Association between Social Media Use and Depression among U.S. Young Adults

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Abstract

Background—Social media (SM) use is increasing among U.S. young adults, and its association with mental well-being remains unclear. This study assessed the association between SM use and depression in a nationally-representative sample of young adults.

Methods—We surveyed 1,787 adults ages 19 to 32 about SM use and depression. Participants were recruited via random digit dialing and address-based sampling. SM use was assessed by self-reported total time per day spent on SM, visits per week, and a global frequency score based on the Pew Internet Research Questionnaire. Depression was assessed using the Patient-Reported Outcomes Measurement Information System (PROMIS) Depression Scale Short Form. Chi-squared tests and ordered logistic regressions were performed with sample weights.

Results—The weighted sample was 50.3% female and 57.5% White. Compared to those in the lowest quartile of total time per day spent on SM, participants in the highest quartile had significantly increased odds of depression (AOR=1.66, 95% CI=1.14–2.42) after controlling for all covariates. Compared with those in the lowest quartile, individuals in the highest quartiles of SM site visits per week and those with a higher global frequency score had significantly increased odds of depression (AOR=2.74, 95% CI=1.86–4.04; AOR=3.05, 95% CI=2.03–4.59, respectively). All associations between independent variables and depression had strong, linear, dose-response trends. Results were robust to all sensitivity analyses.

Conclusions—SM use was significantly associated with increased depression. Given the proliferation of SM, identifying the mechanisms and direction of this association is critical for informing interventions that address SM use and depression.

INTRODUCTION

Depression is highly prevalent in the U.S., and the incidence is increasing.[1,2] It accounts for more disability-adjusted life years (DALYs) than all other mental disorders,[3] and it is projected to become the leading cause of disability in high-income countries by 2030.[4] The economic burden of depression is estimated at 83 billion dollars annually from reduced worker productivity, increased medical expenses, and suicide.[5] Recurrence is frequent, and comorbidity with other psychiatric illnesses such as anxiety and substance use disorder is common.[1,6]

Depression often begins around young adulthood.[7,8] While multiple factors contribute to depression,[9] there is growing interest in the potential influence of social media (SM) use on psychological well-being. SM, which can be defined as "a group of Internet-based applications that allow the creation and exchange of user-generated content,"[10] has become an integral component of connecting with friends and family, sharing personal content, and obtaining news and entertainment.[11,12] Use of SM sites such as Facebook and Twitter has particularly increased among young adults, who are at critical junctures surrounding developmental tasks such as identity development and establishment of social norms.[13] As many as 90% of young adults in the U.S. use social media, and the majority of users visit these sites at least once a day.[14] SM use accounts for about 20% of time online on personal computers and 30% of time online via mobile phones.[15]

Published studies on the association between social media use and depression have yielded mixed results.[16,17] Some studies suggest that SM users may experience decreased depression,[18] possibly from an increase in social capital, perceived social support, and life satisfaction.[19,20] Other studies, however, indicate that frequent use of social media may be associated with declines in subjective well-being, life satisfaction, and real-life community.[17,21] All of these prior studies, however, have been limited by small and/or localized samples. Furthermore, they have tended to focus on one specific platform, Facebook,[16,21] while real-life usage, especially among young adults, tends to incorporate a diverse array of social media sites such as Twitter, Google+, Instagram, Tumblr, Snapchat, and Vine.[14,15] In this study, we aimed to examine a broader range of SM exposures and to determine the association between SM exposure and depression in a large, nationally-representative sample of young adults. Understanding the relationship between SM use and depression could allow the development of interventions or preventative strategies for at-risk populations.

