

The relationship between social media use and perceived social support, loneliness, and emotional connection across 7 countries

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Social media plays a central role in shaping interpersonal connections, yet its association with socioemotional well-being remains widely debated. This study examines the relationship between social media use, loneliness, emotional connection, and perceived social support across seven diverse countries using data from the 2022 Gallup/Meta State of Social Connections Survey. To address inconsistencies in prior research, we employ Specification Curve Analysis (SCA) to assess how different measurements and analytical choices shape how these relationships are reported. Findings suggest limited and context-dependent relationships, with social media use

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showing a small but positive association with emotional connection and perceived social support, while its link to loneliness remains weak. These results highlight the contextual and methodological complexities of studying social media's association with socioemotional well-being and emphasize the need for diverse measures and expanded analytical approaches to fully capture these multifaceted relationships, ultimately enhancing our understanding of how digital platforms use intersects with human well-being.

Keywords: specification curve analysis, well-being, loneliness, perceived social support, emotional connection, social media use

Despite the undeniable influence of social media in shaping contemporary interpersonal interactions, findings from a considerable body of research examining the relationship between social media use and well-being have been marked by substantial variability. Indeed, meta-analytic studies have reported positive, negative, or no significant associations between social media activity and different dimensions of socioemotional well-being, including feelings of loneliness and emotional connection, as well as perceptions of social support (see Valkenburg [2022] for a summary).

Research on the relationship between social media use and loneliness has revealed a range of findings. Some studies suggest that social media platforms, including social network sites and instant messaging tools, have no significant impact on loneliness or life satisfaction (Dienlin et al., 2017). Conversely, other research argues that social media use can exacerbate feelings of isolation by reducing face-to-face interactions and fostering surface-level online connections (Stavrova & Denissen, 2020; Zhang et al., 2022). Although the effects are complex and vary depending on the type of social media and the outcome indicators examined (e.g., Pittman & Reich, 2016), social media platforms provide opportunities for connection with others, such as through the ability to identify weak ties with shared interests. Features that enable individuals to share experiences,

maintain relationships, and access diverse social networks may also be associated with greater social interactions and lower levels of loneliness (Nowland et al., 2018; Song et al., 2014). Based on this assumption, we hypothesize:

H1: Social media use will be correlated with lower levels of loneliness.

Much like the effects of loneliness, previous studies have revealed contradictory results regarding the link between social media use and feelings of being emotionally connected to others. On one hand, Bonsaksen et al. (2021) discovered that individuals who frequented social media platforms multiple times a day reported heightened sensations of emotional isolation. Other scholars observed “that social media keeps people superficially connected, but their level of social connectedness is typically not deep and meaningful enough to make people feel emotionally connected to others” (Iwamoto et al., 2020, p. 246). Contrary to this, social media platforms provide opportunities for individuals to stay connected with friends and family, share personal experiences, and express emotions through posts, messages, and comments (Bayer et al., 2020). This can facilitate emotional bonding and strengthen relationships, leading to a sense of closeness and connection (Altman & Taylor, 1973; Utz, 2015). As such, we hypothesize that:

H2: Social media use will be correlated with higher levels of emotional connection.

Aside from its impact on different dimensions of socioemotional well-being, the role of social media in facilitating perceptions of social support has also attracted attention, particularly during periods of social isolation such as the COVID-19 pandemic. *Perceived* social support involves subjective assessment of how individuals view the availability and adequacy of supportive resources in their social network. In contrast, *received* support refers to the quality and quantity of supportive assistance obtained by the individual (Sarason et al., 1990). Although correlated, perceived social support demonstrates a more consistent relationship with beneficial health outcomes compared with received social support (Barrera, 2000; Uchino, 2004). Findings regarding the relationship between social media use and perceived social support are mixed, potentially reflecting differences in measurement approaches, sample characteristics, or analytical methods. Some studies report a positive association between social media use and social support (Seo et al., 2016), while others find negative or non-significant effects (Li et al., 2015; McDougall et al.,

2016; Wong et al., 2019; Yue et al., 2023). These inconsistencies may stem from variations in how social support is conceptualized or from the diverse ways people engage with social media. For instance, Caboa Machado et al (2023) found that social media use was positively associated with perceived support from friends and significant others, which may be influenced by the nature of online interactions, such as less frequent communication with family members. Despite the variability in findings, this relationship is critical to explore, as understanding how social media usage is associated with perceptions of social support can inform the design of effective technical, social, and policy interventions. As such, we put forth the following hypothesis:

H3: Social media use will be correlated with higher levels of perceived social support.

Given that technology platforms serve as conduits for a wide variety of content and interactions, these mixed findings are unsurprising. However, they underscore the need for a comprehensive and systematic examination of the relationship between social media use and socioemotional well-being—an approach that also accounts for the complex interplay of cultural and demographic factors. For example, prior work has indicated that the effects of social media use on loneliness may be contingent on factors such as culture (Kim et al., 2019) and age (Bonsaksen et al, 2021; Lasgaard et al., 2016; Pagan, 2020). While some studies have demonstrated the potential benefits of social media use on feelings of emotional connection (Pandele et al., 2021; Reich, 2010) and perceptions of social support (Liu et al., 2013; Seo et al., 2016) across different age groups, less is known about how well these patterns generalize across cultures. For instance, the extent to which people are emotionally expressive online may depend on the cultural context of the user (De Choudhury et al., 2017; Liu et al., 2018). De Choudhury et al.'s findings demonstrate that when compared to their peers from Western countries, users in India and South Africa tended to show greater emotional inhibition and express fewer negative emotions on social media. This cultural variation may influence the degree to which individuals are able to harness social support from their networks, as emotional expressiveness plays a crucial role in eliciting support (Kennedy-Moore & Watson, 2001). Thus, it is imperative to assess how social media's impact on perceptions of connection and social support varies across

contexts—especially those in non-Western countries. While some of the ambiguous patterns identified in earlier work are no doubt due to differences in use practices and the technological affordances of the tools studied, this paper provides some guidance for future work while leaving consideration of these more nuanced factors for subsequent studies. Thus, we ask:

RQ1a¹: Across nationally representative samples of people aged 15+ in seven geographically and culturally diverse countries (Brazil, Egypt, France, India, Indonesia, Mexico, and the United States), what is the size and association (positive or negative) of the relationship between self-reported social media use and people’s feelings of social connection (i.e., loneliness, perceived social support, and emotional connection)?

RQ1b¹: Does the size and association (positive or negative) of the relationship between self-reported social media use and people’s feelings of connection vary across plausible alternative model specifications and subsets of the data?

To reconcile these divergent findings and provide a more comprehensive understanding of the relationship between social media use and various dimensions of socioemotional well-being, this paper draws on data from the 2022 Gallup and Meta State of Social Connections Survey. We begin with preregistered analyses based on specific operationalizations of key variables and then employ Specification Curve Analysis (SCA; Simonsohn et al., 2020) to evaluate how different analytical choices impact the findings. Prior research has demonstrated the utility of SCA in addressing analytical flexibility and inconsistent findings in large-scale social datasets; for example, Orben and Przybylski (2019) applied SCA to assess the relationship between digital technology use and adolescent well-being, finding that while some associations were statistically significant, their effect sizes were minimal.

