Exploring Relationships between Social Media Use, Belonging, and Wellbeing

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Abstract

As social media continues to become an increasingly salient part of daily life, understanding its impact on wellbeing is crucial. The relationship between social media use and wellbeing is complex, as both positive and negative outcomes have been reported. These outcomes include a greater sense of belonging—how connected and accepted an individual feels to their environment—along with negative aspects of personal wellbeing, such as depression, anxiety, and low self-esteem. Although social media use may significantly impact wellbeing, previous studies have relied on self-reported screen time, leaving a gap in understanding how objectively measured use relates to wellbeing. This study used repeated measures over time of participant social media screen time data to investigate whether changes in social media use were associated with changes in sense of belonging and personal wellbeing. Additionally, it considered personality differences affecting social media use, including measures of extraversion and emotional stability. Two cross-lagged panel model analyses revealed a negative bidirectional effect between social media use and personal wellbeing. These effects indicate the variables predict each other over time at a within-person level, where higher social media use leads to lower personal wellbeing and higher personal wellbeing leads to lower social media use over time. Additionally, extraversion was found to be positively correlated with both sense of belonging and personal wellbeing. Future research should continue to use objective measures of social media use to further explore associations between social media and potential associations with wellbeing and belonging.

Social Media Use and Effects on Wellbeing and Belonging

Social media platforms are used to create and share user-generated content, communicate with others, and exchange information, perspectives, and opinions (Carr & Hayes, 2015). Social media platforms have rapidly evolved to become a central aspect of modern life since their start in the early 2000's. Many of its users grew up with the internet and rely on social media for much of their communication, information and engagement with modern culture. In 2022, YouTube, TikTok, Instagram, Snapchat, and Facebook were the most popular platforms among adolescents (Vogels et al., 2022).

The diversity across social media platforms and the ways users engage with them contribute to the complex relationship between use and its impact on wellbeing. Social media use has been associated with a greater sense of belonging, which is fostered through meaningful connections and relationships (Davis, 2012; Hagerty et al., 1996). On the other hand, social media use has also been associated with lower personal wellbeing outcomes, such as depression and anxiety (Davis & Goldfield, 2015). Personality differences in individuals, such as extraversion and emotional stability, may also influence social media use, and subsequently, its impact on wellbeing.

Given that social media allows users to form and maintain relationships, we hypothesize that higher social media use is positively correlated with a sense of belonging. However, due to higher social media use being previously associated with negative psychological outcomes, we expect it to be negatively correlated to personal wellbeing. We also predict that changes in social media use over time are associated with changes in sense of belonging and personal wellbeing scores. Finally, we hypothesize that higher social media use is positively correlated with extraversion and negatively correlated to emotional stability. The following section explores

existing research on the role of social media use, screentime, and personality on an individual's sense of belonging and personal wellbeing.

Social Media

Social media are online platforms that encourage engagement between users (Aichner et al., 2021). In the United States and in many parts of the Western world, smartphones have become an essential element to daily life, and social media has become one of the primary means of interpersonal communication. Social media provides a way for users to share content, information, and to view entertainment. YouTube and Facebook are the most used social media platforms among Americans, with 83% and 68% of people, respectively, reporting having used it (Gottfried, 2024).

The most common uses of social media include social interaction, information seeking, passing time, relaxation, and communication (Whiting & Williams, 2013). The ability to communicate information to a wide range of people also allows the platforms to serve as effective ways to increase participation in activism and social movements (Cortès-Ramos et al., 2021). During the COVID-19 pandemic, social media was identified as a way for individuals to cope with the stressors of their current lifestyle and engage in social interaction and entertainment for relaxation and emotional regulation purposes (Bae, 2022). Therefore, social media has proven itself to provide avenues for people to remain informed, connected, and presents a means to unwind and temporarily forget worries.

Sense of Belonging

An individual’s sense of belonging is dependent on how involved, connected, and valued they feel in their environment (Hagerty et al., 1992). Feelings of belonging are fundamental to an individual’s basic needs, and those who report greater amounts of supportive relationships, such

as family, friends, and community, report having a higher sense of belonging (Maslow, 1943; Hagerty et al, 1996).

Relationships nurtured through online communication also have the potential to contribute to an individual's sense of belonging. Davis (2012) conducted in-depth one-on-one semi-structured interviews with adolescents, aged 13-18, over the nature of their conversations online, aiming to identify how adolescent participation in both casual and intimate conversations shapes their sense of belonging and self-disclosure. They revealed that engaging in messaging through social media resulted in feelings of connection and belonging with their friends, as they felt it was easier to self-disclose and have intimate conversations online compared to offline. All participants resided on the island of Bermuda, and at the time of this study, reported the most popular social media and online communication platforms to be Facebook, Skype, and AOL. Due to the unique culture of Bermuda and new social media platforms emerging, it is necessary to further investigate if these results are consistent with participants in the United States using modern platforms.

Platforms connecting individuals to people similar to them have the potential to offer support and a sense of belonging to people who participate in them. Through an online survey about sense of belonging and perceived social support in Facebook groups, Godard & Holtzman (2024) found that multiracial individuals felt a greater sense of belonging and had higher perceived social support when they identified others in an online group to be similar to them. Godard & Holtzman (2024) aimed to understand what made individuals feel like an important and valued part of a group. Members of two Facebook groups for multiracial individuals—which aimed to foster community for people of multicultural backgrounds with mixed traits—completed a survey that included measures of sense of belonging, perceived availability of

support, similarity, and other relevant variables. A strong correlation was found between sense of belonging and perceived availability of support. The shared identification with marginalized groups allowed participants in the online group to form supportive relationships and connections in online contexts.

