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Association of Social Media Use With Social Well-Being, Positive Mental Health, and Self-Rated Health: Disentangling Routine Use From Emotional Connection to Use

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Abstract

Most studies addressing social media use as a normal social behavior with positive or negative effects on health-related outcomes have conceptualized and measured social media use and its effects in terms of dose–effect relations. These studies focus on measuring frequency and duration of use, and have seldom considered users' emotional connections to social media use and the effects associated with such connections. By using a scale with two dimensions capturing users' integration of social media use into their social routines and their emotional connection to the sites' use, the present study has brought preliminary evidence that may help map where social media use, as a normal social behavior, may be considered beneficial or harmful. Data from a nationally representative sample (n = 1,027) of American adults showed that while routine use is associated with positive health outcomes, emotional connection to social media use is associated with negative health outcomes. These associations have been consistent across three health-related outcomes: social well-being, positive mental health, and self-rated health. The data also showed that the strength of the positive and negative associations of routine use and emotional connection with the health outcomes varies across socioeconomic and racial/ethnic population subgroups. Our findings suggest that the link between social media use and health may not only be captured by and explained in terms of conventional dose–effect approaches but may also require a more sophisticated conceptualization and measurement of the social media use behavior.

Keywords

measurement, social media

Social media use is an ever-increasing phenomenon of the 21st century. In the United States, about 7 of 10 individuals use social media to connect with others, receive news content, share information, and entertain themselves (Pew Research Center, 2018). According to a recent study, young individuals pervasively use social media for a variety of reasons including entertainment, identity formation, social enhancement (augmenting offline social status through online interactions), and maintaining interpersonal connections (Ifinedo, 2016). Such uses may hold promises to compensate for the diminishing face-to-face social interaction and the economic, social, and health outcomes resulting from it (Antoci, Sabatini, & Sodini, 2015). Studies suggest that social media can provide individuals with a platform that overcomes barriers of distance and time to connect and reconnect with others and thereby expand and strengthen their offline networks and interactions (Antoci et al., 2015; Hall, Kearney, & Xing, 2018; Subrahmanyam, Reich, Waechter, & Espinoza, 2008).

Social networks, particularly offline networks, enable individuals and communities to form and maintain social capital, which allows individuals to draw on resources such as information and social support from other network members (Viswanath, 2008). In other words, individuals who are members of a social network, as opposed to those who are

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not, have access to information, social support, and other resources such as other network members' skills and knowledge due to their network membership or social connections. This, in turn, is linked to a variety of positive social outcomes such as trust and reciprocity that engender better health (Ellison, Steinfield, & Lampe, 2007; Nabi, Prestin, & So, 2013; Nieminen et al., 2013). Different forms of social capital, including social ties, have been positively related to indices of psychological well-being, such as self-esteem and satisfaction with life (Bargh & McKenna, 2004; Ellison et al., 2007; Helliwell & Putnam, 2004; Nabi et al., 2013). Researchers now argue that online social media networks enhance the opportunity to form and/or maintain offline social capital (Ellison et al., 2007; Steinfield, Ellison, & Lampe, 2008; Valenzuela, Park, & Kee, 2009). For example, Ellison et al. (2007) found that apart from the bonding (within a group) and bridging (across groups) forms of social capital, online network tools enable people to remain in touch with a social network after physically disconnecting from it and thereby benefit from a form of social capital called *maintained social capital*. They found empirical support for this among university students and argued that Facebook use might also be beneficial for users experiencing low self-esteem and low life satisfaction (Ellison et al., 2007; Steinfield et al., 2008). Similarly, Valenzuela et al. (2009) found that intense Facebook use is positively associated with students' life satisfaction, social trust, civic engagement, and participation. A study by Kim and Kim (2017) also indicated that social media use is positively associated with college students' communication network heterogeneity, which, in turn, is positively related to social capital and subjective well-being.

Yet a growing body of research suggests that social media use is negatively associated with health-related outcomes. Although the relationship between social media use and health, particularly mental health, could be bidirectional, most studies in public health focus on the impact of social media use on health-related outcomes. For example, a recent longitudinal study found that Facebook use is generally negatively associated with well-being (Shakya & Christakis, 2017). Importantly, this study indicated that the negative associations of Facebook use are comparable to or greater in magnitude than the positive impact of offline interactions. Another study examining the influence of Facebook use on subjective well-being over time among young adults found that Facebook, rather than enhancing well-being, may undermine it (Kross et al., 2013). Several recent studies have also found negative associations of social media use with a variety of indicators of mental health among adolescents and young adults. For example, in a study drawing data from a sample of adolescents and their parents throughout the United States, Barry, Sidoti, Briggs, Reiter, and Lindsey (2017) found that social media use is moderately and positively related to adolescent-reported fear of missing out and loneliness as well as with parent-reported hyperactivity/impulsivity, anxiety, and depression. Similarly, in a national survey of U.S. young adults, Primack et al. (2017) found that compared with individuals who use 0 to 2 social media platforms, individuals who use 7 to 11 social media platforms have substantially higher odds of having increased levels of depression and anxiety symptoms. In a recent longitudinal study among U.S. adolescents, Ra et al. (2018) have also found a statistically significant but modest association between higher frequency of digital media use and subsequent symptoms of attention-deficit/hyperactivity disorder.

