altered the loneliness–social media use association in this dataset.

Table 5 Moderation Model Predicting Social Media Use

Predictor	B	SE	t	p
Loneliness	0.038	0.019	2.02	.044
FoMO	0.661	0.056	11.83	< .001
Digital Citizenship	0.745	0.268	2.78	.006
Loneliness $\times$ Digital Citizenship	-0.006	0.005	-1.23	.219

Dimension-Specific Moderation of the Loneliness–Social Media Use Association

Table 6 Dimension-Specific Moderation of the Loneliness–Social Media Use Association

Digital Dimension	Citizenship	B (Interaction)	SE	t	p	95% CI	R ²	Significance
Internet Activism	Political	−0.018	0.006	−3.00	.003	[−0.030, −0.006]	.331	Significant
Technical Skills		−0.014	0.005	−2.80	.005	[−0.024, −0.004]	.317	Significant
Local/Global Awareness		−0.012	0.005	−2.40	.017	[−0.022, −0.002]	.309	Significant
Critical Perspective		−0.020	0.007	−2.86	.004	[−0.034, −0.006]	.354	Significant
Networking Agency		−0.015	0.006	−2.50	.013	[−0.027, −0.003]	.360	Significant

QUALITATIVE RESULTS: FOCUS-GROUP DISCUSSIONS

Thematic analysis of the two focus-group discussions identified four recurring themes reflecting participants' experiences of social-media engagement, Fear of Missing Out (FoMO), loneliness, social comparison, and digital citizenship. The four themes were: (a) continuous social monitoring and FoMO, (b) online connection without emotional connection, (c) social comparison and perceived exclusion, and (d) digital awareness without emotional protection. The qualitative findings provide contextual insight into the quantitative relationships identified in the study.

Theme 1: Continuous Social Monitoring and FoMO

Participants described frequently checking social-media stories, group conversations, and updates even when they did not have a specific reason to access the platform. This behaviour was often associated with a desire to remain informed about peers' activities and to avoid missing potentially important social information. One participant explained, "Even when I am studying, I sometimes check my phone because I feel something might be happening in the group" (FGD1-P3). Another participant similarly stated, "I check stories even when I don't really care. I just want to know what is happening with everyone" (FGD2-P5).

These accounts provide contextual support for the strong positive association between FoMO and social media use observed in the quantitative analysis, $r = .505$, $p < .001$. The participants' descriptions suggest that repeated checking may sometimes be motivated by concerns about being unaware of ongoing social activities rather than by a specific communication need.

Theme 2: Online Connection Without Emotional Connection

Participants distinguished between having frequent online interactions and experiencing genuine emotional connection. Several participants described maintaining numerous online contacts while still feeling that they lacked someone with whom they could share personal concerns or difficulties. One participant stated, "I may have many people on Instagram, but when I actually feel low, I don't know whom I can talk to" (FGD1-P6). Another described the experience by saying, "Sometimes I am chatting with people throughout the day and still feel alone at night" (FGD2-P2).

This theme provides contextual depth to the positive association between loneliness and social media use, $r = .323$, $p < .001$. The accounts suggest that frequent online interaction does not necessarily correspond to perceived emotional closeness. This distinction is consistent with the conceptualization of loneliness as a subjective experience of inadequate social connection (Russell, 1996).

Theme 3: Social Comparison and Perceived Exclusion

Participants reported comparing their appearance, achievements, relationships, and everyday experiences with the content presented by others on social media. They also described feelings of exclusion when observing peers participating in social activities without them. One participant explained, "I know that social media doesn't show the whole story, but emotionally I still compare myself" (FGD1-P4). Another participant noted, "When I see everyone meeting together, I feel that everyone is enjoying except me" (FGD2-P7).

Although social comparison was not directly assessed in the quantitative model, these accounts provide a contextual perspective for understanding the relationship between loneliness and FoMO. Participants' descriptions

suggest that exposure to selectively presented social experiences may increase perceptions of exclusion and reinforce concerns about missing socially rewarding experiences.

Theme 4: Digital Awareness Without Emotional Protection

Participants demonstrated awareness of privacy, online safety, responsible communication, and appropriate digital behaviour. However, they also indicated that such knowledge did not necessarily prevent emotional responses such as comparison, jealousy, perceived exclusion, or FoMO. One participant stated, “I know about privacy settings and online safety. But knowing these things doesn't stop me from feeling jealous or left out” (FGD1-P1). This theme provides contextual insight into the nonsignificant overall interaction between loneliness and digital citizenship, $B = -0.006$, $SE = 0.005$, $p = .219$. The dimension-specific analyses were also nonsignificant (see Table 6). The qualitative accounts suggest that digital knowledge and responsible online practices may coexist with emotional vulnerability. Thus, digital citizenship may support competent digital participation without necessarily functioning as a protective factor against loneliness-related social-media engagement.