MATERIALS AND METHODS

Design, Participants, and Setting

We surveyed a nationally-representative sample of U.S. young adults aged 19 to 32 regarding their depression and social media use. We drew our sample from a large-scale web-based research panel developed and maintained by a survey research company called Growth from Knowledge (GfK).[22] Participants were recruited via random digit dialing and address-based sampling, reaching a sampling frame of over 97% of the U.S. population.[22] GfK is continuously recruiting individuals to be a part of their survey panel. Individuals are also free to withdraw from the panel at any point. The GfK Knowledge Panel® model has been shown to be a statistically valid method for surveying and analyzing health indicators from a nationally representative sample.[23,24]

From October 2014 to November 2014, our web-based survey was sent via email to a random sample of 3,048 non-institutionalized adults between the ages of 19 to 32 who had consented to participate in a previous study wave. Participation for this initial wave was 54%, a strong response rate for the use of Internet panels in the recruitment of study subjects.[25,26] The current data were collected during the 18-month follow-up of this study, which assessed multiple health behaviors among individuals ages 18 to 30 at baseline. We used only the 18-month follow-up data for the current analysis because the social media items were not asked at baseline. Thus, although the overall survey was part of a longitudinal study, the data specific to social media use and depression were only asked at one time point. Responses were received from 1,787 participants (59%).

The survey research company (GfK) instituted multiple strategies to improve data quality. For example, they screened all data sets for patterns suggestive of lack of effort. GfK also instituted procedures such as minimizing survey length whenever possible, reducing the need for scrolling, and avoiding the use of long grids. Furthermore, if individuals did not answer a question they were prompted once to answer with the statement "your answer is important to us. Please put your best guess."

The median time for survey completion was 15 minutes and participants received $15 for their participation. This study was approved by the University of Pittsburgh Institutional Review Board and was granted a Certificate of Confidentiality from the National Institutes of Health.

Measures

Participants completed online survey items including depression (dependent variable), social media use (independent variable), and covariates.

Depression—We assessed depression using a 4-item scale developed by the Patient-Reported Outcomes Measurement Information System (PROMIS). PROMIS is a National Institutes of Health Roadmap initiative whose aim is to provide precise, valid, reliable, and standardized questionnaires measuring patient–reported outcomes across the domains of physical, mental, and social health.[27] The PROMIS depression scale was developed using item response theory to promote greater precision and decrease respondent burden.[28]

Specifically, the PROMIS depression scale has been correlated and validated with other commonly used depression instruments, including the Center for Epidemiological Studies Depression Scale (CES-D), the Beck Depression Inventory (BDI-II), and the Patient Health Questionnaire (PHQ-9).[29,30] The 4-item PROMIS depression scale asked participants how frequently in the past 7 days they had experienced depression, including feeling hopeless, worthless, helpless, or depressed.[31] These items were scored on a 5-point Likert scale ranging from 1 to 5, corresponding to responses of "Never," "Rarely," "Sometimes," "Often" and "Always." Thus, the total possible raw score was between 4 and 20. Based upon the non-normal distribution of data, the raw scores were collapsed into tertiles of "low," "medium" and "high" for primary analysis. This was appropriate because one of the specific aims of the PROMIS depression scale is to grade the severity of depression, instead of merely providing a dichotomous cut-off for clinical depression. We classified those who did not endorse any depression as those in the "low" group (raw score = 4), which represented 44.5% of the population. We then classified a "high" group based on both the distribution of the data and the clinical cut-off for depression recommended by the American Psychiatry Association (APA).[32] This cut-off corresponded to a raw score of 9 or more (out of 20), which corresponds to a T-score of 57.3. Because the APA uses 55 as a cutoff for diagnosing clinical depression, individuals in the "high" group have a high likelihood of experiencing some depression.[32] This group represented 26.3% of the population. Those with raw scores between 5 and 8 were classified as "medium" and comprised 29.2% of the population.

Social Media Use—We assessed participants' social media use in three complementary ways. First, participants were asked to estimate *total time per day* on social media for personal use. This item specifically instructed participants to not count any time spent on social media for work. Participants provided estimates in numerical fields for hours and minutes on an average day. Second, participants were asked to report their use of each of 11 widely used social media platforms, including Facebook, Twitter, Google+, YouTube, LinkedIn, Instagram, Pinterest, Tumblr, Vine, Snapchat, and Reddit.[14,15] Seven response choices ranged from "I do not use this platform" to "I use this platform 5 or more times a day." We based these items on the measures used by Pew Internet Research.[14] Using weighted averages based on the frequency responses, we computed social media site *visits per week*. Finally, we summed responses across platforms to obtain a total score without weighting values for frequency. Because there were 7 response choices for each item, which we coded as 0 to 6, the resulting *global frequency score* ranged from 0 to 66. In order to improve interpretability of results, we collapsed all independent variables into quartiles for primary analyses. To ensure robustness of results, we also conducted all analyses with independent variables as continuous.