¹ These research questions (RQ1a and RQ1b) were originally phrased as “what is the size and direction” in our preregistration. Because this could be misinterpreted as a causal hypothesis, we rephrased it here as “what is the size and association (positive or negative)” given our cross-sectional data. The rest of the original wording has been retained for transparency and consistency with our preregistered plan.

Compared with single-model approaches, SCA enables us to examine the consistency of relationships across various measures of a construct, as well as across different models and subsamples.

Because prior research does not always make clear how social media use is related to different well-being outcomes, whether directly or indirectly, and given that our data are cross-sectional, we do not aim to examine causal effects. Nevertheless, studying these associations can provide valuable insight into how patterns of social media use and related experiences vary across countries and demographic groups. As such, we apply SCA to explore how social media use relates to different aspects of socioemotional well-being, including loneliness, emotional connection, and perceived social support, while also considering variations across cultural contexts and age groups

Methods

Transparency and Openness

In the following sections, we report on sample size, all data exclusions (if any), all manipulations, and all measures in the study. The data, materials, preregistered analysis plan, and a full list of measures included in the 2022 Gallup and Meta State of Social Connections Survey can be found in the OSF repository for this project: https://osf.io/nawtr/?view_only=52db38917649484d99cf73a3defa5d80. Data were analyzed using R, version 4.0.0 (R Core Team, 2020) and the package *specr*, version 1.0.0 (Masur & Scharkow, 2023).

Sample Information

As described in the Gallup/Meta State of Social Connections Methodology Report (Gallup, 2022a), the samples in each country were probability-based and nationally representative of the population aged 15 or older who live in a household. These countries were intentionally selected to reflect global language representation, population size, and world region (Gallup, 2022b). Sample sizes were determined by Meta and Gallup with the goal of achieving reasonable precision around country-level estimates of interest.

The original number of interviews conducted were 2,000 in Brazil; 2,002 in Egypt; 2,000 in France; 2,000 in India; 2,077 in Indonesia; 2,001 in Mexico; 2,016 in the United States. In countries where telephone access did not cover a broad enough share of the population (about 80% or more), interviews were conducted face-to-face rather than over the phone. For France and the United States, where surveys were conducted by phone, participants were recruited through random digit dialing or from nationally representative lists of phone numbers, using a dual-frame approach that included both landlines and mobile phones. In Brazil, Egypt, India, Indonesia, and Mexico, where surveys were conducted in person, Gallup applied a combination of stratified and clustered sampling. Sampling units were first organized based on geographic and population factors, and clusters of households were then selected. Within each cluster, interviewers followed a random route method, selecting every third household, and a randomly chosen individual aged 15 or older completed the survey using computer-assisted personal interviewing (CAPI). While Gallup's sampling approach was designed to achieve national representativeness in each country, small segments of the population were excluded in some cases due to geographic inaccessibility or concerns about interviewer safety. All interviews were conducted between April and June 2022.

Survey weights were constructed by Gallup to account for sampling design and correct for unequal selection probabilities across countries. In face-to-face surveys, weights adjusted for multistage sampling and household selection probabilities; in telephone surveys, they adjusted for sampling frame and phone usage. All base weights were post-stratified to align with national population benchmarks (e.g., age, gender, and, where available, education). Full weighting procedures, including design effects and margins of error, are detailed in the Gallup Methodology Report (Gallup, 2022a).

Prior to publicly releasing the survey microdata, Meta assessed re-identification risk within each country using the method described by Rocher et al. (2019). The risk assessment resulted in some variables being coarsened and some participants being removed prior to public release. The final number of participants available for analysis in the released dataset was as follows: Brazil (n = 1,989), Egypt (n = 1,982); France (n =

1,981), India (n = 1,996), Indonesia (n = 2,061); Mexico (n = 1,985); and United States (n = 1,997).

The smallest national subsample in our analysis was from France (n = 1,981). A priori power analysis using G*Power indicated that, with this sample size and eight predictors in the primary model, there was approximately 80% power to detect effect sizes as small as $f^2 = .004$. For context, Cohen (1988) defines an f^2 of .02 as a small effect size. Thus, our sample is sufficiently powered to detect even very small effects, suggesting adequate sensitivity for detecting meaningful associations in the data.

For more detailed information on the sampling procedure and survey weights, please see Gallup Methodology Report (Gallup, 2022a).

Measures

The full survey instrument includes a wide range of questions. However, we focused primarily on the measures that were most relevant to testing our hypotheses and answering our research questions. See Table S1 for full item wording for both primary measures and additional measures included in the SCA.

Loneliness

The primary measure of loneliness, aligned with our preregistered hypotheses, was created by averaging responses from the three negatively worded loneliness items on a scale ranging from 1 to 4, where values closer to 1 ('Never') indicate feeling less lonely and values closer to 4 ('Always') indicate feeling more lonely (e.g., *How often do you feel that you lack companionship? How often do you feel left out? and How often do you feel isolated from others?*; $M = 2.07$; $SD = 0.77$). This measure was adopted from a three-item version of the UCLA Loneliness Scale (Hughes et al., 2004). Ten additional operationalizations of loneliness were also explored in the SCA. These include three positively worded items from the UCLA Loneliness Scale (see Table S1 for an overview of analytic decisions).

Social Support

The primary measure of social support, aligned with our preregistered hypotheses, was created by averaging responses from five items that gauged how often participants felt that a specific type of support was available to them (e.g., *someone to take care of you if*

you were sick or injured; someone to loan you money; someone you can count on to listen to you when you need to talk; someone who makes you feel loved and cared for; and someone to do something fun with). Responses were measured on a scale ranging from 1 to 4, where 1 is ‘Never’ and 4 is ‘Always’ ($M = 3.20$, $SD = 0.65$). These five items were created by Meta and Gallup and adapted from the Medical Outcomes Study Social Support Survey (MOS-SSS; Sherbourne & Stewart, 1991). Seven additional operationalizations of social support were also explored in the SCA.

Emotional Connection

The primary measure of emotional connection, aligned with our preregistered hypotheses, was assessed using a single-item question. The item wording, “In general, how connected do you feel to people? By connected, I mean how close you feel to people emotionally. Do you feel...?” was developed by Gallup and is used here to assess participants' perceived emotional connection to others. Responses were measured on a scale from 1 (“Not at all connected”) to 4 (“Very connected”), with higher values indicating greater connection ($M = 3.05$; $SD = 0.87$)². One additional possible operationalization of emotional connection was also explored in the SCA.

Social Media Use

The primary measure of social media use, aligned with our preregistered hypotheses, was assessed using a single-item question. The item wording, “How often did you interact with people through social media, for example [insert top 5 social media platforms in each country] 1 in the past 7 days?” was developed by Gallup. Responses were recorded on a scale from 1 (“Never”) to 5 (“More than once per day”) ($M = 3.05$, $SD = 1.66$). One additional possible operationalization of social media use that was also explored in the SCA asked about whether there was any prior use of social media within the past 30 days.

²The distribution of this measure is skewed toward higher values, indicating that most respondents report feeling highly connected. Regression coefficients should be interpreted with this skew in mind.

Covariates

Demographic variables such as age, gender, education, household income, household composition (e.g., the number of adults 15 years or older; number of children 15 years or younger), and number of friends were controlled for the purpose of this study. One-hundred and twenty-eight possible combinations of the seven covariates were explored in the SCA.