Although the link between social media use and health has become a growing public health concern, the empirical evidence remains inconclusive (Andreassen, 2015; Berryman, Ferguson, & Negy, 2018; Pantic, 2014), with some studies finding no support for the widely held assumption that social media use decreases real-life social interactions and leads to decreased mental health functioning and well-being (Berryman et al., 2018; Hall et al., 2018). Furthermore, despite the fact that social media use has increasingly become popular across all age groups (Smith & Anderson, 2018), most studies have focused on adolescent and young adult samples in college settings (e.g., Booker, Kelly, & Sacker, 2018; Ellison et al., 2007; Kross et al., 2013). There are also conceptual and methodological issues surrounding the measurement of social media use (Jenkins-Guarnieri, Wright, & Johnson, 2012).

In measuring social media use, most studies rely on individuals' self-reported frequency of use or number of social media accounts opened and/or platforms used. For example, in investigating the link between social media use and mental health indicators such as anxiety, depression, fear of missing out, loneliness, and attention-deficit/hyperactivity disorders, Barry et al. (2017); Primack et al. (2017); Vannucci, Flannery, and Ohannessian (2017); and Ra et al. (2018) have measured social media use in terms of respondents' self-reported number of social media accounts or number of social media platforms used, and frequency and time spent on different digital media. Similarly, in a study reporting the positive association of social media use with perception of social support and related physical and mental well-being, Nabi et al. (2013) have measured how long respondents have been on Facebook (when they opened a Facebook account), and how many Facebook friends they have. While dose–effect approaches that rely on the measurement of frequency and duration of media use and associated effects have been widely used in conventional media effects studies, the unique features of social media, such as interactivity, "always-on," and networked-ness, may require measurement approaches that go beyond frequency and dose.

Indeed, there are studies providing preliminary empirical support for the need to go beyond dose–effect measurements. For example, in a longitudinal study, Frison and Eggermont (2015) found differential effects of Facebook use on adolescents' well-being depending on type of use—whether it was "active" or "passive" use. According to this study, while

active Facebook use (engaging in exchanges with other users) was generally associated with positive outcomes, passive Facebook use (viewing others' posts and profiles without engaging in exchanges) resulted in a more harmful impact on well-being. Similarly, Berryman et al. (2018) found that while overall social media use was not predictive of impaired mental health functioning, one particular activity, that is, "vague-booking" (posting unclear but alarming posts to get attention), was found to be predictive of suicidal ideation among young adults. Another study that assessed the impact of overall social media use, nighttime-specific social media use, and emotional investment in social media on adolescent sleep and well-being also found that nighttime-specific use and emotional investment are more important than overall use in determining adolescent sleep and well-being (Woods & Scott, 2016). Moreover, as argued by researchers (e.g., Jenkins-Guarnieri et al., 2012; Woods & Scott, 2016), despite increasing integration of social media into the daily lives of many users, measures employed by most studies to date fail to capture the integration of social media use into social routines and users' emotional investment in the sites' use. Even the few studies (e.g., Ellison et al., 2007) that have used scales with items measuring users' emotional connection have lumped these items together with behavioral frequency items, and as such little is known whether routine use and emotional connection to use have any differential effects.

Here, it should be noted that current literature characterizes the link between social media use and health in at least two ways. One body of literature considers social media use as a normal social behavior with positive or negative effects on health-related outcomes, while the other focuses on problematic use and associated effects. In our study, social media use is conceptualized as a normal social behavior. Studies focusing on problematic use employ social media addiction scales that, in most cases, go beyond the measurement of frequency and duration of use (Andreassen, 2015).

In this study, we examined the association of social media use integration into social routines and emotional connection to social media use with three health-related outcomes: social well-being, positive mental health, and self-rated health. We also examined how routine use and emotional connection to social media use are associated with sociodemographic factors, and if sociodemographic factors moderate the associations of these two social media use variables with the three health-related outcomes.

Method

Participants

Data for the study come from a nationally representative sample of 1,027 American adults surveyed between June and July 2018. We partnered with Knowledge Networks (KN), a survey research company that maintains a nationwide online probability-based panel (KnowledgePanel®). The KN panel was created by combining random digit dialing and address-based sampling methods. The combination of these two methods of creating the panel helps overcome the problems associated with cell phone penetration that affected many random digit dialing surveys. Because KN surveys are administered over the internet, all study participants either have or are given Internet access by KN. Participants were eligible for the study if they were adult (18 years or older).

Measures

Social Media Use. We adapted Jenkins-Guarnieri et al.'s (2012) Social Media Use Integration Scale. This scale was developed through rigorous procedures that involved both exploratory and confirmatory factor analyses, test–retest, and internal consistency tests for ensuring stability over time, and internal reliability. The scale's convergent and discriminant validity have also been ensured through evidence obtained from high correlations with previously published social media use measures, and nonsignificant correlations between the subscales and other measures unrelated to online social media use. The scale consists of 10 items with a 5-point Likert-type scale, anchored at 1 = *strongly disagree* to 5 = *strongly agree*, and has two subscales—Integration into Social Routines subscale (ISR) that focuses on routine use and Social Integration and Emotional Connection subscale (SIEC) focusing on emotional investment. ISR comprises four items: (1) I enjoy checking my social media account, (2) I don't like to use social media (reverse coded), (3) Using social media is part of my everyday routine, and (4) I respond to content that others share using social media ($M = 2.97$, $SD = 1.07$, Cronbach $\alpha = .90$). SIEC had six items: (1) I feel disconnected from friends when I have not logged into social media, (2) I would like it if everyone used social media to communicate, (3) I would be disappointed if I could not use social media at all, (4) I get upset when I can't log on to social media, (5) I prefer to communicate with others mainly through social media, and (6) Social media play an important role in my social relationships ($M = 2.22$, $SD = 0.86$, Cronbach $\alpha = .91$). Factor analysis confirmed the two subscales, yielding two factors: Factor 1 (ISR) with eigenvalue of 6.16, explained variance 61.58%, factor loadings 0.72 to 0.85; Factor 2 (SIEC) with eigenvalue of 1.1, explained variance 10.63%, factor loadings 0.68 to 0.82.