Covariates—For analysis, we divided the sample into three age groups (19–23; 24–26; 27–32) and race/ethnicity into five mutually exclusive groups (White, non-Hispanic; Black, non-Hispanic; Hispanic; Bi-racial, multiracial; or Other non-Hispanic). We also assessed other environmental and personal factors that may affect depression and social media use.[1,14] These included relationship status (single or in a committed relationship), living situation (with a parent or guardian; with a significant other; or other situation), household income

(under $30,000; $30,000–$74,999; or $75,000 or more) and education level (high school or less; some college; or bachelor's degree or higher).

Data Analysis

We included all participants who had complete data on the PROMIS depression scale and the social media items. Because only ~1% of participants had missing data for these variables, this did not affect our results. To describe our sample, we computed percentages of the dependent variable, each of the three independent variables, and the seven covariates. Next, we used chi-square tests to determine bivariable associations between each of the independent variables and covariates and the PROMIS depression scale score. After confirming that the proportional odds assumption was met, we used ordered logistic regression with appropriate sample weights to examine bivariable and multivariable associations between each social media variable and depression. We decided *a priori* to include all covariates in our primary multivariable models. We also used regression analyses to examine whether there was an overall linear trend between each ordered categorical independent variable and the dependent variable. In order to take advantage of the nationally-representative nature of the data, all primary analyses were conducted using survey weights which took into account sex, age, race/ethnicity, education, household income, census region, metropolitan area, and internet access.

We also conducted four sets of sensitivity analyses to examine the robustness of our results. First, we conducted all analyses with the outcome variable as dichotomous instead of in tertiles. For these analyses, those above the APA cut-off for the PROMIS depression scale were compared with all others.[32] Second, we conducted all analyses with independent variables as continuous instead of ordered categorical variables. Third, we conducted all analyses using only covariates that had a bivariable association of $P < .15$ with the outcome. Fourth, we conducted all analyses without survey weights. Results from all sensitivity analyses showed similar levels of significance and magnitude to those described here.

Statistical analyses were performed with Stata 12.1 (Stata Corp, College Station, Texas), and two-tailed *P*-values $< .05$ were considered to be significant.

RESULTS

Participants

A total of 1,787 participants completed the questionnaire. The weighted sample was 50.3% female, 57.5% White, 13.0% African American, 20.6% Hispanic and 8.9% biracial/multiracial or other. Of these, slightly more than half (55.6%) were in a committed relationship and approximately a third (35.7%) reported living with a significant other. In terms of household income, 22.9% were in the "low" category (under $30,000) and 38.7% were in the "high" category ($75,000 and above). About one-third (36.0%) of participants had not attended any college, while a quarter (25.8%) had a B.A. or higher (Table 1). There were no differences between responders and non-responders in terms of age (p = .12), sex (p = .07), or race (p = .21).

Depression

Accounting for survey weights, 44.5% of the sample reported no indicators of depression in the past week and were placed in the "low" group. About one-fourth (26.3%) were classified as "high," and the remaining 29.2% of participants were in the "medium" group.

Social Media Use

Median total time on social media was 61 minutes per day (interquartile range [IQR] = 30–135). Median social media site visits per week across all platforms was 30 (IQR = 9–57) and median global frequency score was 11 (IQR = 6–17). Only 58 individuals (3.2%) reported 0 site visits per week.