Data Analyses

Primary Analysis

To test our primary hypotheses, we first fit a series of preregistered models using the specified variable definitions – one for each country – that regressed each socioemotional outcome onto self-reported social media use and a host of covariates (age, gender, number of close friends, education, income, and household composition).

Specification Curve Analysis

This study employs specification curve analysis (SCA) to examine the relationships between social media use and socioemotional well-being indicators (i.e., loneliness, emotional connection, and perceived social support). Proposed by Simonsohn et al. (2020), SCA is a method used to improve the transparency in analytical decision-making by systematically assessing how various analytical choices influence empirical findings. Relatedly, SCA has been used to examine the associations between social media use on adolescent well-being (Twenge et al., 2022). By applying this method, we are able to test the robustness of these proposed relationships across different measures of a construct as well as across different country and demographic subsamples (RQ1a and RQ1b). Table S1 presents the measurement operationalization implemented in the SCA.

Handling Item Non-Response

Not all participants responded to all items in the survey. Item non-response was handled using multiple imputation. That is, non-missing survey responses along with participants' sampling weight and covariates were used to impute missing data across 10 data sets. Unless specified otherwise, all regression results reported are weighted and pooled across these 10 multiply imputed datasets.

Results

Social Media Use and Loneliness

Primary Results

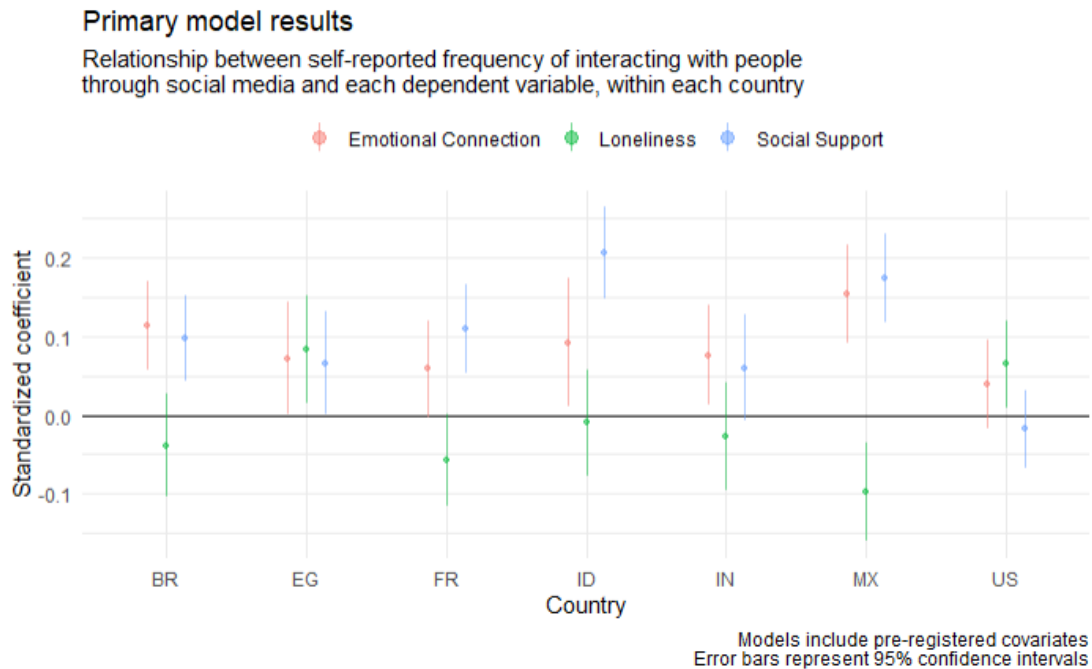


Figure 1. Relationship between self-reported frequency of interacting with people through social media and each dependent variable (loneliness, emotional connection, and perceived social support) within each country³.

Note: BR = Brazil; EG = Egypt; FR = France; ID = Indonesia; IN = India; MX = Mexico; US = United States

Our primary hypothesis was that social media use would be negatively associated with loneliness. Findings are visualized in Figure 1. Full output of this analysis, including the summary of preregistered weighted OLS regression coefficients, standard errors, and 95% confidence intervals for the association between social media use and loneliness, are presented in Supplemental Table S2. A significant positive relationship between social media use and loneliness was only observed in Egypt ($\beta = 0.08$, $SE = 0.03$, 95% CI [0.01,

0.14]). In other words, frequent use of social media was associated with more loneliness. However, a significant negative relationship was observed in the Mexico sample ($\beta = -0.09$, $SE = 0.03$, 95% CI [-0.16, -0.03]) - suggesting that increased social media use was associated with less loneliness. No significant relationship was observed in the remaining countries. Thus, H1 is not supported.

Specification Curve Analysis

Figure 2 shows an SCA of the relationship between self-reported social media use and feelings of loneliness using all data, while Table 1 summarizes specification curves of the relationship within specific subsets of the data. The analysis revealed that across all subsets, 30% of the models yielded a significantly negative coefficient between social media use and loneliness (median $\beta = -0.04$, $Mad = 0.09$, $min = -0.45$, $max = 0.28$, $n = 19,712$). In the majority of analyses (60%), however, no significant relationship was observed.

Across most nations, over 70% of the specifications tested resulted in non-significant associations between social media use and loneliness. Two notable exceptions were Mexico and Indonesia. In Mexico (median $\beta = -0.14$, $Mad = 0.09$, $min = -0.64$, $max = 0.25$, $n = 9,856$), social media use was significantly associated with less loneliness in 61% of specifications, whereas in Indonesia (median $\beta = -0.12$, $Mad = 0.14$, $min = -1.03$, $max = 0.43$, $n = 9,152$), a similar result was obtained in 48% of specifications. Positive links between social media use and loneliness were observed in the United States (22% of specifications), though even in that sample, most associations were non-significant. Across all demographic groups, more than 70% of the specifications resulted in nonsignificant associations. When significant results were observed, they were more likely to be negative (i.e., social media use was associated with less loneliness), but in no more than 30% of specifications.

³Descriptive statistics and boxplots of the key variables across countries can be found in the Appendix (Supplemental Figures S1 and S2).

Among respondents aged 65 and above, social media use was relatively less likely to be negatively associated with loneliness (12%).