In addition to building community online, social media use may also benefit existing offline relationships. Guo et al. 's (2024) study used data from the 2018 Program for International Student Assessment (PISA) and looked at 15 year old student responses on school belonging, social media use, and bullying. The study found strong associations between social media use and school belonging. However, they also found social media use increased bullying, which is associated with reduced school belonging. Differences in social media use outcomes were explained by controlling for cultural differences, specifically collectivism and individualism. Collectivistic cultures—where individuals are more group-oriented—are more likely to use social media for interpersonal interaction, whereas individualistic cultures—which prioritize individual achievement—tend to use social media for more self-centred reasons, such as self-promotion. A greater association between social media use and sense of belonging was found in collectivistic cultures and social media use was more greatly associated with bullying in individualistic cultures. These findings provide background into how social media use may be related to both positive and negative outcomes, depending on factors such as age and culture.

The relationship between sense of belonging and social media use has predominantly been looked at in children and adolescents, as seen in Davis (2012) and Guo et al. (2024). Besides age, studies have focused on a specific group of people, such as Godard & Holtzman (2024) focusing on multiracial individuals. In order to capture the relationship between social

media use and sense of belonging, a more diverse sample consisting of young adults of all backgrounds is needed to further investigate and understand the relationship between the two.

Personal Wellbeing

An individual's personal wellbeing consists of their physical, mental, and emotional health and how satisfied they are in those realms of life (Kumar, 2020; Cummins et al., 2003). In order to receive appropriate social support, an individual must develop meaningful relationships where they feel safe disclosing personal information.

Individuals with social anxiety struggle forming relationships due to decreased social skills, Bonetti et al. (2010) sought to investigate how online communication may impact lonely, socially anxious youth by providing a more accessible means of communication. A sample of students aged 10-16 years old completed a survey over their use of online communication—including who they talk to, what they talk about, and why— as well as loneliness and social anxiety. Results showed that those who were more lonely and socially anxious communicated online more frequently while disclosing both casual and intimate topics. They also identified compensating for social skills in person as a key motivator for frequent online communication. Access to a means of communicating without direct, in-person contact is a valuable resource to many people, but is especially beneficial to those who may be socially anxious and would not be able to nurture relationships offline. Although this alternative way of communicating can be beneficial, it may also be detrimental to wellbeing. Avoidance is known to breed anxiety, and further avoiding face-to-face contact by using online platforms as primary sources of communication may impact social skills and support in the long run. Although these implications do not overshadow the potential benefits of online communication, it is important

for future research to consider the role of loneliness and mental illness on social media use outcomes.

In some cases, minimizing social media use can lead to better outcomes in wellbeing. Davis & Goldfield (2025) found that decreasing social media use to one hour a day for three weeks was associated with decreases in depression and anxiety symptoms in individuals who had previously reported feeling depressed and anxious. Young adults aged 17-25 were randomly assigned into two groups, one served as the intervention group and the other as the control. The intervention group was asked to reduce social media use to one hour a day for three weeks, while the control group was given no restrictions. Participants completed measures of social media use, depressive symptoms, anxiety, and sleep at the start of the survey and after three weeks. Results showed that participants who had reported symptoms of depression and anxiety in the baseline survey had a significant decrease in symptoms after the three week intervention. Additionally, they found increases in sleep of about 30 minutes per night. Implementing a decrease in social media use may benefit both physical and mental wellbeing in young adults. The study's use of repeated measures of depression, anxiety, and sleep over three weeks allowed researchers to capture meaningful changes in wellbeing over time.

Consistent with Bonetti et al. (2010) and Davis & Goldfield (2025), outcomes in wellbeing associated with social media use may be both positive and negative, depending on the amount of use, and why and how it is being used. While social media use may benefit those with a preference for online communication, further research is necessary to see whether more frequent online communication is also associated with benefits in wellbeing in more general populations.

Big 5 Personality

Personality traits have been associated with variation in social media use. The five-factor model of personality includes 5 traits: openness, conscientiousness, extraversion, agreeableness, and neuroticism (McCrae & John, 1992). Openness involves being receptive to new ideas and being imaginative. Conscientiousness refers to being diligent, thorough, and responsible. Extraversion involves sociable and outgoing tendencies, and may also include positive affect. Agreeableness involves altruism, caring, and kindness. Neuroticism is characterized by tendencies to experience negative emotions and affect, which can include depression, anxiety, anger, and self-consciousness.

While different social media platforms attract different types of people, the most frequent users of the most popular social media platforms tend to be higher in extraversion and neuroticism (Vaid & Harari, 2021). To investigate what personality traits are associated with different types of social media use, Vaid and Harari (2021) conducted an exploratory analysis of two large samples of undergraduate college students with an average age of 18. Participants completed a survey assessing their demographics, personality traits, and social media use. To measure social media use, researchers divided relevant platforms into 10 categories, including blogging, media sharing, and online forums. Participants reported their frequency of use for each category. Individuals who more frequently used social networking sites and messaging platforms— such as Facebook, Instagram, and Snapchat— were more likely to be female and score higher in extraversion, neuroticism, and narcissism. Different categories of social media were associated with different personality traits, for example, massive multiplayer online role-playing games (MMORPGs) were more frequently used by those lower in extraversion, agreeableness, and conscientiousness. These findings suggest that certain personality traits,

specifically extraversion and neuroticism, are relevant to research about more traditional social media platforms, categorized by social networking sites in this study.