Bivariable Analyses

Bivariable analyses showed significant associations between all social media use variables, depression, age, sex, race/ethnicity, and education level (Table 1). A greater percentage of participants aged 27–32 were in the "high" depression category (38.7%) as compared to participants aged 19–23 (28.8%) and 24–26 (32.5%). Female sex and lower education level were also both associated with being in the "high" depression group. Additionally, bivariable analyses demonstrated significant associations between total time per day on social media and age, sex, and education level (Table 2). Younger age, female sex, and lower education level were all associated with greater time per day on social media. Age was the only covariate significantly associated with social media site visits per week ($P < .001$), with younger age associated with being in the highest category of site visits per week. Age, living situation, and household income were all significantly associated with the global frequency score (P from < .001 to .03), with younger age, not living with a significant other, and being in the highest tertile of household income associated with a greater global frequency score (data not shown).

Multivariable Analyses

In fully adjusted models, participants in the highest quartile of total time per day on social media had significantly greater odds of having depression (AOR = 1.66, 95% CI = 1.14 – 2.42) compared to those in the lowest quartile (Figure). Compared to those in the lowest quartile, participants in the highest quartiles of social media site visits per week (AOR = 2.74, 95% CI = 1.86 – 4.04) and global frequency score (AOR = 3.05, 95% CI = 2.03 – 4.59) reported greater depression. Sensitivity analyses demonstrated that all associations between independent variables and depression had strong, linear, dose-response trends ($P = .002$ for total time per day and $P < .001$ for both visits per week and global frequency score).

DISCUSSION

This study demonstrates a strong and significant association between social media use and depression in a nationally-representative sample of U.S. young adults. There was a linear association between social media use and depression for all three social media use variables. While some prior studies have found no association or mixed results,[16,33] our findings are consistent with prior research that showed an association between social media use and mood dysregulation.[17,34]

Our findings regarding prevalence of depression were generally consistent with prior research. In particular, Christakis et al. found that 56% of college-aged adults reported no depression according to the PHQ-9,[35] which has been validated against the PROMIS depression measure.[36] Our findings regarding the linear association between social media use and depression were somewhat surprising given prior research that has shown increased depression in those with low internet use.[33] However, one reason for our finding may be that our sample had so few individuals who did not use social media (only 3.2% of the sample). It is notable that our results showed a consistent linear trend between the independent and dependent variables even when the independent variable was operationalized as continuous.

Because our data were cross-sectional, the directionality of this association is not clear. It may be that individuals with depression tend to use more social media. For example, depressed individuals with a diminished sense of self-worth may turn to social media based interactions for validation.[37,38] Subsequently, individuals may suffer from continuous rumination and guilt surrounding internet use, while feeling compelled to continue the cycle due to low self-efficacy and negative self-appraisal.[37,39] Due to the high accessibility of social media and the possibility of socialization in a controlled setting, individuals with underlying depression and anhedonia may be more drawn to social media interactions rather than face-to-face interactions.[40,41]

It may also be that those who use increased amounts of social media subsequently develop increased depression. Multiple studies have linked social media use with declines in subjective mood, sense of well-being, and life satisfaction.[17,21,34] For example, passive consumption of social media content—as opposed to active communication—has been associated with decrease in bonding and bridging social capital and increase in loneliness.[42] One explanation may be that exposure to highly idealized representations of peers on social media elicits feelings of envy and the distorted belief that others lead happier and/or more successful lives.[43,44] Consequently, these envious feelings may lead to a sense of self-inferiority and depression over time.[45] It is also possible that the feeling of "time wasted" by engaging in activities of little meaning on social media negatively influences mood.[34] Additionally, the substantial rise in the amount of time young individuals spend on the Internet—particularly on social media—has led some to call for the recognition of "Internet addiction" as a distinct psychiatric condition that is closely associated with depression.[46,47] Finally, it is possible that increased social media exposure may increase the risk of cyber-bullying, which may also increase feelings of depression.[48,49]

Regardless of the direction of association between social media use and depression, these findings should be of interest to clinicians and public health practitioners. For example, it may be valuable for clinicians to assess social media use among depressed individuals to probe for maladaptive patterns of use, which may be contributing to mood dysregulation. Additionally, there may be useful ways of leveraging social media to decrease stigma of depression and identify individuals at risk, such as detecting self-disclosures of depression on social media.[50] Because social media has become an integrated component of human interaction, it is important for clinicians interacting with young adults to recognize the important balance to be struck in encouraging potential positive use but redirecting from

problematic use. With regard to public health practitioners, these findings suggest that social media may provide valuable venues to screen for depression or to disseminate targeted educational messages regarding depression. Such messages could promote awareness regarding maladaptive use and its association with mood disorders.