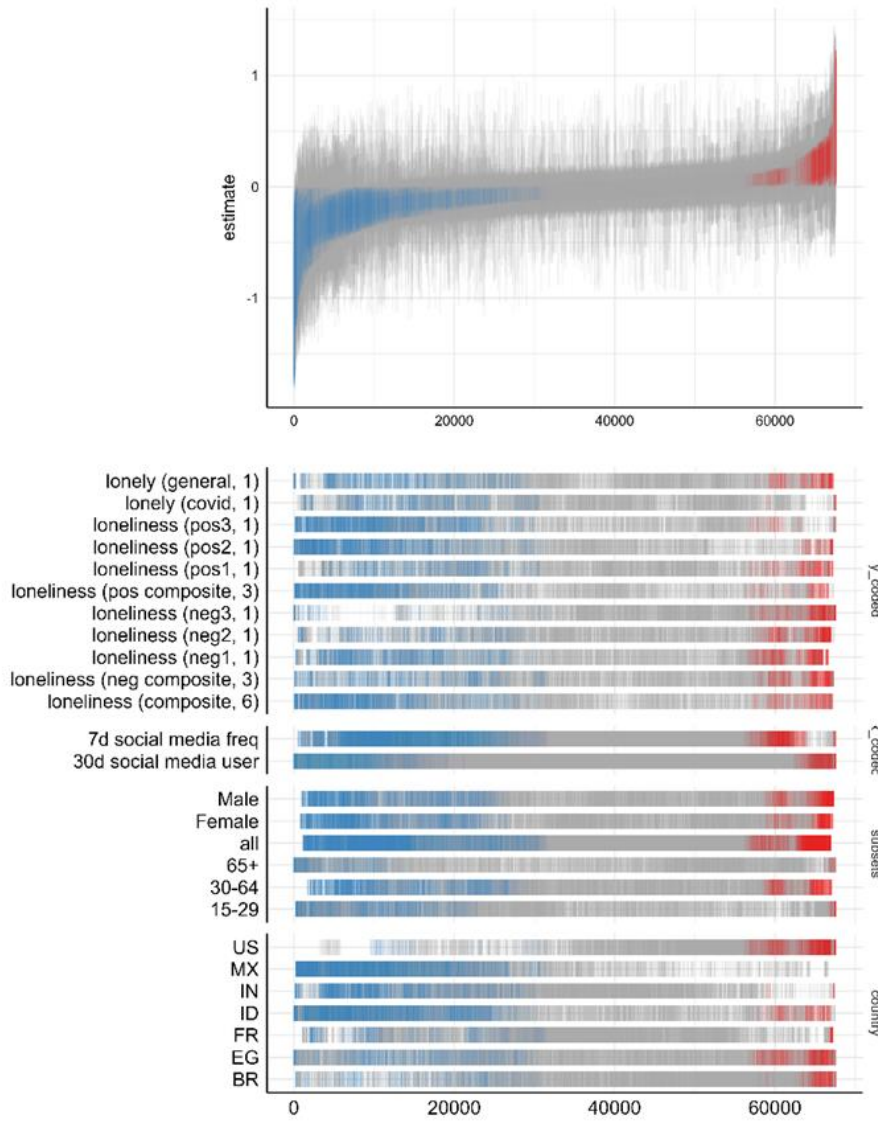


Figure 2. Social media use and loneliness specification curve

Note: The 67,314 points on the x-axis represent different possible model specifications resulting from the combinations of analytical decisions involving 128 possible covariates (or no covariates) and 11 possible operationalizations of loneliness. The regression coefficient for social media use in each specification is shown at the top of the graph (Estimate); the gray error bars represent 95% confidence intervals. The “dashboard” of decisions is displayed at the bottom of the graph (Outcome). Models were weighted OLS regressions within each country (US = United States; MX = Mexico; IN = India; ID = Indonesia; FR = France; EG = Egypt; BR = Brazil). Estimates were pooled across analyses of 10 imputed datasets. Blue and red represent statistically significant estimates of the relationship, while gray represents non statistically significant estimates.

Table 1. Specification curve summaries of the relationship between social media use and loneliness, across all models and curves within specific subsets (ages, genders, and countries).

Subset	n	Median β	Mad	Min β	Max β	LB Estimate	UB Estimate	Prop Sig (Positive)	Prop Sig (Negative)
all	19712	-0.04	0.09	-0.45	0.28	-0.29	0.19	0.10	0.30
15-29	9856	-0.09	0.13	-0.68	0.67	-0.55	0.29	0.01	0.22
30-64	9856	-0.04	0.09	-0.40	0.29	-0.26	0.17	0.06	0.21
65+	8448	-0.04	0.14	-1.22	0.55	-0.70	0.27	0.01	0.12
Female	9856	-0.04	0.11	-0.51	0.32	-0.31	0.20	0.05	0.23
Male	9856	-0.04	0.10	-0.47	0.33	-0.32	0.24	0.08	0.22
Brazil	9856	-0.00	0.08	-0.68	0.67	-0.28	0.23	0.04	0.06
Egypt	9856	-0.04	0.11	-1.22	0.55	-0.47	0.25	0.10	0.14
France	9856	-0.05	0.05	-0.45	0.32	-0.27	0.11	0.01	0.08
Indonesia	9152	-0.12	0.14	-1.03	0.43	-0.48	0.16	0.03	0.48
India	9152	-0.06	0.07	-0.75	0.38	-0.30	0.06	0.00	0.25
Mexico	9856	-0.14	0.09	-0.64	0.25	-0.50	0.05	0.00	0.61

United States	9856	0.05	0.08	-0.32	0.48	-0.13	0.26	0.22	0.01
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Note: Bolded 'LB estimate' and 'UB estimate' indicate statistical significance at the 95% confidence interval.

Social Media Use and Emotional Connection

Primary Results

Our primary hypothesis predicted that social media use would be positively associated with emotional connection. Results are visualized in Figure 1. Full output of this analysis, including the summary of preregistered weighted OLS regression coefficients, standard errors, and 95% confidence intervals for the association between social media use and emotional connection, are presented in Supplemental Table S3. A significant positive relationship between social media use and social support was observed in all countries except the United States. In other words, increased use of social media was associated with stronger feelings of emotional connection, consistent with H2.

Specification Curve Analysis

Figure 3 shows an SCA of the relationship between self-reported social media use and feelings of emotional connection using all data, while Table 2 summarizes specification curves of the relationship within specific subsets of the data. The analysis revealed that *across all subsets*, 71% of the models yielded a significantly positive coefficient between social media use and emotional connection (median $\beta = 0.10$, $Mad = 0.07$, $min = -0.10$, $max = 0.47$, $n = 3,584$).

A significant positive association between social media use and emotional connection was fairly robust in Indonesia, India, and Mexico (69-79% of specifications), but less robust in Brazil, France, and the United States where the majority of results were nonsignificant. In Egypt, a positive association was detected in 68% of specifications despite the confidence interval including 0. This may suggest a smaller effect as well as a skewed distribution.

With regard to the demographic subsets, a positive association between social media use and emotional connection was detected in the majority of the specifications for

Males and those aged 30-64 years old (57 – 61%). However, it is important to note that the confidence interval for these subsets included 0, raising similar concerns as those found in the Egypt subset. Findings were less robust in Female respondents, as well as those 15-29 years old and aged 65 and above, where the majority of the results were nonsignificant (52 – 87%).