The relationship between social media use and personality is complex, as there have been findings suggesting a bidirectional association between neuroticism and social media use (Drążkowski et al., 2022). An experimental study on Instagram and neuroticism revealed that reviewing instances of self-disclosure on the platform may temporarily increase neuroticism in individuals. Participants were randomly assigned to a condition and asked to complete a survey measuring personality at the end of their task. The experimental condition tasked participants to review their ten latest posts and count how many pictures were selfies and how many positive and negative emoticons they used. The control condition included viewing selfies saved to their camera roll and emoticon use in text messages. Reviewing posts on the actual Instagram platform was associated with higher neuroticism compared to viewing pictures outside the platform. Further investigation on how long term social media use may affect neuroticism is necessary to better understand this relationship.

In addition to findings on the relationship between social media use and personality, previous studies have also suggested associations between personality and wellbeing. Stubblebine et al. (2024) found that individuals higher in extraversion and agreeableness reported greater feelings of belonging compared to those higher in neuroticism. The longitudinal study through a college transition social-belonging trial assessed first year college students personality and belonging measures at the beginning and end of an academic year over an online survey. These measures revealed that extraversion, agreeableness, and neuroticism at the end of the year were associated with their feelings of belonging at the beginning of the year. Espinoza-Dìaz et al. (2023) found similar results in early childhood and elementary teachers. The

teachers completed measures assessing psychological wellbeing, personality, and burnout. They found that lower neuroticism and higher extraversion were associated with greater psychological wellbeing in teachers. These studies suggest that an individual's personality may have a role in their wellbeing. It is important for further research to investigate the relationships between social media use, personality, and wellbeing.

Screentime

Screen time refers to the amount of time spent on an electronic device, such as phones, tablets, and computers. While some argue that screen time offers benefits like easier communication and greater convenience in daily life, others emphasize the potential harmful effects on youth development and physical health, suggesting risks may outweigh rewards (LeBlanc et al., 2017).

Through data from a longitudinal study investigating the effects of screen time, De La Rosa (2024) found greater screen-based leisure time associated with negative wellbeing, such as decreases in life satisfaction and body satisfaction. Participants from the New Zealand Attitudes and Values Study (NZAVS) completed measures assessing their frequency of screen-based activities and their physical health. Screen-based activities included watching television, using social media, and playing video games, and physical health was measured by average hours of sleep, body mass index, and body satisfaction. Participants with the greatest screen-time reported higher body mass index, worse subjective health, and lower body satisfaction. Dissatisfaction with one's body and health may lead to decreased psychological wellbeing; therefore, it is important to consider physical health outcomes when examining relationships between screen time and wellbeing.

Additional outcomes to screen time were found in a study done by Lua et al. (2023), where screen time was found to be associated with less physical activity and less hours of sleep in adolescents. The meta-analytic study examining youth aged 10-18 and their screen time use after the COVID-19 pandemic found that most adolescents exceed the World Health Organization's recommended two hour screen time limit, which was set to ensure adequate sleep, which is typically nine to eleven hours for this age range. The study concluded that unhealthy screen time, sleep, and physical activity patterns formed during the pandemic followed adolescents after restrictions were lifted. Screen time use before bed was found to especially impact adequate sleep and participation in physical activity. These findings suggest prolonged screen time may have significant impacts on wellbeing.

Previous research, such as the NZAVS cited in De La Rosa (2024), has relied on user reported weekly estimates of screetime, which is an approach prone to bias. The current study uses reliable means of collecting screen time data, such as iPhone tracking features (Hodes & Thomas, 2021) and repeated measures of wellbeing to further explore the relationship between screen time and wellbeing.

Conclusions

Social media use has been associated to positive outcomes, such as sense of belonging (Davis, 2012; Godard & Holtzman, 2012; Gue et al., 2024) and personal wellbeing (Bonetti et al, 2010) and negative outcomes, such as increased depression and anxiety symptoms (Davis & Goldfield, 2025). Personality differences, such as extraversion and neuroticism, have also been associated with wellbeing (Stubblebine et al., 2024; Espinoza-Dias et al., 2023). Social media may offer social support to individuals by facilitating communication (Bonetti et al., 2010) and providing an outlet for self-expression (Godard & Holtzman, 2024), however, it is unclear what

amount of use maximizes belonging and general wellbeing while minimizing negative effects, such as depression and anxiety. This study determines if there are relationships between an individual's social media use and their personal well being, sense of belonging, and personality, as well as identifies whether use is associated with positive outcomes.

Methods

Study Design Overview

This study examines relationships between social media use and positive outcomes in wellbeing. Undergraduate students enrolled in an introduction to psychology course completed repeated measures of sense of belonging (Sense of Belonging Scale - 8), personal wellbeing (Personal Wellbeing Index - Adults), screentime, and personality (Ten Item Personality Inventory) over the course of three weeks through online surveys. We predicted that changes in social media use would be associated with changes in personal wellbeing and sense of belonging, and that higher social media use would be associated with lower personal wellbeing but with higher sense of belonging. Additionally, we also predicted that individuals high in extraversion and low in emotional stability would have higher levels of social media use.