The teams behind some social media sites have already begun to reach out to users who show signs of serious depression. When one searches blog site Tumblr for tags indicative of a mental health crisis such as "depressed," "suicidal," or "hopeless," the search function redirects to a message which begins with "Everything okay?" and provides links to pertinent resources.[51] Similarly, in early 2015, Facebook tested a feature by which users' friends could easily and anonymously report worrisome posts.[52] Authors of problematic content received pop-up messages on their next visit to the site voicing concern and encouraging them to speak with a friend or helpline worker. Although this button has since been removed, Facebook still accepts reports of suicidal content via an online form. Continued research into the factors that relate SM and depression will allow sites to refine their procedures and reach out to those with greatest need.

It is important to note that there are many different types of interactions that can occur over social media, and our study assessed only overall time spent and frequency of visits to social media sites. Moreover, because previous work in this area has tended to focus on one specific platform, most commonly Facebook, we aimed to look at the relationship between total social media use and depression,[16,21] as opposed to focusing on specific platforms. Our fine-grained assessment of multiple platforms likely improved our measurement of overall frequency of social media use. However, given the unique features of each platform, it may be valuable for future work to assess associations between specific social media sites and depression.

Furthermore, it will be an important task of future qualitative and quantitative research to comprehensively assess content and contextual elements related to social media use. For example, time on social media may be primarily spent viewing profiles, or it may be spent as an active participant, and these distinct patterns of use may have differential associations with mood conditions. Thus, it may be that those who are more active users feel more engaged and derive more sense of social capital from social media interactions.[19,53] However, it may also be that active users are more prone to having negative exposures, which can affect self-cognitions. Therefore, active vs. passive character of social media interaction and its effect on mood may be valuable to assess in the future.

Additionally, it will be important to assess the overall emotional valence of social media interactions. Some individuals may primarily spend time "liking" others' posts, wishing friends happy birthday, and making positive comments. Others, however, may be prone to posting negative status updates or engaging in contentious interactions, which may be detrimental to relationship-building and lead to depression.[54]

Limitations

Given the rapid proliferation of social media platforms, we attempted to capture broad and representative use of social media by young adults by including multiple social media

platforms and creating three complementary methods of assessing social media use based on self-report. However, it was a limitation of our work that we were unable to use "gold standard" measures of social media exposure such as ecological momentary assessment or empirical data from social media sites due to the large sample size. Additionally, our frequency measure, although it was adapted from a validated scale,[14] may not have been sufficient for modern users. In particular, the highest exposure level we assessed for each platform was "5 or more times per day," while other scales include options such as use "several times an hour" and "all the time."[55] It may be valuable for future studies to use more fine-grained measures such as these. It is also a limitation that we were unable to conduct a complete diagnostic interview to determine if participants met clinical diagnosis of depression. Further longitudinal studies involving ecological momentary assessment or empirical data from multiple social media platforms may help identify the directionality of the association between social media and depression and guide anticipatory guidance around social media use for patients with depression in particular.

CONCLUSION

In conclusion, this study assessed depression and social media use across multiple social media platforms in a large, nationally representative sample of young adults. Given the increasing prevalence of social media and the substantial morbidity and mortality associated with depression worldwide, the positive association we found between social media use and depression has important implications for future research and intervention. For example, longitudinal evaluation and finer-grained assessment of content and contextual factors will ultimately improve our understanding of these associations and our ability to intervene. Additionally, social media platforms may be a useful tool to identify individuals at risk for depression and to provide intervention.