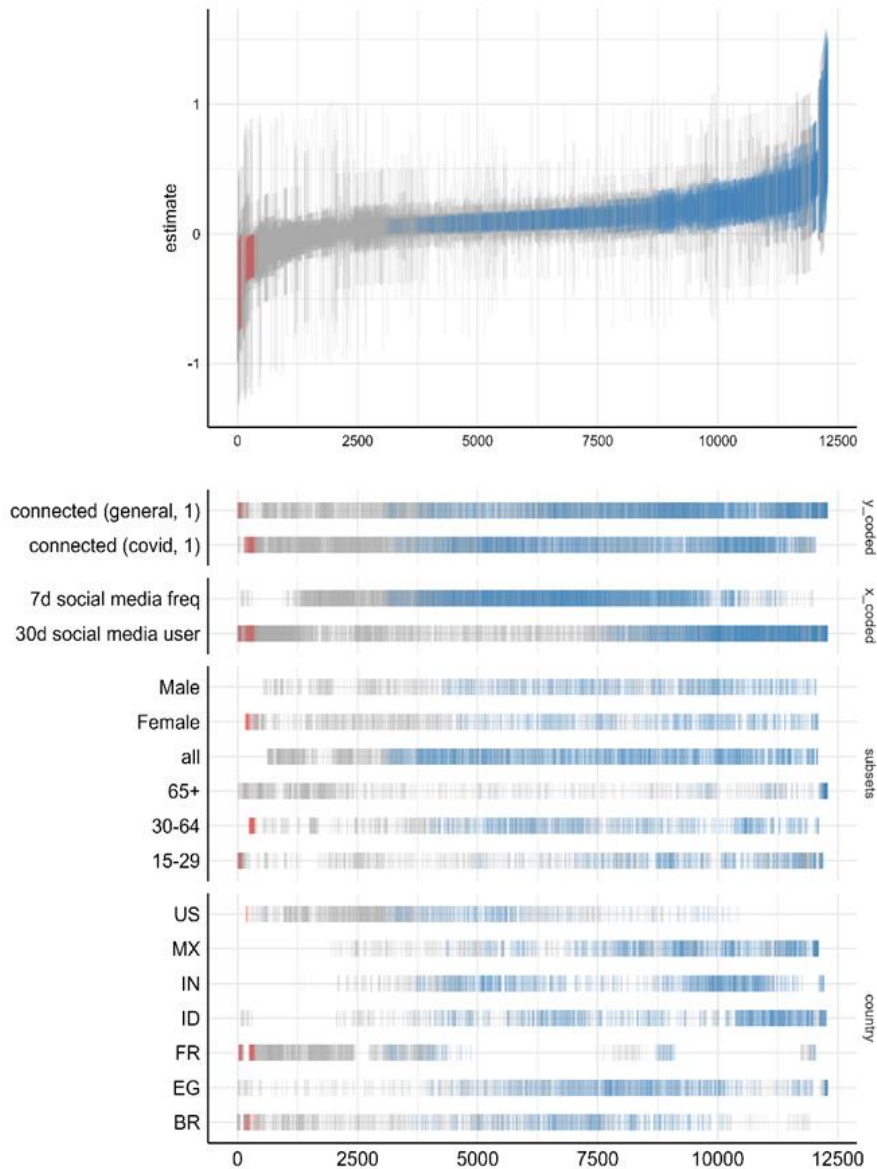


Figure 3. Social media use and emotional connection specification curve

Note: The 12,288 points on the x-axis represent different possible model specifications resulting from the combinations of analytical decisions involving 128 possible covariates (or no covariates) and two possible operationalizations of the emotional connection. The regression coefficient for social media use in each specification is shown at the top of the graph (Estimate); the gray error bars represent 95% confidence intervals. The “dashboard” of decisions is displayed at the bottom of the graph (Outcome). Models were weighted OLS regressions within each country (US = United States; MX = Mexico; IN = India; ID = Indonesia; FR = France; EG = Egypt; BR = Brazil). Estimates were pooled across analyses of 10 imputed datasets. Blue and red represent statistically significant estimates of the relationship, while gray represents non statistically significant estimates.

Table 2. Specification curve summaries of the relationship between social media use and emotional connection, across all models and curves within specific subsets (ages, genders, and countries).

Subset	n	Median β	Ma d	Min β	Max β	LB Estimate	UB Estimate	Prop Sig (Positive)	Prop Sig (Negative)
all	3584	0.10	0.07	-0.10	0.47	-0.08	0.36	0.71	0.00
15-29	1792	0.14	0.14	-0.50	0.64	-0.38	0.57	0.41	0.02
30-64	1792	0.11	0.05	-0.19	0.50	-0.17	0.36	0.58	0.03
65+	1536	0.06	0.16	-0.45	0.96	-0.24	0.82	0.13	0.00
Female	1792	0.09	0.09	-0.24	0.48	-0.17	0.38	0.46	0.02
Male	1792	0.12	0.08	-0.12	0.46	-0.08	0.34	0.57	0.00
Brazil	1792	0.09	0.06	-0.50	0.40	-0.28	0.26	0.39	0.02
Egypt	1792	0.13	0.05	-0.45	0.96	-0.13	0.75	0.68	0.00
France	1792	0.00	0.10	-0.41	0.45	-0.35	0.38	0.11	0.05
Indonesia	1664	0.17	0.13	-0.37	0.85	0.02	0.63	0.73	0.00
India	1664	0.14	0.10	-0.04	0.72	0.05	0.34	0.79	0.00
Mexico	1792	0.18	0.11	0.01	0.50	0.04	0.45	0.69	0.00

United States	1792	0.06	0.05	-0.21	0.25	-0.11	0.18	0.27	0.01
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Note: Bolded 'LB estimate' and 'UB estimate' indicate statistical significance at the 95% confidence interval.

Social Media Use and Perceived Social Support

Primary Results

Our primary hypothesis predicted that social media use would be positively associated with perceptions of social support. Findings are visualized in Figure 1. Full output of this analysis, including the summary of preregistered weighted OLS regression coefficients, standard errors, and 95% confidence intervals for the association between social media use and emotional connection, are presented in Supplemental Table S4. A significant positive relationship between social media use and social support was observed in all countries except the United States. In other words, increased use of social media was associated with stronger feelings of social support, lending support to H3.

Specification Curve Analysis

Figure 4 shows an SCA of the relationship between self-reported social media use and perceptions of social support using all data, while Table 3 summarizes specification curves of the relationship within specific subsets of the data. The analysis revealed that *across all subsets*, 71% of the models yielded a significantly positive coefficient between social media use and perceived social support (median $\beta = 0.12$, $Mad = 0.10$, min = -0.30, max = 0.71, n = 14,336).

However, there is a great deal of variability in the robustness of the association between social media and perceived social support. Positive effects were robust across different specifications in Indonesia (61%) and Mexico (85%). They were less evident in Brazil, Egypt, and France ($\leq 47\%$) and quite rare in the United States sample (9%). In India, positive effects were detected in 84% of specifications despite the 95% CI including zero. With regard to the demographic subsets, a positive association between social media use and perceived social support was detected in the majority of the specifications for both Males and Females, as well as those aged 30-64 years old (51 – 60%). Findings were less

robust in respondents aged 15-29 years old in addition to respondents aged 65 and above, where the majority of the results were nonsignificant (64 – 75%).