Participants

Participants included undergraduate students enrolled in an introductory psychology course at the University of Texas at Austin (n = 189 at Time 1, n = 103 at Time 2, n = 75 at Time 3). Inclusion criteria consisted of using an Apple iPhone, having Screen Time features enabled, and being over 18 years old. Exclusion criteria included use of a non-Apple branded phone. Compensation for participants was in the form of course credit. Consent was granted as an acknowledgement of participation through the online surveys.

Measures

Sense of Belonging Scale (SBS-8)

The SBS-8 (Mellinger et al., 2024) measures an individual's sense of belonging through facets of acceptance, feeling valued, fitting in, and connectedness (Table 1). The 8-item measure was developed based on a theoretical framework from Hagerty et al. (1992) and Hagerty and

Patusky (1995). Items were rated on a 5-point Likert scale from “Strongly disagree” to “Strongly agree” and were scored as the average of all items. Items marked with an R were reverse scored. Convergent validity for the SBS-8 was supported by a strong correlation with the SOBI-P, a well established measure for sense of belonging, $r(352) = .87$, $p < .001$ (Mellinger et al., 2024).

Table 1

Sense of Belonging Scale - 8 Items and Facets

Item	Facet
1. In general, I feel a sense of belonging.	Accepted
2. I don’t really feel accepted. (R)	Accepted
3. Overall, I feel valued by others.	Valued
4. I feel disregarded. (R)	Valued
5. I feel like I fit in.	Fit
6. I feel like I don’t really fit in with others. (R)	Fit
7. I feel connected with others.	Connected
8. I feel so distant from others. (R)	Connected

Note. Items marked with (R) were reverse coded.

Personal Wellbeing Index (PWI-A)

The PWI-A (Cummins, et al., 2003) measures an individual’s satisfaction with their quality of life and wellbeing (Table 2). The PWI-A is 7 items, and each item measures a domain of wellbeing: Standard, Health, Achieving, Relationships, Safety, Community, and Future. Items

are measured through a 0-10 point scale, where 0 is no satisfaction at all and 10 is completely satisfied, and are scored by taking the average of all items. Convergent validity for the PWI-A was supported by a strong correlation with the SWLS, another commonly used measure of subjective wellbeing (r = .78) (Weinberg et al., 2018).

Table 2

Personal Wellbeing Index - Adults Items and Domains

Items	Domains
1. your standard of living?	Standard
2. your health?	Health
3. what you are achieving in life?	Achieving
4. your personal relationships?	Relationships
5. how safe you feel?	Safety
6. feeling part of your community?	Community
7. your future security?	Future

Note. Items followed an initial question, "How satisfied are you with…?"

Ten Item Personality Inventory (TIPI)

The TIPI (Gosling et al., 2003) measures the Big Five personality traits: extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences (Table 3). The TIPI measures emotional stability instead of neuroticism, however, both assess an individual's

emotion management and tendency for negative emotions and therefore can be used interchangeably. The TIPI consists of 10 items, including two items for each trait. Only items measuring extraversion and emotional stability were calculated and included in data analysis. It is rated on a 7-point likert scale from “Disagree strongly” to “Agree strongly”. Scores were calculated by taking the average of the two items for each trait, accounting for reverse-scored items. Convergent validity for the TIPI has been supported by moderate-to-strong correlations with the BFI, another brief Big Five personality inventory, with correlations of $r = .87$ for extraversion and .81 for emotional stability (Gosling et al., 2003).

Table 3

Ten Item Personality Inventory Items for Extraversion and Emotional Stability

Items	Traits
1. Extraverted, enthusiastic.	Extraversion
2. Anxious, easily upset. (R)	Emotional Stability
3. Reserved, quiet. (R)	Extraversion
4. Calm, emotionally stable.	Emotional Stability

Note. Items followed an initial statement, “I see myself as:”

Screen Time

The “Screen Time” feature on iOS allows users to view the time spent on their devices, including what apps and websites are used (Apple, 2025). Participants were instructed to take

and upload a screenshot of the Screen Time summary from the “Last Week” view. The following instructions were given to participants for capturing and uploading a screenshot:

> Please upload a screenshot of your Screen Time app use from last week.
>
> To find this data on iPhone go to:
>
> Settings > Screen Time > See All App & Website Activity > Last Week
>
> Ensure that only iPhone app use is displayed by only selecting your iPhone from "Devices" in the top right hand side.
>
> Take a screenshot by quickly pressing and releasing the side button and volume up button.
>
> Crop out any personal information if necessary (e.g. device name, "John's iPhone").
>
> Upload it to the survey

Video instructions and an example screenshot were also included in the survey. Time spent on social media apps—specifically Instagram, Snapchat, TikTok, X, and Facebook—included in the Screen Time summary were recorded in hours and minutes. While Screen Time is not a validated tool, objective measures of screen time are not subject to as much information and recall bias as self-reported measures of screen time (Kristensen et al., 2022).