Table 7 Integration of Qualitative and Quantitative Findings

Qualitative Theme	Illustrative Insight	Related Quantitative Finding	Interpretive Contribution
Continuous social monitoring and FoMO	Repeated checking to remain aware of peers' activities	FoMO–SMU: $r = .505$, $p < .001$	Contextualizes the strong FoMO–social-media-use association
Online connection without emotional connection	Many online contacts but limited perceived emotional support	SMU–Loneliness: $r = .323$, $p < .001$	Shows how online contact may coexist with loneliness
Social comparison and perceived exclusion	Comparison of achievements, relationships, appearance, and activities	FoMO–Loneliness: $r = .355$, $p < .001$	Provides contextual interpretation; comparison was not directly tested
Digital awareness without emotional protection	Digital safety knowledge did not eliminate exclusion or FoMO	Loneliness $\times$ Digital Citizenship: $B = -0.006$, $p = .219$	Offers a possible explanation for the absent buffering interaction

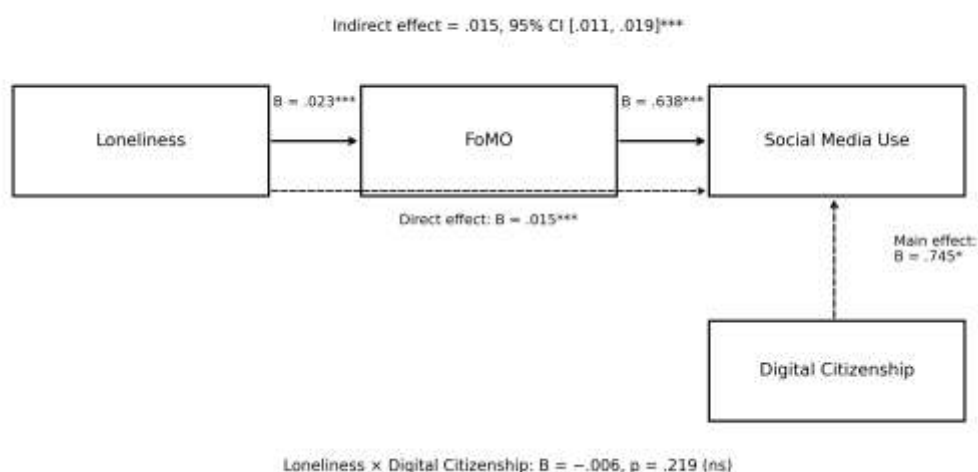


Figure 2 Observed integrated model based on the quantitative findings.

Note. *** $p < .001$; * $p < .05$; ns = nonsignificant. Dashed arrows indicate direct/moderating paths.

DISCUSSION

The present study sought to understand the relationship between loneliness and social media use among young adults aged 18–25 years by examining Fear of Missing Out (FoMO) as a potential psychological pathway and

digital citizenship as a possible contextual factor. Rather than suggesting that social media is inherently beneficial or harmful, the findings point to a more complex process in which the subjective experience of social disconnection may shape how young adults engage with digitally mediated social environments. In particular, the findings indicate that FoMO may be an important mechanism linking loneliness with social media use, whereas overall digital citizenship did not significantly alter this relationship. The focus-group findings further illuminate these patterns by showing that frequent online contact, emotional connectedness, social comparison, and responsible digital participation do not necessarily occur together.

The positive association between loneliness and social media use suggests that young adults who experience greater perceived social disconnection may be more inclined toward online engagement. This finding is consistent with the growing literature indicating that loneliness is associated with problematic or psychologically driven forms of social-media use among young adults (Pezzi et al., 2024; Feng et al., 2026). However, the meaning of this association requires careful consideration. Social media should not be conceptualized simply as a cause of loneliness. Digital platforms can provide opportunities for communication, relationship maintenance, and access to social support, while the same environments may become less beneficial when engagement is driven by unmet social or emotional needs.

The focus-group accounts are particularly informative in this regard. Participants described situations in which they remained in frequent contact with others online but did not necessarily experience that contact as emotionally meaningful. The distinction between being socially connected and feeling socially connected is central to understanding loneliness. As conceptualized by Russell (1996), loneliness is a subjective experience arising from a perceived discrepancy between desired and actual social relationships. Consequently, the number of online interactions may have limited relevance if those interactions do not provide the sense of intimacy, belonging, or support that an individual seeks.