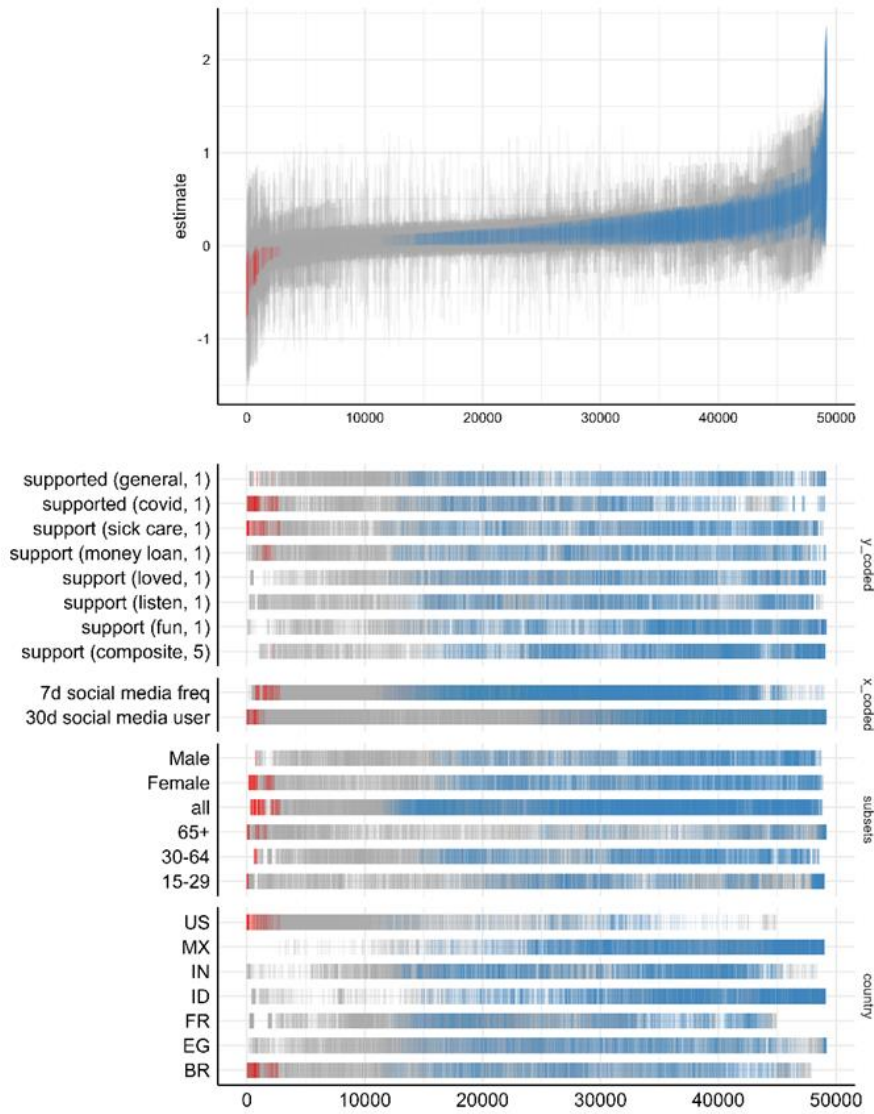


Figure 4. Social media use and perceived social support specification curve

Note: The 49,152 points on the x-axis represent different possible model specifications resulting from the combinations of analytical decisions involving 128 possible covariates

(or no covariates) and eight possible operationalizations of perceived social support. The regression coefficient for social media use in each specification is shown at the top of the graph (Estimate); the gray error bars represent 95% confidence intervals. The “dashboard” of decisions is displayed at the bottom of the graph (Outcome). Models were weighted OLS regressions within each country (US = United States; MX = Mexico; IN = India; ID = Indonesia; FR = France; EG = Egypt; BR = Brazil). Estimates were pooled across analyses of 10 imputed datasets. Blue and red represent statistically significant estimates of the relationship, while gray represents non statistically significant estimates.

Table 3. Specification curve summaries of the relationship between social media use and social support, across all models and curves within specific subsets (ages, genders, and countries).

Subset	n	Median β	Mad	Min β	Max β	UB Estimate	LB Estimate	Prop Sig (Positive)	Prop Sig (Negative)
all	14336	0.12	0.10	-0.30	0.71	-0.06	0.48	0.71	0.02
15-29	7168	0.13	0.12	-0.49	0.76	-0.29	0.66	0.35	0.01
30-64	7168	0.11	0.10	-0.24	0.64	-0.06	0.45	0.52	0.00
65+	6144	0.12	0.19	-0.54	1.44	-0.27	0.78	0.22	0.03
Female	7168	0.12	0.12	-0.39	0.73	-0.15	0.51	0.57	0.03
Male	7168	0.12	0.12	-0.22	0.68	-0.04	0.48	0.51	0.00
Brazil	7168	0.10	0.10	-0.49	0.54	-0.29	0.40	0.38	0.07
Egypt	7168	0.11	0.08	-0.37	1.44	-0.06	0.62	0.47	0.00
France	7168	0.10	0.06	-0.33	0.37	-0.08	0.32	0.42	0.00
Indonesia	6656	0.23	0.15	-0.29	0.98	-0.05	0.69	0.84	0.00
India	6656	0.12	0.09	-0.54	0.61	0.00	0.35	0.61	0.00
Mexico	7168	0.23	0.13	-0.06	0.76	0.06	0.63	0.85	0.00
United States	7168	0.02	0.07	-0.48	0.37	-0.18	0.18	0.09	0.05

Note: Bolded 'LB estimate' and 'UB estimate' indicate statistical significance at the 95% confidence interval.

Discussion

Leveraging data from the 2022 State of Social Connections Survey, our study aimed to explore the relationship between social media use and three key psychosocial outcomes: loneliness, emotional connection, and perceived social support. We utilized specification curve analysis (SCA; Simonsohn et al., 2020) to account for the diversity of possible model specifications and to generate a more comprehensive understanding of these relationships across multiple contexts. Understanding how these correlations vary across contexts and model specifications can help inform and motivate future research aimed at identifying potential causal relationships. Prior work has applied this approach to examine digital technology use and well-being (Orben & Przybylski, 2019), underscoring its utility in studying the associations between social media use and well-being. In particular, the heterogeneity observed in our findings provides meaningful insight into how the factors surrounding social media use, such as social and cultural environments, might shape its associations with well-being. This helps explain why prior studies have reached differing conclusions and underscores the importance of evaluating digital media patterns within and across diverse populations.

Our first hypothesis posited that social media use would be correlated with lower levels of loneliness. The SCA results show that only 30% of all subsets yielded a significantly negative coefficient, indicating a weak relationship between social media use and reduced loneliness. Across all specifications the confidence intervals include zero, suggesting that the distribution of effect sizes appears to cluster around zero or lean negative. This means that in our data, the impact of social media use on loneliness, though generally negative, is too small to be robustly detected. These findings contrast with earlier research, which suggests that features of online communication that enable individuals to share experiences, maintain relationships, and access diverse social networks may facilitate

easier social interactions and potentially reduce loneliness (Nowland et al., 2018; Song et al., 2014).

One key reason for this contrast could be that our study examines seven different countries, and earlier studies do not account for cross-country differences in social media use or the varying types of interactions and activities users engage in on these platforms. This omission highlights the complexity of social media's role in loneliness, as different cultural contexts and interaction patterns may significantly influence this relationship (Zhang et al., 2022). For example, in our SCA, Mexico and Indonesia showed notably higher proportions of significantly negative associations (61% and 49%, respectively). In comparison, the United States showed higher proportions of significantly positive associations (22%). These patterns indicate that the relationship between social media use and loneliness is not uniform both within and across diverse populations and may depend on country and community-level factors such as communication norms, platform ecosystems, or the role of messaging-based tools in sustaining social ties.