Procedures

Participants were asked to complete an online survey via Qualtrics on a mobile device. The survey was accessible by scanning a QR code or by continuing directly if already on the appropriate device. After accessing the survey, participants acknowledged consent and continued with survey instructions. After demographic questions, the SBS-8, PWI-A, and TIPI were completed. Participants then received instructions on accessing their iPhone Screen Time data, taking a screenshot with required information, and uploading it to the survey.

A week after their first submission, participants were sent a follow-up survey and asked to complete the PWI-A, SBS-8, and to upload a screenshot of their Screen Time data. Instructions on how to upload their screenshot were restated. A third and final survey was sent two weeks after their initial response and included all measures and instructions from the second survey.

Statistical Analyses

Pearson's correlation coefficients were calculated to explore relationships between social media use, personality, sense of belonging, and personal wellbeing.

Two random intercept cross-lagged model (RI-CLPM) analyses were conducted to analyze whether social media use, sense of belonging, and personal wellbeing influence each other over time (Hamaker, et al. 2015). The first model included random intercepts, autoregressive paths, and cross-lagged paths of social media use and personal wellbeing. The second model included the same paths but with social media use and sense of belonging. Appropriate model-fit indices, such as chi-square statistic (χ^2), the comparative fit index (CFI), the standardized root mean square residual (SRMR), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA) were used to test model fit to the data (Bentler & Bonett, 1980l; Kojima, et al. 2021). All analyses were conducted using R and the R lavaan package for structural equation modeling (Rosseel, 2012).

Results

Descriptive Statistics and Correlations

Descriptive statistics and correlations between study variables are presented in Table 4.

Table 4

Descriptive Statistics and Correlations

Variable	n	M(SD)	1	2	3	4	5	6	7	8	9
SMU1	101	21.55(11.57)	-								
SBS1	189	28.57(6.21)	-0.06	-							
PWI1	188	6.86(1.45)	0.04	0.68***	-						
SMU2	59	18.45(10)	0.79***	-0.14	-0.04	-					
SBS2	103	29.41(6.54)	-0.04	0.81***	0.65***	-0.10	-				
PWI2	103	6.88(1.59)	0.11	0.63***	0.76***	0.10	0.63***	-			
SMU3	38	19.46(11.06)	0.80***	-0.04	0.02	0.81***	0.08	0.08	-		
SBS3	75	29.07(6.17)	0.01	0.82***	0.64***	-0.03	0.84***	0.55***	0.00	-	
PWI3	75	6.85(1.60)	0.05	0.55***	0.78***	0.04	0.57***	0.78***	-0.04	0.59***	-

Note. SMU = Social Media Use, SBS = Sense of Belonging, PWI = Personal Wellbeing.

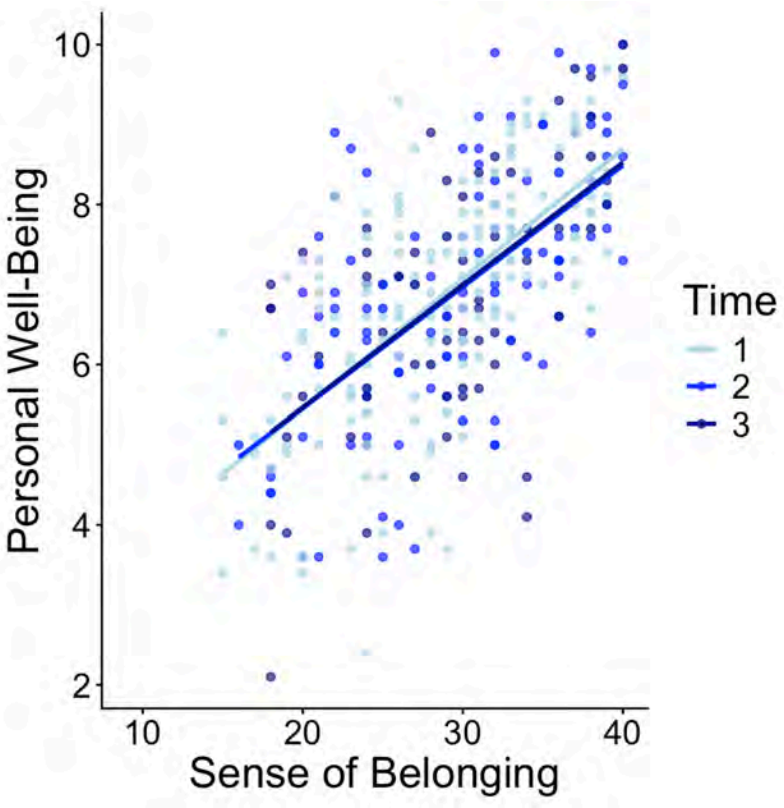
1/2/3 = Time 1, 2, 3. *** $p < 0.001$

All variables showed high stability over time, with correlations ranging from $r = .76$ to .84 ($p <$ .001). While there were no significant correlations between social media use and sense of

belonging or personal wellbeing, sense of belonging and personal wellbeing were positively correlated at each time (r = .55 to .68, p < .001) (Figure 1).

Figure 1

Correlations between Personal Wellbeing and Sense of Belonging over time.

