


## RESEARCH ARTICLE

# The association between valence of social media experiences and depressive symptoms

Brian A. Primack MD, PhD<sup>1,2,3</sup>  | Meghan A. Bisbey BA<sup>1,4</sup> | Ariel Shensa MA<sup>1,2</sup> |  
 Nicholas D. Bowman PhD<sup>5</sup> | Sabrina A. Karim BA<sup>1,4</sup> | Jennifer M. Knight MA<sup>5</sup> |  
 Jaime E. Sidani PhD<sup>1,2</sup>

<sup>1</sup>Center for Research on Media, Technology, and Health, University of Pittsburgh, Pittsburgh, PA, USA

<sup>2</sup>Department of Medicine, University of Pittsburgh, Pittsburgh, PA, USA

<sup>3</sup>University Honors College, University of Pittsburgh, Pittsburgh, PA, USA

<sup>4</sup>School of Medicine, University of Pittsburgh, Pittsburgh, PA, USA

<sup>5</sup>Department of Communication, West Virginia University, Morgantown, WV, USA

## Correspondence

Brian A. Primack, 3600 Cathedral of Learning, 4200 Fifth Avenue Pittsburgh, PA 15260, USA. Email: bprimack@pitt.edu

Data collected at the West Virginia University.

Grant sponsor: the Fine Foundation.

**Background:** Social media (SM) may confer emotional benefits via connection with others. However, epidemiologic studies suggest that overall SM is paradoxically associated with increased depressive symptoms. To better understand these findings, we examined the association between positive and negative experiences on SM and depressive symptoms.

**Methods:** We conducted a cross-sectional survey of 1,179 full-time students at the University of West Virginia, aged 18 to 30, in August 2016. Independent variables were self-reported positive and negative experiences on SM. The dependent variable was depressive symptoms as measured using the Patient-Reported Outcomes Measurement Information System. We used multivariable logistic regression to assess associations between SM experiences and depressive symptoms controlling for sociodemographic factors including age, sex, race/ethnicity, education, relationship status, and living situation.

**Results:** Of the 1,179 participants, 62% were female, 28% were non-White, and 51% were single. After controlling for covariates, each 10% increase in positive experiences on SM was associated with a 4% decrease in odds of depressive symptoms, but this was not statistically significant (adjusted odds ratio [AOR] = 0.96; 95% confidence interval [CI] = 0.91–1.002). However, each 10% increase in negative experiences was associated with a 20% increase in odds of depressive symptoms (AOR = 1.20; 95% CI = 1.11–1.31). When both independent variables were included in the same model, the association between negative experiences and depressive symptoms remained significant (AOR = 1.19, 95% CI = 1.10–1.30).

**Conclusions:** Negative experiences online may have higher potency than positive ones because of negativity bias. Future research should examine temporality to determine if it is also possible that individuals with depressive symptomatology are inclined toward negative interactions.

## KEYWORDS

computer/Internet technology, depression, Internet, web-based

## 1 | INTRODUCTION

Depression is the leading cause of disability worldwide (World Health Organization, 2016). In the United States, the economic burden of depression is over \$210 billion (Greenberg, Fournier, Sisitsky, Pike, & Kessler, 2015). Moreover, many individuals with depression also experience physical or psychiatric comorbidities that contribute to the overall disease burden (Greenberg et al., 2015). Only about half of individuals experiencing major depression receive treatment in the United States and fewer than 10% receive treatment in many other countries

(National Institute of Mental Health, 2016; SAMHSA, 2015; World Health Organization, 2016). Depression is associated with a combination of biological, psychological, and social factors (World Health Organization, 2016). Prior research has identified media exposures, such as video games, television, movies, and the Internet, to be associated with depression among adolescents (Bickham, Hswen, & Rich, 2015; Primack et al., 2009).

However, social media (SM) use has presented a puzzle in terms of its relationship with depression. SM use is rapidly increasing worldwide. In the United States the percentage of young adults using SM

skyrocketed from 12% in 2005 to 90% in 2015 (Perrin, 2015). Among online adults in 2016, Facebook remained the most popular SM platform (79%, a 7 percentage point increase from 2015), followed by Instagram (32%), Pinterest (31%), LinkedIn (29%), and Twitter (24%; Greenwood, Perrin, & Duggan, 2016). Of note, as of 2016, 62% of American adults reported getting their news from SM (Gottfried & Shearer, 2016).