Social Well-being. Keyes' (1998) 15-item social well-being scale (SWBS-15) with a 5-point Likert-type scale anchored at 1 = *strongly disagree* to 5 = *strongly agree* was used. SWBS-15 has five dimensions: Social Integration, Social Acceptance, Social Contribution, Social Actualization, and Social Coherence. The full scale was used ($M = 3.13$, $SD = 0.46$, Cronbach $\alpha = .80$).

Positive Mental Health. Lukat, Margraf, Lutz, van der Veld, and Becker's (2016) scale was used. The scale consists of 9

items with a 5-point Likert-type scale anchored at 1 = *strongly disagree* to 5 = *strongly agree*, with items such as "much of what I do brings me joy" and "in general, I am confident" ($M = 3.71$, $SD = 0.71$, Cronbach $\alpha = .94$).

Self-Rated Health. This was measured by asking respondents to rate their health as 5 = *excellent*, 4 = *very good*, 3 = *good*, 2 = *fair*, and 1 = *poor* ($M = 3.40$, $SD = 0.97$). The scale was taken from previous studies (e.g., Jung, Ramanadhan, & Viswanath, 2013).

Analysis

Preliminary analyses using descriptive statistics and analysis of variance (ANOVA) were conducted to examine social media users' routine use and emotional connection to social media use by sociodemographics. Then, three hierarchical (block-wise) multiple linear regression models were constructed to determine whether and how routine use and emotional connection to use are associated with social well-being, positive mental health, and self-rated health. To examine if the relationship between social media use variables and health-related outcomes vary across sociodemographic groups, interaction terms were included in all regression models. The hierarchical or block-wise entry method was used to examine the amount of variance (in the dependent variables) explained by each block of variables: sociodemographic variables, the social media use variables, and then the interaction terms. The variables were entered into the regressions in the following order. Sociodemographic variables (gender, age, education, income, and race/ethnicity) were entered into the first block. The two explanatory variables and the interaction terms were entered into the second and third blocks, respectively.

Results

Participants provided data on sociodemographic characteristics: gender (male = 48.5%, female = 51.5%), age (18-29 = 20.6%, 30-44 = 25.1%, 45-59 = 26.2%, 60+ = 28.1%), race/ethnicity (White, non-Hispanic = 64.6%, Black, non-Hispanic = 11.8%, Hispanic = 15.8%, Other = 8.1%), education (less than high school = 11%, high school = 28.7%, some college = 28.7%, bachelor's or above = 31.5%), and income (<$10,000 = 4.2, $10,000 to <$25,000 = 10.9, $25,000 to <$50,000 = 19.5, $50,000 to <$75,000 = 17.4, $75,000 to <$100,000 = 13.9, $100,000 to <$150,000 = 17.1, >$150,000 = 16.9).

Routine use varied by gender and age. A *t* test indicated that routine use is higher among women than men. Similarly, one-way ANOVA with post hoc comparisons indicated that routine use is significantly lower among older adults (60+) compared with the other three age groups. However, routine use did not significantly vary across education, income, and racial/ethnic groups (see Table 1).

Emotional connection to social media use varied by age, education, and race/ethnicity. One-way ANOVA with post hoc comparisons showed that there are significant differences in emotional connection with social media use among the youngest (18-29), the middle (30-44), and older (60+) age groups, but not between the 30-44 and 45-59 age groups. Emotional connection is higher among people with less than a high school education compared with people with some college education, and bachelor's and higher degrees. ANOVA indicated a global effect of race/ethnicity on emotional connection to social media use, although the post hoc comparisons were unable to detect significant differences among racial/ethnic groups due perhaps to unequal sample size of racial/ethnic groups. The *t* test and ANOVA also showed that there are no significant differences in emotional connection to social media use based on gender and income (see Table 1).

Social Well-Being

The first block-wise regression analysis indicated that age, education, and household income are significant predictors of social well-being, $F(16, 880) = 8.16$, $p < .001$, explaining 12.9% of the variation in social well-being. Compared with the youngest age group (18-29), individuals in the other three age groups, 30 to 44, 45 to 59, and 60+ reported low levels of social well-being (Table 2). Conversely, social well-being was positively associated with education and income. Compared with individuals with less than a high school education, those with some college education, and bachelor's and higher degrees reported better social well-being. Similarly, compared with the poorest income groups (<$10,000), the top three high-income groups, $75,000 to <$100,000, $100,000 to <$150,000, and >$150,000 reported better social well-being.

The regression also showed that the two social media use variables are significant predictors of social well-being, $F(18, 878) = 8.44$, $p < .001$, accounting for additional 1.8% of the variance. It was noted that the two variables work divergently in predicting social well-being: while routine use is positively associated, emotional connection is negatively associated. The interaction analyses showed that age and race/ethnicity moderate the relationship between routine use and social well-being. The relationship between routine use and social well-being is weaker among the elderly (60+), Hispanics, and the "Other" racial/ethnic groups compared with the youngest age group (18-29 years) and the White, non-Hispanic group, respectively (Figure 1). Education and race/ethnicity moderate the relationship between emotional connection and social well-being, $F(50, 846) = 4.48$, $p < .001$, explaining additional 6.2% of the variance. The relationship between emotional connection and social well-being is weaker among those with bachelor's and higher degrees compared with individuals with less than a high school education, whereas the relationship is stronger among the

Table 1. Descriptive Statistics and Tests of Global Effects of Sociodemographic Variables on Routine Use and Emotional Connection to Social Media Use (N = 1,027).