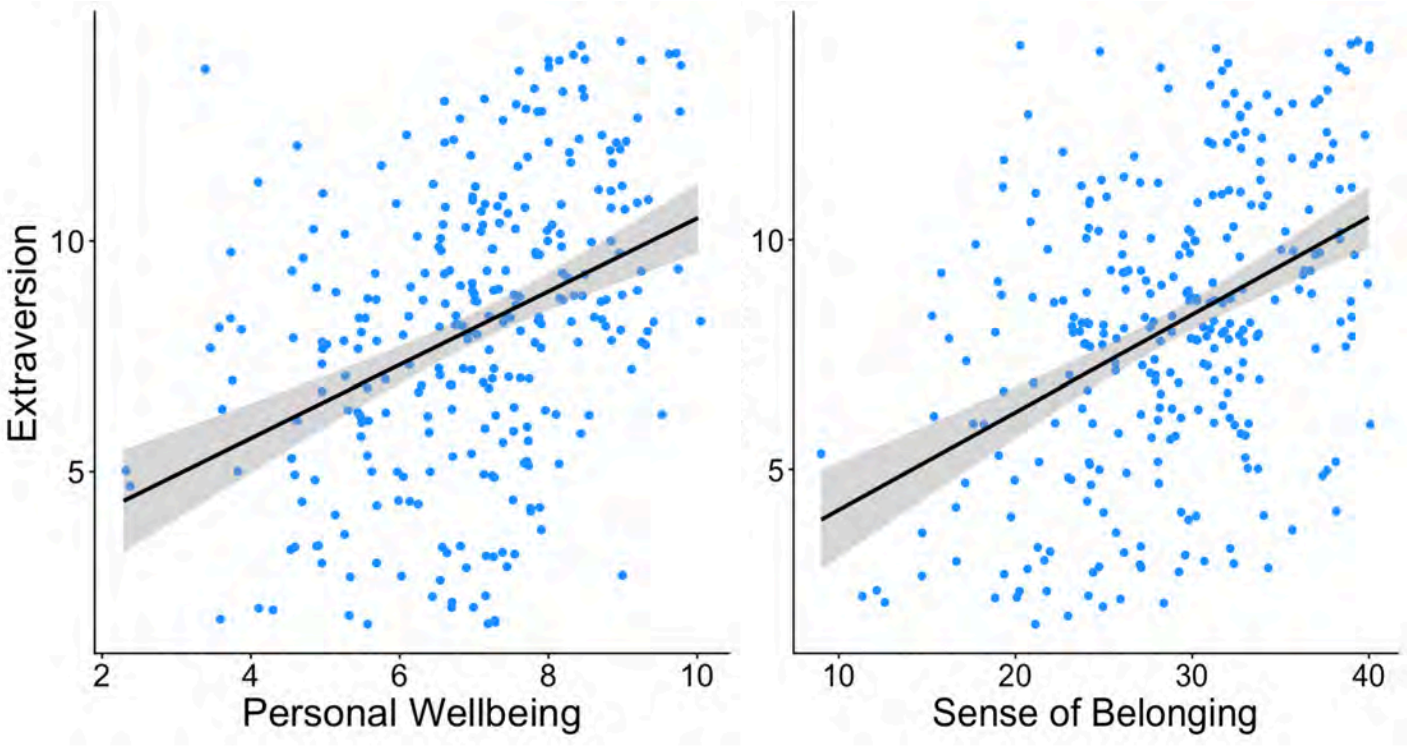


Note. Figure depicts moderate positive correlations at Time 1 = r(186) = .68, p = < .001; Time 2 = r(186) = .63, p = < .001, and Time 3 = r(186) = .59, p = < .001.

Additionally, social media use showed no significant correlation to extraversion, r(99) = .13, p = .19, or emotional stability r(99) = .04, p = .7. However, both sense of belonging and personal wellbeing were positively correlated with extraversion at r = .42 and .38, p < .001, respectively (Figure 2).

Figure 2

Correlations between Extraversion and Sense of Belonging and Personal Wellbeing



Note. Figure depicts moderate positive correlations for both personal wellbeing at $r(289) = .38$, $p = < .001$, and sense of belonging at $r(289) = .42$, $p = < .001$.

Model Findings

Two random intercept cross-lagged panel models (RI-CLPM) analyses were done to investigate the relationships between social media use and 1) personal wellbeing and 2) sense of belonging over time. Goodness-of-fit indices () indicate both models had a sufficient fit to the data, with TLI = 1.11 and 1.01, respectively and RMSEA = 0 for both models.