Our second hypothesis posited that social media use would be correlated with higher levels of emotional connection. The SCA results largely support this hypothesis, with 71% of the models yielding a significantly positive coefficient. However, confidence intervals exclude zero in only three subsets: Indonesia, India, and Mexico, suggesting that while the effect sizes may be generally small and positively skewed, the large sample sizes in these subsets allow for the detection of significant effects. Similarly to findings focusing on social media use and emotional connection, the SCA results also show that 71% of the models yielded a significantly positive coefficient, supporting the hypothesis that social media use is associated with perceived social support (H3). However, this finding comes with notable heterogeneity across different model specifications. In some cases, the confidence intervals for these results still include zero, suggesting that while the overall trend is positive, the magnitude of the effect may similarly be small and context dependent. Across outcomes, associations were weakest and least consistent in the United States, Brazil, and France, and strongest in Indonesia, India, and Mexico. In many middle-income and non-Western countries, platforms such as WhatsApp and Facebook function as primary communication infrastructures (Poushter, 2024), which may strengthen the

connection between online interaction and perceptions of emotional closeness or available support.

Cultural frameworks may also help contextualize these differences. Prior research indicates that users in collectivist contexts are more likely to use social networking platforms for relationship maintenance, communication with close ties, and socially supportive interaction (Abbas & Mesch, 2015), whereas users in more individualistic contexts more often demonstrate motivations aligned with entertainment, self-promotion, and broader networks (e.g., Kim et al., 2011). In such settings, digital communication may more readily translate into feelings of bonding and support, potentially explaining the stronger positive associations observed in India, Indonesia, and Mexico. By contrast, more individualistic contexts, such as the United States and France, may place less emphasis on digitally mediated relational maintenance, which may help account for the weaker and less consistent associations found in these countries.

With regard to the demographic differences observed in our findings, for emotional connection and social support, positive associations were more frequently detected among both men and women subsets, as well as those aged 30 to 64. Weaker positive associations were found mostly within the 65+ subset. These subset differences suggest that the relational affordances of social media may be more relevant for individuals in midlife, who, compared with older adults, may rely more heavily on digital tools to maintain dispersed networks. In support of this notion, a recent poll from the Pew Research Center found that adults aged 30 to 64 use a broader array of social media platforms and have higher usage rates than adults ages 65 and older (Pew Research Center, 2025). These patterns, although not causal, reinforce the broader conclusion that relationships between social media use and socioemotional well-being are shaped by demographic and contextual factors rather than reflecting a universal pattern.

Variations in media portrayals of social media use, along with differences in policies, regulations, and cultural contexts, may shape how individuals in different countries perceive and report their social media experiences, potentially influencing our findings. Media portrayals often frame social media as either harmful or beneficial, shaping public narratives that influence how individuals interpret their own usage. In support of

this notion, prior work has found that those from globally Western countries are more likely to believe that Facebook has negative personal and societal impacts compared to those from Eastern and global south countries (Ernala et al., 2022). This, in turn, may contribute to discrepancies in self-reported engagement and well-being. For instance, Ernala et al. (2020) highlights the challenges of accurately measuring social media use, demonstrating that self-reported data often diverges from actual usage and revealing differences in reporting accuracy across countries. They found significant between-country differences in error in self-reported time spent, with non-Western countries such as Thailand having higher levels of error. These concerns are further supported by a systematic review and meta-analysis by Parry et al. (2021), which found that self-reported media use often poorly corresponds with logged usage, particularly for measures of problematic media use.

Additional cross-national research further supports the interpretation that differences in social media associations may arise from differences in how people use these platforms. Studies show that country-level factors predict social comparison tendencies (Chen et al., 2021), impression-management norms (Liu et al., 2018), and the prevalence of messaging-based versus feed-based interaction (Poushter, 2024), all of which may shape how online interactions translate into feelings of support or connection. As such, while it is beyond the scope of this study, it is crucial for future work to systematically explore the nuanced relationship between social media use and indicators of socioemotional well-being, taking into account the variability introduced by not only reporting biases, but contextual factors as well.

This work provides valuable insights to the relationship between social media use and socioemotional well-being indicators, though it is not without limitations. Although this study includes variations in measures of social media use, loneliness, perceived social support, and emotional connection available within the *State of Social Connections Study*, the scope remains limited. The cross-sectional scope of the data, combined with the heterogeneity of behaviors captured by a single-item measure of social media use, limits the ability of this study to provide a nuanced understanding of the relationship between social media use and socioemotional well-being.

While this dataset enables the examination of model specifications across diverse cultures and age groups, researchers have conceptualized and measured these constructs in numerous ways. Future research should strive to incorporate these alternative measures (e.g., behavioral data on social media use, validated measures) into specification curve analyses to achieve a more comprehensive understanding of these complex relationships. Additionally, the dataset's correlational nature limits the scope of this study, preventing any causal inferences about the relationship between social media use and different dimensions of socioemotional well-being. To address this limitation, future research should incorporate diverse methodological approaches, such as experimental or longitudinal designs, to better establish causal relationships.

While our findings provide evidence for positive associations between social media use and both emotional connection and perceived social support, they also reveal a nuanced and often minimal relationship with loneliness. These results underscore the importance of considering cross-cultural and contextual factors when examining the socioemotional effects of social media use. Future research should build on this work by incorporating behavioral measures and expanding analytical approaches to capture the full scope of these multifaceted relationships, ultimately advancing our understanding of how digital platforms shape human well-being. The SCA approach provides a way to better understand patterns identified in prior literature by testing multiple decision pathways and thus offering insight into the durability or idiosyncratic nature of specific methodological decisions. As such, our study demonstrates the value of using specification curve analysis to unravel the complex and context-dependent relationships between social media use and key psychosocial outcomes – an important research focus that will remain crucial as practices, platforms, and cultural expectations shift

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Supplemental Materials

Table S1: Measurement Operationalization

	Measure Operationalization	Item Name	Item Wording	Response Options
Dependent Variable (Y)				
	Single item measure of support	Supported (general, 1)	In general, how supported do you feel by people? By supported, I mean how much you feel cared for by people? Do you feel...?	Very supported (4) Fairly supported (3) A little supported (2) Not at all supported (1)
Social Support	Single item measure of social support	Support (covid, 1)	Compared to before the [local term for coronavirus] pandemic, do you now feel more supported by people, less supported by people, or the same as you did before? By supported, I mean how much you feel cared for by people.	More supported (1) The same as you did before (0) Less supported (-1)
	Single item measure of social support	Support (sick care, 1)	Suppose that you needed someone to take care of you if you were sick or injured. How often would this	Always (4) Sometimes (3) Rarely (2) Never (1)

		type of support or help be available to you?	
Single item measure of social support	Support (money loan, 1)	Suppose that you needed someone to loan you money. How often would this type of support or help be available to you?	Always (4) Sometimes (3) Rarely (2) Never (1)
Single item measure of social support	Support (loved, 1)	Suppose that you needed someone who makes you feel loved and cared for. How often would this type of support or help be available to you?	Always (4) Sometimes (3) Rarely (2) Never (1)
Single item measure of social support	Support (listen, 1)	Suppose that you needed someone you can count on to listen to you when you need to talk. How often would this type of support or help be available to you?	Always (4) Sometimes (3) Rarely (2) Never (1)
Single item measure of support	Support (fun, 1)	Suppose that you needed someone to do something fun with. How often would this type of support or help be available to you?	Always (4) Sometimes (3) Rarely (2) Never (1)
Mean of the 5 social support	Support	-	-