	Social media integration into social routines					Emotional connection to social media use				
Variables	*M*	*SD*	*F*/*t*	*df*	*p*	*M*	*SD*	*F*/*t*	*df*	*p*
Gender										
Female	3.13	1.01				2.27	0.82			
Male	2.80	1.11	4.90	972	.00	2.17	0.91	1.66	988	.098
Age										
18-29	3.17	0.87				2.53	0.72			
30-44	3.16	0.98				2.29	0.86			
45-59	2.99	1.18				2.22	0.87			
60+	2.66	1.11	13.58	(3, 1000)	.00	1.94	0.87	20.51	(3, 985)	.00
Education										
Less than high school	3.04	0.90				2.46	0.83			
High school	2.95	1.03				2.24	0.88			
Some college	3.01	1.11				2.20	0.85			
Bachelor's or higher	2.95	1.14	0.36	(3, 1000)	.78	2.15	0.86	3.48	(3, 985)	.016
Household income										
<$10,000	2.91	1.05				2.50	0.97			
$10,000 to <$25,000	3.06	1.03				2.20	0.91			
$25,000 to <$50,000	3.04	0.98				2.35	0.77			
$50,000 to <$75,000	3.03	1.14				2.14	0.90			
$75,000 to <$100,000	2.94	1.08				2.26	0.89			
$100,000 to <$150,000	3.01	1.12				2.16	0.84			
>$150,000	2.81	1.09	1.02	(6, 997)	.41	2.14	0.86	2.03	(6, 982)	.059
Race/ethnicity										
White, non-Hispanic	2.95	1.11				2.17	0.87			
Black, non-Hispanic	2.90	1.04				2.32	0.91			
Hispanic	3.11	1.03				2.34	0.81			
Other	3.04	0.91	1.24	(3, 100)	.29	2.31	0.78	2.62	(3, 985)	.049

Note. Scale range: 1 = *strongly disagree*, 5 = *strongly agree*.

"Other" racial/ethnic group compared with the White, non-Hispanic group (Figure 2).

Positive Mental Health

The second regression analysis showed that age, education, household income, and race/ethnicity were significant predictors of positive mental health (PMH), $F(16, 900) = 7.37$, $p < .001$, explaining 11.6% of the variation in PMH. Compared with individuals in the youngest age group (18-29), those in the oldest age group (60+) reported better PMH. Also, compared with individuals with less than a high school education, those with some college education and bachelor's and higher degrees reported better PMH. Similarly, compared with individuals in the lowest income group (<$10,000), those in the higher income groups reported better PMH. In terms race/ethnicity, while Black, non-Hispanic, and the Hispanic groups reported better PMH, those who identified themselves as "Other" reported lower PMH, compared with the White, non-Hispanic group (Table 2).

The analysis also indicated that the two social media use variables predicted PMH, $F(18, 898) = 7.82$, $p < .001$, explaining additional 2% of the variance. Similar to social well-being, the two social media use variables worked divergently in predicting PMH: while routine use is positively associated, emotional connection is negatively associated. None of the interaction terms predicted PMH.

Self-Rated Health

The third regression model indicated that age, education, income, and race/ethnicity were significant predictors of self-rated health (SRH), $F(16, 958) = 9.62$, $p < .001$, explaining 13.9% of the variation in SRH. Compared with individuals in the youngest age group (18-29), those in the three older age groups rated themselves as less healthy. In terms of education, those with some college education and bachelor's and higher degrees rated themselves as healthier compared with individuals with less than a high school education. Similarly, compared with individuals in the lowest income group, those in the higher income groups rated themselves as healthier. With regard to race/ethnicity, individuals in the "Other" group rated themselves as less healthy compared with the White, non-Hispanic group.

Table 2. Standardized Coefficients (β) From Hierarchical Regression Analyses for Sociodemographic (Control) and Social Media Use (Explanatory) Variables Predicting Social Well-Being, Positive Mental Health, and Self-Rated Health (N = 1,027).