Table 5

Model Fit Indices for Personal Wellbeing and Sense of Belonging RI-CLPM

Model	□²	df	CFI	SRMR	TLI	RMSEA
PWI	0.65	1	1	0.01	1.11	0
SBS	0.31	1	1	0.01	1.01	0

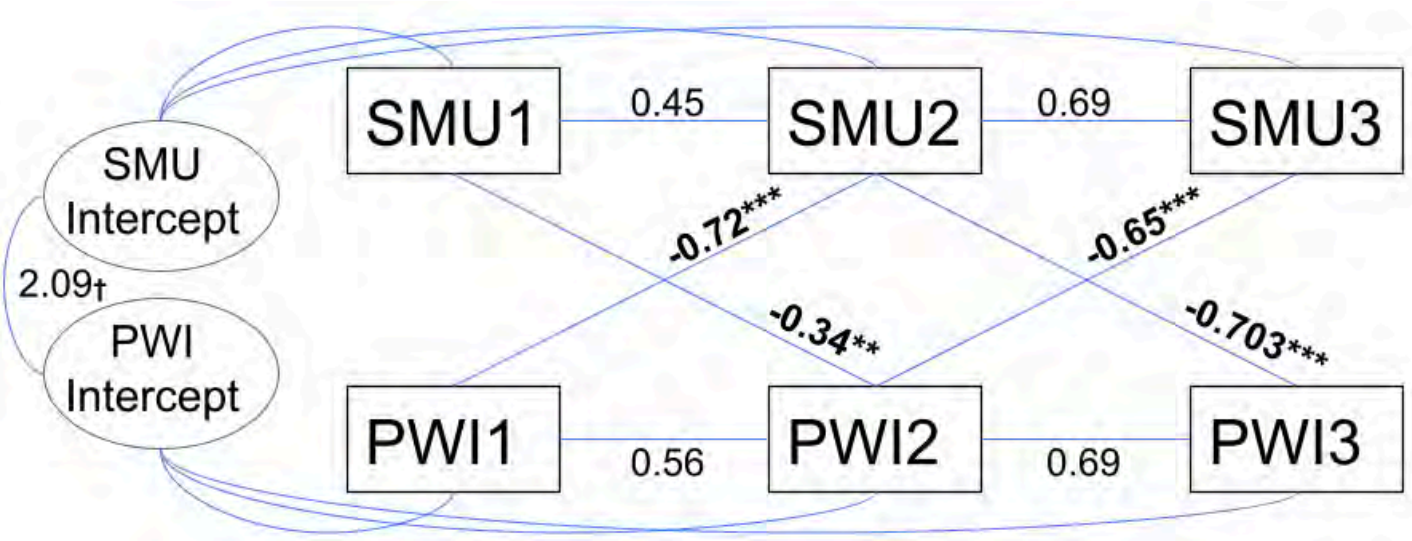
Note. CFI: Comparative Fit Index; SRMR: Standardized Root Mean Square Residual; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation. Both PWI and SBS RI-CLPM included SMU.

Social Media Use and Personal Wellbeing Model

Standardized path coefficients are presented in Figure 3. There was a significant negative bidirectional effect between social media use and personal wellbeing at a within-person level. Higher social media use predicted lower personal wellbeing (β = -0.34 and -0.70, $p < 0.01$ and .001) and higher personal wellbeing predicted lower social media use (β = -0.65 and -0.72, $p <$ .001). There were no significant effects in the autoregressive paths. Random intercept variance was non-significant (RI_SMU = 39.89, SE = 62.51, p = .52 and RI_PWI = 0.44, SE = 1.17, p = .71) and the random intercept correlation (r = 2.09, $p < .001$) exceeded theoretical bounds due to identification issues caused by minimal between-person stability. Random-intercept results suggest variations in social media use and personal wellbeing are primarily within-person and state-like.

Figure 3

Standardized Regression Coefficients for Personal Wellbeing RI-CLPM



Note. SMU = Social Media Use, PWI = Personal Wellbeing, 1/2/3 = Time 1, 2, and 3.

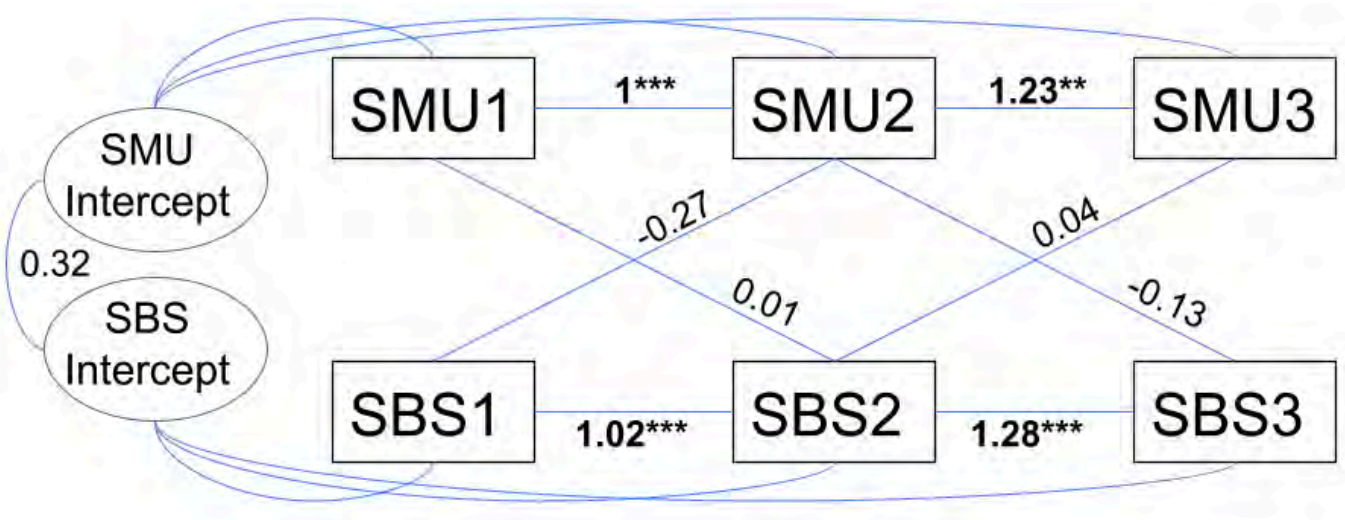
†Value exceeds ±1, suggesting lack of stable between-person differences. **$p < .01$, ***$p < .001$

Social Media Use and Sense of Belonging Model

Standardized path coefficients are presented in Figure 4. There were no significant cross-lagged effects. Autoregressive effects were significant for both variables, with $\beta = 1$ and 1.23, $p < .01$ and .001 for social media use and $r = 1.02$ and 1.28, $p < .001$ for sense of belonging, suggesting variable stability over time. Random intercept variance for social media use and personal wellbeing were negative at RI_SMU = -24.89, $SE = 15.78$, $p = .115$ and RI_SBS = -8.72, $SE = 2.87$, $p = .002$, further indicating variance is primarily within-person and state-like.