This distinction may be especially salient during the 18–25 age period. Young adulthood is characterized by considerable restructuring of social networks as individuals enter higher education, employment, intimate relationships, and new social environments. Existing relationships may become geographically dispersed, while new relationships are still developing. Social media can therefore become an easily accessible means of maintaining social presence. At the same time, its continuous visibility of other people's activities may make perceived social deficits more difficult to ignore. The present findings should therefore be understood within this developmental context rather than as evidence of a uniformly negative effect of social media.

The most consequential finding of the study concerns the mediating role of FoMO. Loneliness was associated with greater FoMO, and FoMO was subsequently associated with greater social media use. The significant indirect effect suggests that part of the relationship between loneliness and social media use may operate through concerns about being excluded from rewarding social experiences. This interpretation is consistent with the original conceptualization of FoMO as an ongoing apprehension that others may be experiencing rewarding events in one's absence, accompanied by a desire to remain connected to what others are doing (Przybylski et al., 2013).

The importance of this finding lies less in the statistical significance of the indirect effect than in the psychological process it suggests. A lonely young adult may not turn to social media solely because of a desire for interaction. Instead, social disconnection may increase sensitivity to information about peers, making uncertainty about what others are doing particularly uncomfortable. Social media provides an immediate solution to that uncertainty: one can check stories, group conversations, updates, and other social cues almost continuously. The behaviour may therefore become oriented toward monitoring social life rather than simply participating in it.

This interpretation is closely reflected in the focus-group accounts. Participants described checking social-media content even when they had no particular information to obtain. The reported need to know “what is happening” suggests that the act of checking may itself become psychologically reinforcing. Importantly, such behaviour does not necessarily indicate that participants consciously experienced themselves as lonely before using social media. Rather, loneliness and FoMO may operate together in subtle ways, with social uncertainty encouraging repeated monitoring of the digital social environment.

The present findings are consistent with recent empirical work that has begun to examine FoMO as a mechanism rather than merely a correlate of social-media engagement. Longitudinal research among college students has reported a relationship between loneliness and later problematic social-networking-site use through FoMO (Wang et al., 2025). Similarly, research using intensive longitudinal approaches has indicated that day-to-day loneliness may be linked to social-media use through FoMO-related processes. The convergence between these findings and the present results strengthens the case for examining the psychological motivation underlying digital engagement. Nevertheless, the mediation identified in the present study should be interpreted as a statistical indirect association rather than a demonstrated causal mechanism. The cross-sectional design does not establish temporal ordering. It remains plausible that social-media experiences contribute to subsequent loneliness and FoMO, or that loneliness, FoMO, and social-media engagement influence one another reciprocally. Longitudinal and experience-sampling research will be necessary to determine whether the pathway identified here persists across time and everyday contexts.

Although social comparison was not directly incorporated into the quantitative model, it emerged consistently within the focus-group discussions and provides an important interpretive layer. Participants described comparing their appearance, achievements, relationships, and social experiences with the content presented by peers online. Of particular interest was the tension between knowing that social media presents a selective representation of reality and nevertheless experiencing emotional comparison.

This observation is important because critical awareness does not necessarily eliminate emotional responses. Young adults may understand that online profiles are curated while still experiencing feelings of inadequacy or exclusion when confronted with images of peers' relationships, achievements, celebrations, or social gatherings. Previous research has similarly demonstrated links between social-media use, social comparison, and self-evaluation (Vogel et al., 2014; Appel et al., 2016).

Within the present study, social comparison may therefore represent part of the experiential environment in which FoMO develops. Seeing others participate in activities from which one is absent can transform an abstract concern about "missing out" into a more immediate perception of exclusion. However, because social comparison was examined only qualitatively, the present findings do not establish it as a mediator or explanatory variable. Its role should instead be regarded as a theoretically relevant direction for subsequent research.

The proposed moderating role of digital citizenship was not supported. The nonsignificant loneliness $\times$ digital citizenship interaction indicates that the strength of the loneliness–social media use relationship did not differ significantly according to participants' overall level of digital citizenship. This finding deserves a more nuanced interpretation than simply concluding that digital citizenship was ineffective.

Digital citizenship is a multidimensional construct involving competencies and forms of participation within digital environments, including technical skills, critical perspective, networking agency, local/global awareness, and Internet-based participation (Choi et al., 2017). These dimensions describe how individuals navigate and participate in digital spaces; they do not necessarily describe how individuals regulate loneliness, manage rejection sensitivity, or respond emotionally to social comparison.