	Social well-being			Positive mental health			Self-rated health		
Variables	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Block 1: Controls									
Gender (female = 0, male = 1)	−0.04	−0.02	−0.01	−0.06	−0.05	−0.04	−0.01	−0.002	−0.01
Age 18-29 (ref.)									
30-44	−0.14**	−0.16***	−0.13*	−0.03	−0.05	−0.04	−0.09*	−0.10*	−0.09*
45-59	−0.12**	−0.13**	−0.11*	0.07	0.05	0.05	−0.25***	−0.27***	−0.25***
60+	−0.12**	−0.13**	−0.10*	0.14**	0.11*	0.12*	−0.17***	−0.19***	−0.17***
Education									
Less than high school (ref.)									
High school	0.05	0.05	0.07	0.10	0.08	0.10*	0.08	0.07	0.10
Some college	0.23***	0.22***	0.25***	0.25***	0.22***	0.25***	0.14*	0.13*	0.16**
Bachelor's or higher	0.35***	0.34***	0.37***	0.26***	0.24***	0.25***	0.18**	0.17**	0.18**
Household income <$10,000 (ref.)									
$10,000 to <$25,000	0.08	0.06	0.08	0.13*	0.11*	0.14*	0.10	0.08	0.08
$25,000 to <$50,000	0.05	0.04	0.06	0.18*	0.17*	0.21*	0.23**	0.22**	0.21**
$50,000 to <$75,000	0.10	0.08	0.12	0.26***	0.23**	0.27***	0.27***	0.25***	0.26***
$75,000 to <$100,000	0.16*	0.15*	0.18*	0.28***	0.27***	0.33***	0.27***	0.26***	0.27***
$100,000 to <$150,000	0.14*	0.11	0.13	0.23**	0.21**	0.26***	0.27***	0.25***	0.26***
>$150,000	0.19**	0.18*	0.20*	0.31***	0.29***	0.34***	0.41***	0.39***	0.39***
Race/ethnicity									
White, non-Hispanic (ref.)									
Black, non-Hispanic	0.05	0.06	0.07*	0.09*	0.10**	0.10**	−0.001	0.01	0.01
Hispanic	0.01	0.02	0.03	0.09*	0.10**	0.11**	0.02	0.03	0.04
Other	0.01	0.01	0.003	−0.07*	−0.06*	−0.08*	−0.14***	−0.13***	−0.15***
Block 2: Explanatory variables									
Social media use integration into social routines (routine use)		0.20***	0.50		0.15**	−0.35		0.09*	0.24
Emotional connection to social media use (emotional connection)		−0.15**	−0.05		−0.21***	0.37		−0.16***	−0.05
Block 3: Interaction terms									
Gender × Routine use (RU)			0.05			0.04			−0.02
Age									
(30-44) × RU			−0.10			0.04			−0.10
(45-59) × RU			−0.078			0.03			−0.09
(60+) × RU			−0.17*			−0.04			0.03
Education									
High school × RU			−0.16			0.15			0.01
Some college × RU			0.10			0.16			−0.04
Bachelor's+ × RU			0.24			0.15			−0.04
Household income									
$1240,000 to <$25,000 × RU			−0.01			0.17			0.11
$25,000 to <$50,000 × RU			−0.02			0.12			0.03

(continued)

Table 2. (continued)

Variables	Social well-being			Positive mental health			Self-rated health		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
$50,000 to <$75,000 × RU			−0.09			0.04			−0.02
$75,000 to <$100,000 × RU			−0.01			0.15			0.12
$100,000 to <$150,000 × RU			−0.17			0.13			0.002
>$150,000 × RU			−0.09			0.02			0.03
Race/ethnicity									
Black, Non-Hispanic × RU			−0.04			−0.09			−0.12*
Hispanic × RU			−0.12*			−0.02			−0.06
Other × RU			−0.12*			−0.03			−0.10*
Gender × Emotional connection (EC)			−0.07			−0.06			−0.02
Age									
(30-44) × EC			0.05			−0.10			0.02
(45-59) × EC			0.04			−0.01			−0.06
(60+) × EC			0.06			0.04			−0.10
Education									
High school × EC			0.07			−0.19			−0.14
Some college × EC			−0.06			−0.17			−0.11
Bachelor's+ × EC			−0.29*			−0.13			−0.11
Household income									
$10,000 to <$25,000 × EC			−0.08			−0.11			−0.02
$25,000 to <$50,000 × EC			0.01			−0.10			0.03
$50,000 to <$75,000 × EC			0.002			−0.02			0.10
$75,000 to <$100,000 × EC			−0.07			−0.19			−0.04
$100,000 to <$150,000 × EC			0.06			−0.18			0.02
>$150,000 × EC			0.002			−0.06			0.06
Race/ethnicity									
Black, Non-Hispanic × EC			0.01			0.05			0.11*
Hispanic × EC			0.08			−0.04			0.03
Other × EC			0.09*			0.08			0.11*
R^2	0.13	0.15	0.21	0.12	0.14	0.18	0.14	0.15	0.20
F for change in R^2	8.16***	9.42***	2.10**	7.37***	10.24***	1.35	9.62***	7.10**	1.75*

*$p < .05$. **$p < .01$. ***$p < .001$.

The two social media use variables predicted SRH, $F(18, 956) = 9.45$, $p < .001$, explaining additional 1.3% of the variance. Similar to the other two outcome variables, while routine use is positively associated with SRH, emotional connection has is negatively associated. The interaction analyses showed that race/ethnicity moderates the relationships of routine use and emotional connection with SRH, $F(50, 924) = 4.61$, $p < .001$, accounting for additional 4.9% of the variance. The relationship between routine use and SRH is less pronounced among the Black, non-Hispanic, and the "Other" racial/ethnic groups compared with the White, non-Hispanic group, whereas the relationship between emotional