Loneliness

scale items (i.e., sick care, money loan, loved, listen, fun)*	(composite, 5)		
Single item measure of loneliness	Lonely (general, 1)	In general, how lonely do you feel? By lonely, I mean how much you feel emotionally isolated from people. Do you feel...?	More lonely (2) Less lonely (1)
Single item measure of loneliness	Lonely (covid, 1)	Compared to before the [local term for coronavirus] pandemic, do you now feel more lonely, less lonely, or the same as you did before? By lonely, I mean how much you feel emotionally isolated from people.	More lonely (1) The same as you did before (0) Less lonely (-1)
Single item measure of loneliness, reverse scored (positively worded)	Loneliness (pos1, 1)	How often do you feel that there are people who really understand you?	Always (4) Sometimes (3) Rarely (2) Never (1)
Single item measure of loneliness, reverse scored (positively worded)	Loneliness (pos2, 1)	How often do you feel that there are people you can talk to?	Always (4) Sometimes (3) Rarely (2) Never (1)

	Single item measure of loneliness, reverse scored (positively worded)	Loneliness (pos3, 1)	How often do you feel that there are people you can turn to?	Always (4) Sometimes (3) Rarely (2) Never (1)
	Mean of the 3 positively worded reverse scored loneliness scale items	Loneliness (pos composite, 3)	-	-
	Single item measure of loneliness (negatively worded)	Loneliness (neg1, 1)	How often do you feel that you lack companionship?	Always (4) Sometimes (3) Rarely (2) Never (1)
	Single item measure of loneliness (negatively worded)	Loneliness (neg2, 1)	How often do you feel left out?	Always (4) Sometimes (3) Rarely (2) Never (1)
	Single item measure of loneliness (negatively worded)	Loneliness (neg3, 1)	How often do you feel isolated from others?	Always (4) Sometimes (3) Rarely (2) Never (1)
	Mean of the 3 negatively worded loneliness scale items*	Loneliness (neg composite, 3)	-	-
	Mean of the 6 loneliness scale items (3 negatively worded, 3 positively worded reverse scored)	Loneliness (composite, 6)	-	-
Emotional Connection	Single item measure of emotional connection*	Connected (general, 1)	In general, how connected do you feel to people? By connected, I mean	Very connected (4)

			how close you feel to people emotionally. Do you feel...?	Fairly connected (3) A little connected (2) Not at all connected (1)
	Single item measure of emotional connection	Connected (covid, 1)	Compared to before the [local term for coronavirus] pandemic, do you now feel more connected to people, less connected to people, or the same as you did before? By connected, I mean how close you feel to people emotionally.	More connected (1) The same as you did before (0) Less connected (-1)
Independent Variable (X)				
Social Media Use	Single item measure of frequency of social media use to interact with people in the past 7 days*	7 Day Social Media Freq	How often did you interact with people through social media, for example [insert top 5 social media platforms in each country] 1 in the past 7 days?	Never (1) Only once (2) A few times (3) Once per day (4) More than once per day (5)
	Single item measure of social media use in the past 30 days	30 Day Social Media User	Did you interact with people through social media, for example [insert	Yes (1) No (0)

top 5 social media
platforms in each
country] 1 to get
support or help in
the past 30 days?

Note: * Indicates the measurement operationalization used in the primary analyses. Item names were modified slightly from the Gallup/Meta State of Social Connections Codebook for analysis.

Figure S1. Box plots of social media frequency, connection, and social support items.

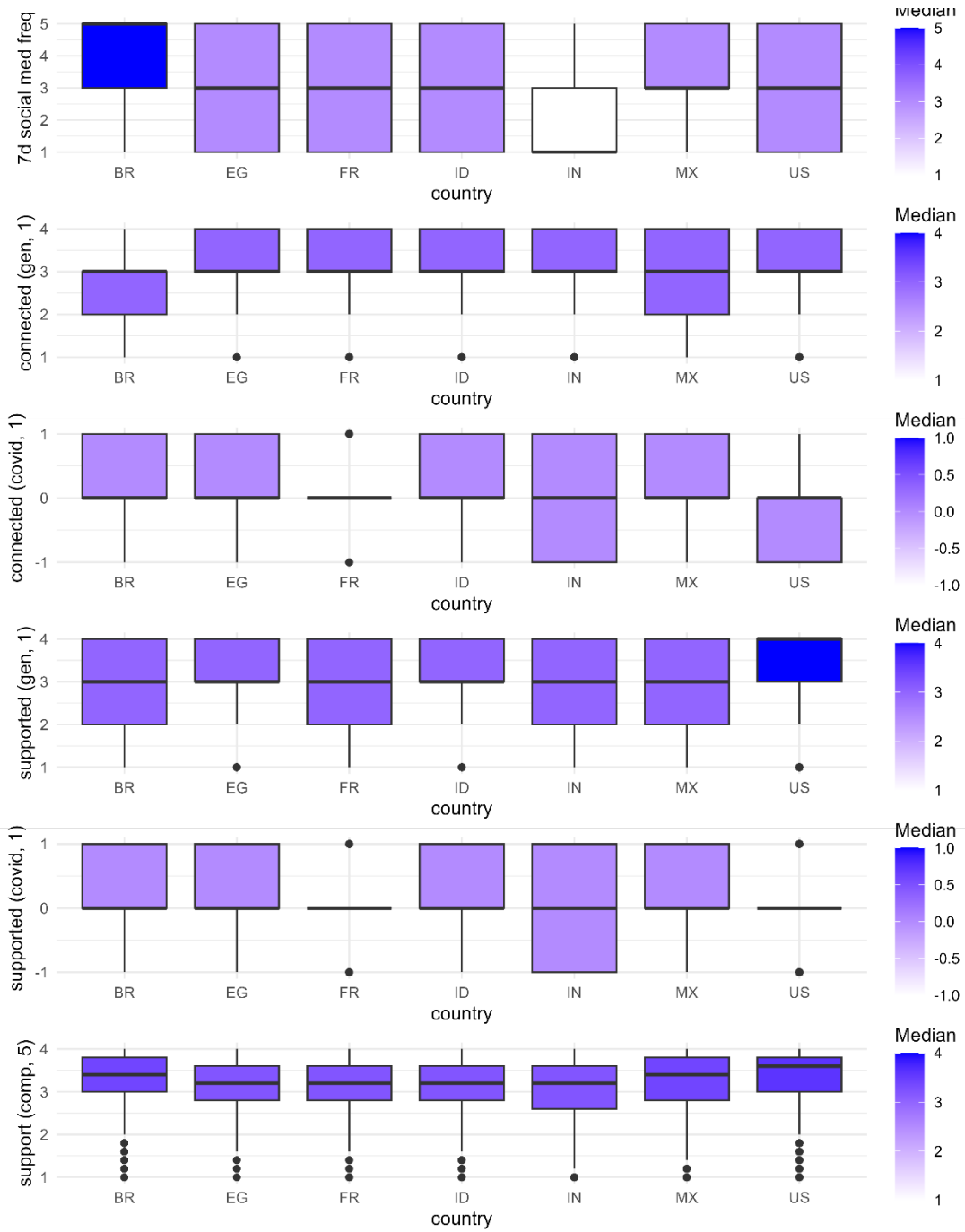


Figure S2. Boxplots of loneliness items.