The qualitative findings help make this distinction visible. Participants appeared capable of recognizing issues related to privacy, online safety, and responsible digital behaviour while simultaneously acknowledging experiences of jealousy, exclusion, comparison, and FoMO. This suggests that digital competence and emotional vulnerability can coexist. Knowing how to use social media responsibly does not necessarily reduce the psychological importance of social belonging.

This may explain why digital citizenship did not function as the anticipated buffer. The proposed moderation model implicitly assumes that greater digital competence would weaken the tendency for loneliness to be accompanied by social-media engagement. Yet the motivation to remain socially connected may operate at a different psychological level from the skills required to navigate digital environments safely and critically. A young adult may therefore possess considerable digital knowledge while still feeling compelled to check social media when concerned about being excluded.

The finding also raises an important issue concerning the use of a global digital-citizenship score. Because digital citizenship comprises several dimensions, combining them into a single index could potentially conceal relationships that operate differently across dimensions. To address this concern, the present study estimated separate moderation models for Internet Political Activism, Technical Skills, Local/Global Awareness, Critical Perspective, and Networking Agency. None of the five loneliness $\times$ dimension interactions was statistically significant: Internet Political Activism, $B = -0.008$, $p = .109$; Technical Skills, $B = -0.002$, $p = .682$; Local/Global Awareness, $B = -0.005$, $p = .299$; Critical Perspective, $B = -0.008$, $p = .092$; and Networking Agency, $B = -0.006$, $p = .170$. Thus, the additional analyses did not reveal evidence that a particular digital-citizenship dimension significantly changed the strength of the loneliness–social media use association in this sample. The findings should nevertheless be interpreted in the context of the cross-sectional design and the conceptual differences among the dimensions.

The value of the qualitative component lies in its ability to illuminate experiences that cannot be fully captured through correlations and regression coefficients. The quantitative findings establish a pattern among loneliness, FoMO, and social media use; the focus-group discussions help explain how that pattern may be experienced in everyday life. The integrated comparison of these findings is presented in Table 7.

Across the discussions, a recurring tension emerged between connection and connectedness. Participants could remain continuously informed about other people's lives without necessarily feeling emotionally close to those individuals. Similarly, they could recognize the constructed nature of online content while still comparing themselves with it. They could understand privacy and responsible digital practices while remaining emotionally affected by exclusion. These tensions suggest that the psychological consequences of social media cannot be understood solely in terms of frequency of use or digital competence. These integrated findings are summarized in Table 7.

The qualitative findings therefore complement rather than independently confirm the quantitative model. The repeated descriptions of social monitoring provide a plausible experiential context for the FoMO–social media

relationship. Accounts of online contact without emotional closeness help contextualize the loneliness finding, while descriptions of comparison and exclusion point toward mechanisms that could be examined in future quantitative models. The qualitative evidence is consequently most useful when treated as explanatory and hypothesis-generating rather than as a second form of statistical evidence.

Implications for Understanding Young Adults' Digital Behaviour

The findings have a focused implication for understanding social-media use among 18–25-year-olds. The central issue may not be simply how much social media young adults use, but what psychological function that use serves. When engagement is motivated by the need to monitor peers, avoid missing social information, or manage feelings of exclusion, increased use may represent an attempt to respond to social discomfort rather than an independent behavioural problem.

This distinction has implications for psychological interventions. Programmes designed to reduce problematic social-media engagement may be more effective when they address loneliness and FoMO alongside behavioural habits. Encouraging young adults simply to reduce their online time may be insufficient when social media is serving as a readily available strategy for managing perceived social disconnection. Interventions could instead focus on recognizing FoMO-triggered checking, strengthening meaningful interpersonal connection, developing tolerance for temporary social uncertainty, and helping individuals critically interpret socially comparative content.

The findings also suggest that digital citizenship education should not be positioned as an emotional-health intervention by itself. Digital literacy, privacy awareness, and responsible participation remain important, but they address different aspects of digital life from loneliness and FoMO. A more comprehensive approach would combine digital citizenship education with psychosocial strategies that address belonging, social comparison, and emotionally driven online engagement.

Limitations and Future Directions

The findings should be interpreted in light of several limitations. Most importantly, the cross-sectional design prevents conclusions regarding directionality or causation. The mediation model is theoretically informed, but the data cannot establish that loneliness precedes FoMO and that FoMO subsequently produces greater social-media use. Longitudinal and experience-sampling studies are required to test this sequence more rigorously.

The reliance on self-report measures also introduces the possibility of common-method and reporting biases. In addition, the sample was restricted to young adults aged 18–25 years and was predominantly student-based, limiting the extent to which the findings can be generalized to young adults in other educational, occupational, or cultural contexts.