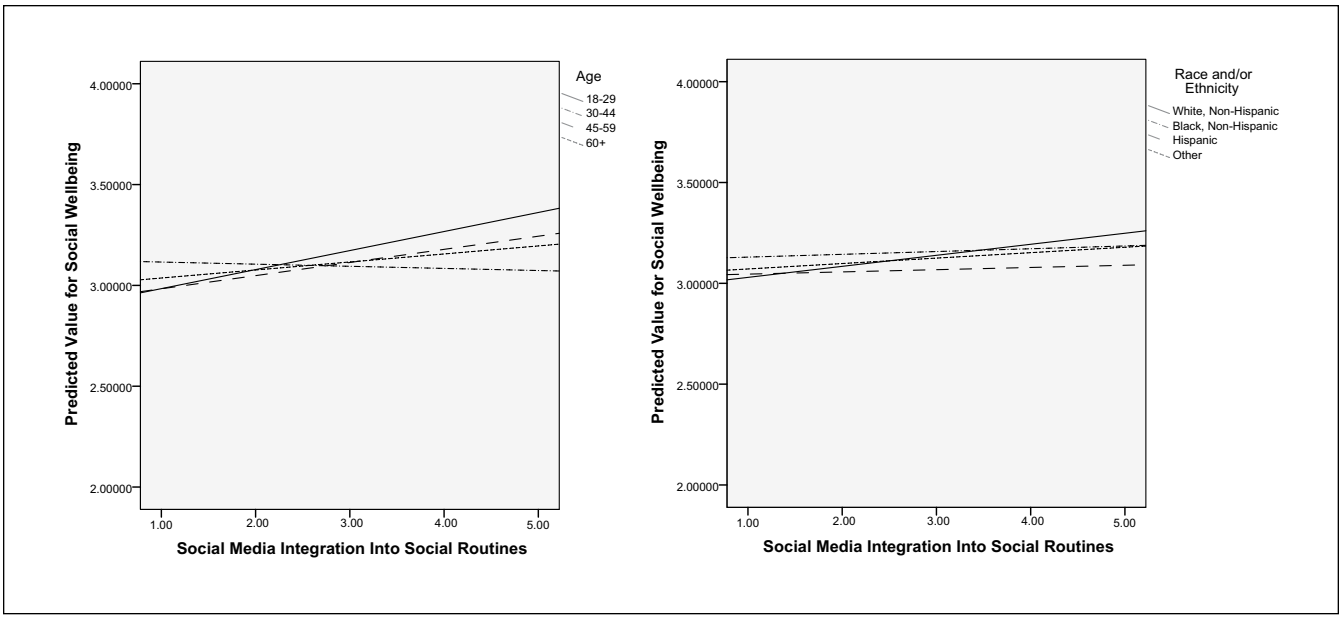

Figure 1. Plots for interactions of social media routine use with age and race/ethnicity.

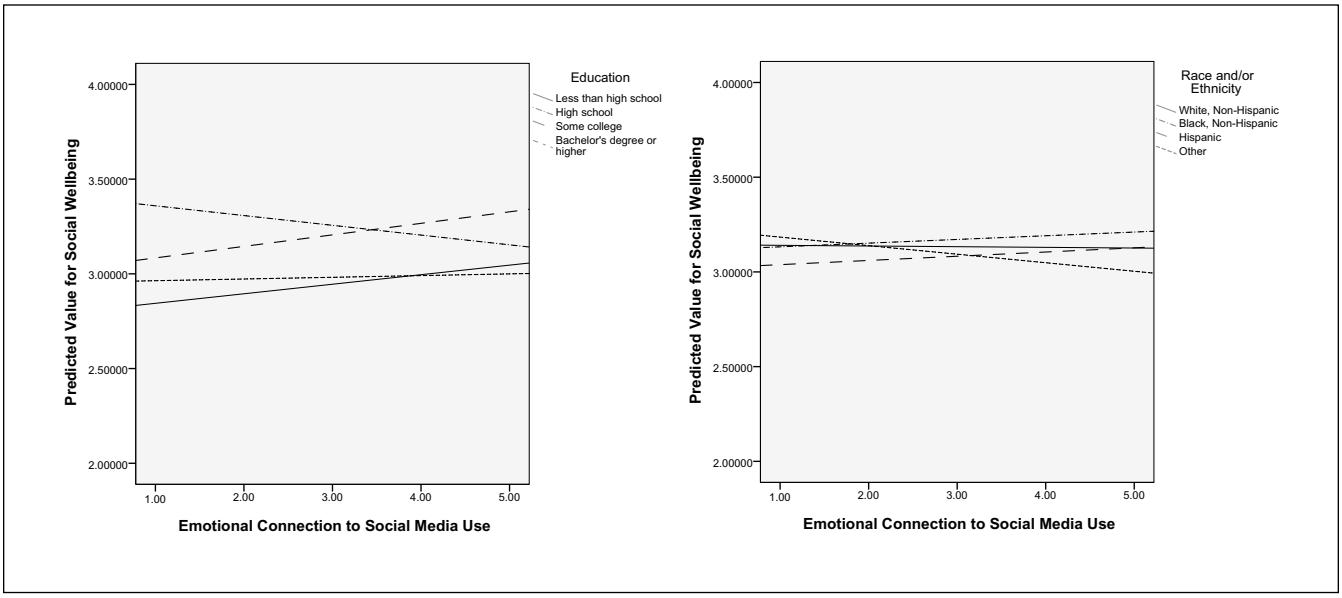

Figure 2. Plots for interactions of emotional connection to social media use with education and race/ethnicity.

connection and SRH is stronger among these two groups: Black, non-Hispanic, and "Other" (Figure 3).

Discussion

This study assessed the association of social media use integration into social routines and emotional connection to social media use with three health-related outcomes: social well-being, positive mental health, and self-rated health. The findings suggest that routine use of and emotional connection with social media could have divergent associations with the three health-related outcomes. While routine use was positively associated with all the three, emotional connection to social media was negatively associated with all the three outcomes. The data also showed that associations of routine use and emotional connection with the three health-related outcomes vary across some social groups.