Figure 4

Standardized Regression Coefficients for Sense of Belonging RI-CLPM



Note. SBS = Sense of Belonging.

Discussion

This study sought to explore relationships between social media use, personal wellbeing, sense of belonging, and personality among undergraduate students. Results revealed a significant predictive effect between social media use and personal wellbeing at each time, as well as associations between personality and both sense of belonging and personal wellbeing at time one.

Predictive Effects

Social media use and personal wellbeing have a negative, bidirectional effect on each other over time. For example, higher social media use at Time 1 predicted lower personal wellbeing at Time 2, while higher personal wellbeing at Time 1 predicted lower social media use at Time 2. This effect was significant at each time point, creating a potentially harmful cycle where using more social media becomes a coping mechanism that reinforces lower wellbeing. Further, the minimal between-person variance of social media use and personal wellbeing indicate that the variables are state-like constructs that vary day to day. The within-person fluctuation of the variables implies the variables are not stable individual differences. These findings are important as they suggest variables are subject to change through intervention. An individual may be able to modify their high social media use or low personal wellbeing, thus ending or decreasing the negative cycle.

These results are consistent with past literature (Davis & Goldfield, 2025) on the effects social media use has on wellbeing, specifically how lowering social media use can increase personal wellbeing, by decreasing symptoms of depression and anxiety. This study not only further confirms that lowering social media use predicts higher wellbeing, but also that a higher wellbeing at baseline would predict that social media use would not be high.

Social media use and sense of belonging did not predict each other over time, but did predict themselves over time, indicating high stability within the variable. While findings regarding personal wellbeing were consistent with past literature, results were not consistent with past findings indicating that social media use positively influences sense of belonging, such as Davis (2012) and Godard & Holtzman (2024). As sense of belonging and personal wellbeing are correlated, this suggests that feelings of belonging are associated with wellbeing independent of social media use.

RI-CLPM findings partially supported the hypothesis, which predicted higher social media use at lower levels of personal wellbeing, while predictions on higher social media use leading to higher sense of belonging were not supported. Previous findings that informed the hypothesis predominantly focused on children and adolescents. It is possible that the undergraduate students surveyed had more opportunities for community and relationship building outside of social media, due to the social nature of attending a large university. University students may reserve social media use for more entertainment purposes, rather than as a means of communication and connection.

Associations Between Variables

Contrary to previous findings (Vaid & Harari, 2021; Drążkowski et al., 2022) and the hypothesis, social media use was not found to be associated with either extraversion or emotional stability. The present study considers the amount of social media used, rather than the platform and type of use which previous studies have looked at. Future research should consider platform differences in active/passive use when considering associations with social media use and personality.

Additionally, a relationship that was not predicted was a positive correlation between extraversion and both sense of belonging and personal wellbeing. Extraverted tendencies such as being outgoing and sociable may lead to more personal connections contributing to social support, therefore increasing both belonging and wellbeing. It is unsurprising that sense of belonging and personal wellbeing were also found to be positively associated. Both constructs share theoretical similarities, such as feelings of satisfaction and comfort with one's community and relationships.

Limitations and Future Directions

A single RI-CLPM including random intercept, cross-lagged, and autoregressive paths of all variables—social media use, sense of belonging, and personal wellbeing—would have been an ideal analysis. Due to a smaller sample size than traditionally used for RI-CLPM analysis (Kojima, et al. 2021), modifying the model down to two separate analyses was the best way to best fit the data and return results that were informative. Future research should prioritize a sufficiently powered sample in order to simplify model design and be able to explore effects between variables over time in an easier fashion.

Additionally, attrition in survey responses over time is a common challenge in longitudinal designs. This challenge was addressed by accounting for missing data using Full Information Maximum Likelihood (FIML) and Maximum Likelihood with Robust standard errors (MLR) in order to estimate missing data (Beaujean, 2014). While the estimators are reliable and the standard for handling missing data in SEM, future research should aim to reduce attrition and minimize missing data.

As previously mentioned, there is conceptual overlap between sense of belonging and personal wellbeing. The correlation between the two is unsurprising, as individuals who are more

connected to their environment and communities will have more social support and therefore may have better satisfaction in other domains of life.

Finally, future research should continue to employ objective screen time data over time while considering types of use, such as active vs. passive use. Types of use can also be associated with different platforms, such as passive use for TikTok and active use for Facebook, for example.

Conclusion

Findings were partially supportive of the study hypothesis. Social media use and personal wellbeing predict each other over time, and neither extraversion nor emotional stability was associated with social media use. Results both support and contrast previous literature while contributing novel findings by using objective measures of social media use to explore predictive relationships between use and belonging and wellbeing.

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