Acknowledgments

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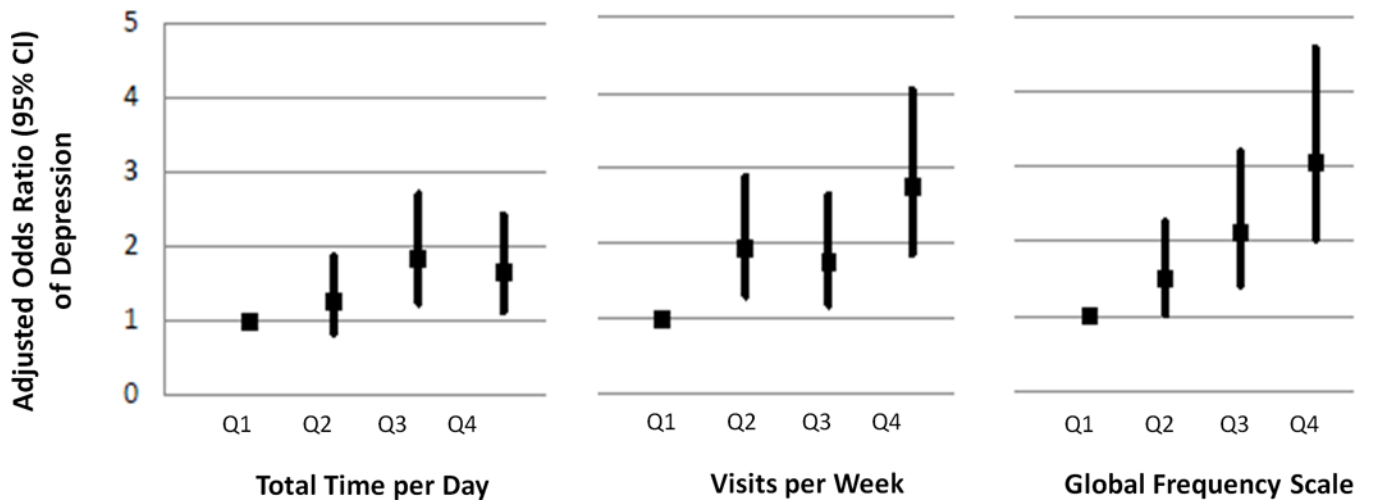
Figure. Multivariable Associations between Depression and Social Media Use Variables
Each social media use variable is divided into quartiles from lowest (Q1) to highest (Q4). Vertical bars represent 95% confidence interval and point estimates of adjusted odds ratio. *P* value for overall linear effect was .002, <.001 and <.001 respectively for each social media use variable. The multivariable model adjusted for age, sex, race, relationship status, living situation, household income, and education level.

Table 1

Whole Sample Characteristics and Bivariable Associations with Depression

Independent Variables	Whole Sample (N = 1,787)	Depression			P Value[a]
		Low (n = 731)	Medium (n = 544)	High (n = 512)	
		Column %[b]			
Social Media Use					
Total Time per Day (min)					.006
Q1 (0–30)	29.8	36.0	24.9	24.7	
Q2 (31–60)	20.8	22.0	22.7	16.6	
Q3 (61–120)	24.0	20.3	24.1	30.1	
Q4 (121 and above)	25.5	21.8	28.3	28.6	
Visits per Week[c]					<.001
Q1 (0–8)	28.3	36.6	23.8	19.4	
Q2 (9–30)	25.1	24.0	25.6	26.4	
Q3 (31–57)	24.1	23.1	24.2	25.5	
Q4 (58 and above)	22.5	16.4	26.4	28.7	
Global Frequency Score[c,d]					<.001
Q1 (0–6)	27.5	35.6	21.0	20.9	
Q2 (7–11)	27.0	28.1	27.5	24.8	
Q3 (12–17)	22.4	20.1	25.0	23.6	
Q4 (18–66)	23.1	16.2	26.6	30.7	
Covariates					
Age, y					.03
19–23	33.6	34.5	36.6	28.8	
24–26	24.7	20.5	24.2	32.5	
27–32	41.6	45.0	39.2	38.7	
Sex					.006
Female	50.3	44.1	57.7	52.5	
Male	49.7	55.9	42.3	47.5	