Social well-being, the appraisal of one's circumstance and functioning in society (Keyes, 1998), was found to be significantly associated with age, education, and income. Our findings showed that social well-being decreases with age. However, as social well-being is multidimensional, we also

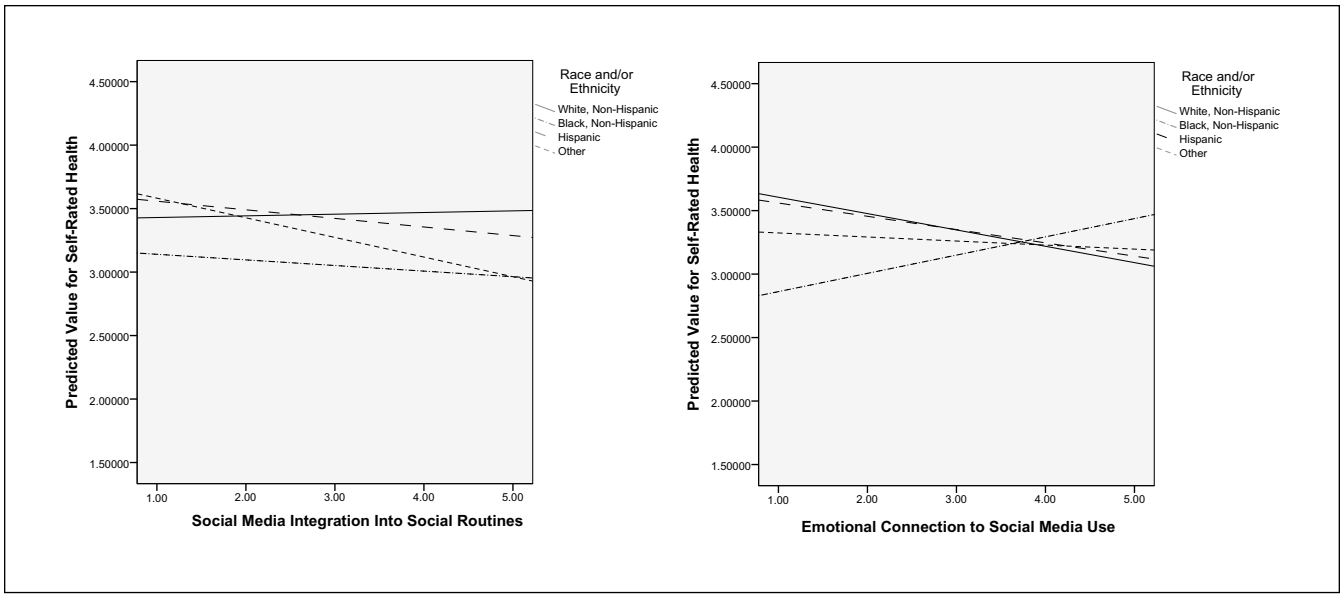

Figure 3. Plots for interactions of routine use of and emotional connection to social media use with race/ethnicity.

noted that at least one of its five dimensions, namely social acceptance, was found to be significantly lower among younger age groups (18-29 and 30-44 groups) compared with the 60+ age group. This finding suggests that the link between age and social well-being remains equivocal and inconclusive (de Jager, Coetzee, & Visser, 2008) and should be seen in the context of Keyes' (1998) initial observation that social well-being is heterogeneous across ages. In contrast, consistent with previous findings (e.g., Keyes, 1998; Zhang, Chen, McCubbin, McCubbin, & Foley, 2011), social well-being was found to be positively associated with education and income. Taken together, these findings suggest the persistent role that prominent social factors play in shaping social well-being.

Social well-being is also shaped by one's social networks and the different forms of social capital that accrue from them. In this regard, online social networks could be useful in complementing and, in some cases, substituting the diminishing face-to-face social networks (Putnam, 2007). However, as discussed above, the empirical basis of this assumption has been sparse and marred by controversy. The findings of the present study suggest that people are likely to feel more social well-being as a result of routinely using and/or integrating social media use into their social routines. However, to the extent they are emotionally connected to such use, they are less likely to experience social well-being.

PMH, an indicator of well-being that has increasingly gained salience (World Health Organization, 2014), is also shaped by sociodemographic factors and social media use. Consistent with prior work (Schönfeld, Brailovskaia, & Margraf, 2017), our data indicated that PMH is higher among the elderly (60+) compared with those in the youngest (18-29) age group. In line with mounting evidence supporting the link between socioeconomic position and health, PMH is also found to be higher among people with better education and income. Moreover, PMH was found to be higher among Black and Hispanic racial/ethnic groups, and lower among the "Other" racial/ethnic group compared with Whites, mirroring past findings (McGuire & Miranda, 2008). Apart from sociodemographic factors, PMH is also associated with social media use behavior. The two social media use variables worked divergently in predicting PMH: while routine use is positively associated, emotional connection is negatively associated.

SRH, an independent predictor of morbidity and mortality (Burström & Fredlund, 2001), has been found to be associated with not only sociodemographic factors but also social media use. Similar to social well-being, age, education and income were important factors associated with SRH. SRH was found to be lower among older adults compared with younger people, whereas it is higher among individuals with better education and income. SRH also varied across racial/ethnic groups; individuals in the "Other" racial/ethnic group rated themselves as less healthy compared with Whites. These associations are generally consistent with recent literature (Präg & Subramanian, 2017; Spencer et al., 2009). The two social media use factors predicted SRH divergently, in the way they did to social well-being and PMH. While routine use is positively associated, emotional connection is negatively associated.