The moderation analysis warrants a nuanced interpretation. The overall digital-citizenship interaction was not significant, and the five dimension-specific interaction models were also nonsignificant (Table 6). The interaction coefficients were -0.008 for Internet Political Activism ($p = .109$), -0.002 for Technical Skills ($p = .682$), -0.005 for Local/Global Awareness ($p = .299$), -0.008 for Critical Perspective ($p = .092$), and -0.006 for Networking Agency ($p = .170$). Although these additional analyses reduce the possibility that a single global score masked a statistically detectable interaction in this dataset, they do not establish that dimension-specific moderation could never occur. Future research can examine these dimensions in larger, more diverse, and longitudinal samples and with more specific measures of social-media behaviour.

Finally, the qualitative component involved a small number of participants and was intended to deepen contextual understanding rather than establish generalizability. Future mixed-methods research could benefit from larger and more diverse qualitative samples, transparent coding procedures, and longitudinal integration of qualitative and quantitative data.

CONCLUSION

The present study suggests that the relationship between loneliness and social media use among young adults aged 18–25 years is best understood as a psychologically embedded process rather than as a straightforward consequence of spending more time online. Loneliness was associated with greater social-media engagement, and FoMO accounted for a significant indirect component of this association. The explanatory sequential qualitative findings provided contextual depth by illustrating repeated social monitoring, perceived exclusion, and the distinction between online contact and emotional connection. Because the study is cross-sectional, the observed indirect effect should be interpreted as a statistical association rather than a demonstrated causal pathway.

Overall digital citizenship did not significantly moderate the loneliness–social media use relationship, and the five dimension-specific moderation analyses likewise produced nonsignificant interaction effects. Thus, in this sample, neither the global digital-citizenship score nor any individual dimension tested—Internet Political Activism, Technical Skills, Local/Global Awareness, Critical Perspective, or Networking Agency—significantly altered the loneliness–social media use association.

Implications

The findings have several focused implications for young adults aged 18–25 years. First, interventions addressing intensive social-media engagement should consider loneliness as a possible underlying social-emotional factor. Advising young adults simply to reduce screen time may overlook the reasons they seek online interaction.

Second, FoMO may be a useful intervention target. Psychoeducational and counselling approaches could help young adults recognize repeated checking driven by concern about exclusion, distinguish meaningful communication from monitoring, and develop greater tolerance for temporary disconnection.

Third, university wellbeing initiatives may benefit from strengthening meaningful offline social connection while discussing digital habits. The aim should not be to portray social media as inherently harmful, because online platforms can provide genuine communication and support.

Fourth, digital citizenship education should continue to emphasize critical evaluation, privacy, safety, responsible communication, and networking. However, the present findings do not justify claiming that digital citizenship itself buffers the loneliness–social media use relationship.

LIMITATIONS

The cross-sectional design prevents conclusions about temporal or causal direction.

The study relied primarily on self-report measures, which may be affected by recall and response biases.

The sample was restricted to young adults aged 18–25 years, limiting generalization to other age groups.

The sample was predominantly student-based, which may limit representation of nonstudent young adults.

The moderation analysis also warrants a nuanced interpretation. The overall digital-citizenship interaction was not significant, and the five dimension-specific interaction models were also nonsignificant. Although these additional analyses reduce the possibility that a single global score masked a statistically detectable interaction in this dataset, they do not establish that dimension-specific moderation could never occur. Future research can examine these dimensions in larger, more diverse, and longitudinal samples and with more specific measures of social-media behaviour.

The qualitative sample included only 16 participants and therefore provides contextual rather than population-level evidence.

The focus-group quotations supplied for the current draft were identified as illustrative and require verification against the original transcripts before journal submission.

Future Research

Future research should use longitudinal designs to test whether loneliness at an earlier time point predicts later FoMO and social-media use and whether social-media use subsequently predicts changes in loneliness. Such designs would permit reciprocal pathways to be examined.

Future studies should also distinguish general social-media engagement from problematic or compulsive use because recent evidence suggests that these constructs have different relationships with loneliness (Feng et al., 2026).

The five dimensions of digital citizenship were examined separately in the present analysis, and none of the dimension-specific loneliness $\times$ digital-citizenship interactions was statistically significant. Future studies should nevertheless continue to test these dimensions separately in larger, more diverse, and longitudinal samples. Critical Perspective, Networking Agency, Technical Skills, Local/Global Awareness, and Internet Political Activism may relate differently to specific forms of digital behaviour, even if no moderation was detected in the present dataset.

Mixed-methods longitudinal research would be particularly valuable because it could combine temporal evidence with participants' descriptions of why they check social media, what triggers FoMO, and how they distinguish online contact from meaningful social connection...

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