Independent Variables	Whole Sample (N = 1,787)	Depression			P Value[a]
		Low (n = 731)	Medium (n = 544)	High (n = 512)	
		Column %[b]			
Social Media Use					
Race/Ethnicity					.02
White, non–Hispanic	57.5	60.0	54.9	56.1	
Black, non–Hispanic	13.0	15.9	10.5	10.7	
Hispanic	20.6	18.9	21.1	23.0	
Other[e]	8.9	5.2	13.5	10.2	
Relationship Status					.08
Single[f]	44.4	39.9	47.7	48.6	
Committed relationship[g]	55.6	60.1	52.4	51.4	
Living Situation					.10
Parent/Guardian	34.0	33.1	30.5	39.4	
Significant other	35.7	39.0	33.5	32.4	
Other[h]	30.4	27.9	36.0	28.2	
Household Income					.003
Under $30,000	22.9	19.0	20.4	32.3	
$30,000–$74,999	38.4	38.7	38.5	37.8	
$75,000 and above	38.7	42.3	41.1	29.9	
Education Level					.002
High school or less	36.0	32.7	31.6	46.3	
Some college	38.3	37.9	40.1	36.8	
B.A. or higher	25.8	29.4	28.3	16.9	

[a] P value derived using Chi-square analyses comparing proportion of users in each category.

[b] Column percentages are based upon survey weighted data, therefore may not be congruent with the cell frequency proportion of total N. Values may not total 100 due to rounding.

[c] Includes Facebook, Twitter, Google+, YouTube, LinkedIn, Instagram, Pinterest, Tumblr, Vine, Snapchat, and Reddit.

[d] Based on a 7-point Likert-type response scale ranging from "I don't use this platform" to "5 or more times a day." A summary score was created for the 11 SM platforms with scores ranging from 0–66.

[e] Includes Multiracial.

[f]Includes widowed, divorced, and separated.

[g]Includes engaged, married, and in a domestic partnership.

[h]Defined as not living with a parent/guardian or significant other.

Table 2

Associations between Covariates and Social Media Use

Covariate	Total Time per Day, min[a]				P Value[b]
	Column %[c]				
	0–30	31–60	61–120	121+	
Age, y					<.001
19–23	26.7	27.6	37.2	43.3	
24–26	27.4	20.3	26.1	23.2	
27–32	45.9	52.1	36.8	33.5	
Sex					<.001
Female	42.7	43.4	53.4	61.0	
Male	57.3	56.6	46.6	39.0	
Race/Ethnicity					.13
White, non-Hispanic	63.5	63.7	54.0	48.4	
Black, non-Hispanic	10.5	10.4	15.0	16.6	
Hispanic	16.5	17.3	23.3	25.4	
Other[d]	9.4	8.6	7.8	9.6	
Relationship Status					.09
Single[e]	41.3	38.3	46.8	50.5	
Committed relationship[f]	58.7	61.7	53.2	49.5	
Living Situation					.13
Parent/Guardian	31.3	29.5	36.9	37.7	
Significant other	41.0	40.4	31.2	29.1	
Other[g]	27.7	30.1	32.0	33.3	
Household Income					.17
Under $30,000	18.2	20.7	24.4	28.0	
$30,000–$74,999	41.4	36.2	41.4	34.1	
$75,000 and above	40.4	43.2	34.1	37.9	
Education Level					.003
High school or less	31.9	26.3	38.4	45.0	

Covariate	Total Time per Day, min[a]			P Value[b]
	Column %[c]			
	0–30	31–60	61–120	121+
Some college	37.1	41.7	39.1	36.9
B.A. or higher	31.0	32.0	22.5	18.2

[a]Includes Facebook, Twitter, Google+, YouTube, LinkedIn, Instagram, Pinterest, Tumblr, Vine, Snapchat, and Reddit.

[b]P value derived using Chi-square analyses comparing proportion of users in each category.

[c]Values may not total 100 due to rounding.

[d]Includes Multiracial.

[e]Includes widowed, divorced, and separated.

[f]Includes engaged, married, and in a domestic partnership.

[g]Defined as not living with a parent/guardian or significant other.