The study also found that the relationships of both routine use and emotional connection with social well-being and SRH vary considerably across population subgroups. The relationship of routine use with social well-being is weaker among the elderly (60+), Hispanics, and the "Other" racial/ethnic groups compared with the youngest

age group (18-29 years) and the White group, respectively. The relationship of emotional connection with social well-being is weaker among those with bachelor's and higher degrees compared with individuals with less than a high school education, whereas the relationship is stronger among the "Other" racial/ethnic group compared with the White group. The relationship between routine use and SRH is less pronounced among the Black, non-Hispanic, and the "Other" racial/ethnic groups compared with the White, non-Hispanic group, whereas the relationship between emotional connection and SRH is stronger among these two groups: Black, non-Hispanic, and "Other." These findings suggest that the benefits and harms associated with social media use may be patterned by demographic, socioeconomic, and racial/ethnic identities. While the benefits seem to be generally higher among younger, better educated, and the White racial/ethnic groups, the harms seem to be higher among older, less educated, and minority racial/ethnic groups. These findings are consistent with a growing body of literature on the link between communication inequalities and health that shows that health outcomes could vary across socioeconomic and racial/ethnic population subgroups as a result of differences in motivation for, access to, and use of communication resources (Bekalu & Eggermont, 2014; Viswanath & Emmons, 2006; Viswanath, Ramanadhan, & Kontos, 2007).

Overall, the findings of this study highlight the importance of considering users' routine use of social media vis-à-vis their emotional connection to such use in describing the link between social media use and health. The finding that routine use is positively associated with all the three health-related outcomes (social well-being, PMH, and SRH) suggests that the widespread concern about the negative health effects of social media use in general may not always be tenable. In line with earlier observations (e.g., Ellison et al., 2007; Steinfield et al., 2008), social media could be a helpful tool that can provide individuals with the opportunity to connect and reconnect (after physical disconnection) and maintain their social capital. On the contrary, the finding that emotional connection to social media use is negatively associated with the three health-related outcomes suggests the need for considering the potential harmful impact of social media use even as a normal social behavior. Here, it should be noted that we chose to consider emotional connection to social media use as a normal social behavior for, at least, the simple reason that the emotional connection scale we used was not an addiction scale. However, given the bidirectional relationship between social media use and mental health, individuals who are emotionally connected to social media use might as well be those who have already been experiencing one or another form of mental disorder. Indeed, Xu and Tan (2012) suggest that the transition from normal to problematic social media use occurs when users regard the social media use as an important or even exclusive mechanism to relieve stress, loneliness, or depression.

The findings of this study may have implications for theory and practice. In terms of theory, the study has brought preliminary evidence that suggests the need for going beyond dose–effect approaches in conceptualizing and measuring social media use and its association with health. With this, the study joins the few prior studies that have shown that beyond frequency and duration of use, other aspects of use, such as type of use, should be considered in characterizing the link between social media use and health (Berryman et al., 2018; Frison & Eggermont, 2015; Woods & Scott, 2016). If replicated, the findings could also inform practitioners in public health or health education that interventions aiming at promoting conscience or rational use of social media may need to be envisaged for the general public. More focused interventions might also target individuals who are emotionally connected to social media use in school or organizational settings. Such interventions could focus on promoting *effortful control skills* among emotionally involved users, particularly adolescents and young adults. As the volitional aspect of self-regulation, effortful control has been widely shown to be useful in dealing with problematic Internet and social media use (Li, Zhou, Li, & Zhoua, 2016; Lian et al., 2018; Özdemir, Kuzucu, & Ak, 2014).

Limitations

This study has some limitations that should be taken into account in interpreting the findings. First, although the data come from a relatively large nationally representative sample, the study is cross-sectional. As such, while the results are useful to provide preliminary evidence of associations, it is important to note the inherent predictive limitations of cross-sectional studies. Because the exposure and outcome variables are assessed simultaneously, there is generally no evidence of temporal and causal relationships. Further research with longitudinal data is required to establish such relationships. Second, although we have employed widely used and validated measures, they are all self-report measures that are inherently liable to inaccuracies of under- or overreporting. Indeed, the fragmented and ubiquitous nature of Internet (social media) use complicates the accuracy of self-report measures (Araujo, Wonneberger, Neijens, & de Vreese, 2017). Third, the routine social media use scale was designed to measure individuals' integration of social media use into their daily routines and social behavior. However, it lacks the frequency and duration of use items that are commonly used in the literature. Future studies using the Social Media Use Integration Scale need to take this limitation into account.

Conclusion

Existing literature on the link between social media use and health is equivocal and inconclusive and often does not acknowledge the increasing integration of social media use into users' social behavior nor the emotional connection that

it generates. By using a two-dimensional scale that captures these concepts, the present study has brought preliminary evidence that may help to map where social media use, as a normal social behavior, may become beneficial or harmful. While routine use was found to be associated with positive health outcomes, emotional connection was associated with negative outcomes, a finding that was observed consistently across the three health-related outcomes of interest: social well-being, PMH, and SRH. It was also noted that the strength of the positive and negative associations of routine use and emotional connection with the health outcomes varies across socioeconomic and racial/ethnic population subgroups. Overall, the findings suggest that the relation between social media use and health may require a more qualitative conceptualization and measurement of the behavior beyond current dose–effect approaches. Future study is needed to characterize the factors associated with and/or the mechanisms through which emotional connection to social media use and health-related outcomes are associated.

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