Because the goal of SM is to connect individuals, it is not surprising that studies suggest its ability to enhance emotional support. For example, Facebook use among college students may help maintain established relationships, and benefits appear particularly strong among users with low self-esteem and low life-satisfaction (Ellison, Vitak, Gray, & Lampe, 2014). SM also facilitates the formation of new connections, providing an alternative way to connect with others who share similar interests (Ellison, Heino, & Gibbs, 2006; Ellison, Steinfield, & Lampe, 2007). Furthermore, individuals with more SM connections report having greater social capital, which has also been associated with lower depression (Ellison, Steinfield, & Lampe, 2011; Ellison et al., 2014; Steinfield, Ellison, & Lampe, 2008). This may be because those with greater social capital are able to draw upon resources from members of their networks, leading to useful information, new personal relationships, and employment opportunities (Granovetter, 1973; Paxon, 1999). Consistent with all of this, having a larger Facebook audience has been associated with increased life satisfaction, perceived social support, and subjective well-being (Kim & Lee, 2011; Manago, Taylor, & Greenfield, 2012).

However, other studies suggest that increased SM exposure may counter-intuitively be associated with *increased* depression among both adolescents (Lou, Yan, Nickerson, & McMorris, 2012; Pantic et al., 2012) and adults (Kross et al., 2013; Lin et al., 2016; McDougall et al., 2016; Shensa, Sidani, Lin, Bowman, & Primack, 2016). This may be because SM facilitates engagement in social comparison, giving users the impression that others are happier and more meaningfully engaged (Acar, 2008; Chou & Edge, 2012; Lup, Trub, & Rosenthal, 2015). Frequency of SM use may lead to media multitasking—either between SM platforms or SM and other tasks—which has been associated with depression, social anxiety, and declines in academic performance (Becker, Alzahabi, & Hopwood, 2013; Cain, Leonard, Gabrieli, & Finn, 2016; Xu, Wang, & David, 2016).

Whereas prior studies have generally treated SM use as a unidimensional exposure variable (e.g., via “time” or “frequency”), all SM experiences are not the same in terms of positive or negative subjective experience. For example, an individual can spend 2 hr engaging in experiences that feel highly positive to the user—such as supporting close friends with positive messages and “likes”—whereas another user might spend those same 2 hr having highly negative experiences including vehement arguments on emotional topics such as politics. It would be valuable to determine if these distinct experiences are differently associated with depression; if they are, that might provide a direction for intervention.

Another literature gap that would be useful to fill would be to assess overall use of SM. Many previous studies have focused on one platform, such as Facebook (Kross et al., 2013) or Instagram (Lup et al., 2015). However, an increasing number of individuals are using a more diverse

set of platforms (Greenwood et al., 2016; Perrin, 2015), with 56% of online adults using more than one of the five most common SM platforms (Greenwood et al., 2016).

Therefore, the purpose of this study was to examine, in a large cohort of university students, associations between positive and negative SM experiences on a variety of platforms and depressive symptoms. We hypothesized that reporting a greater proportion of positive experiences on SM would be associated with lower levels of depressive symptoms (H1). Second, we hypothesized that reporting a greater proportion of negative experiences on SM would be associated with greater levels of depressive symptoms (H2). Our third aim was to compare the effect sizes associated with positive and negative experiences on depressive symptoms in the same statistical model. For this more exploratory aim, we did not have a specific *a priori* hypothesis.

## 2 | METHODS

### 2.1 | Design

We conducted a cross-sectional study of SM use and depressive symptoms among young adults from one large U.S. state university. In August 2016, participants were recruited via an email distributed to all registered students, including both undergraduate and graduate students. The email invited recipients to participate in an online survey designed to understand both the positive and negative associations between SM use and well-being. Enrollment continued until about 1,200 responses were received; this figure was based on power calculations that relied upon prior distributions and estimates for the independent and dependent variables.

Participants provided online informed consent. The median completion time for the survey was 16 min. As thanks for their time, participants were entered into a drawing for a \$50 Amazon gift card for every 25 participants enrolled. This study was approved by the University of West Virginia Institutional Review Board and the survey was administered via Qualtrics (Qualtrics, 2015).

### 2.2 | Sample

To be eligible, participants had to be between 18 and 30 years of age and undergraduate or graduate students at the University of West Virginia in Morgantown, WV. There were 1,228 eligible participants, and of these, 1,179 had complete data for our primary dependent and independent variables.

### 2.3 | Measures

#### 2.3.1 | Depressive symptoms (dependent variable)

We assessed depressive symptoms using the 4-item Patient-Reported Outcomes Measurement Information System (PROMIS) scale. 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 (Cella et al., 2010). The PROMIS

depression scale has been validated against other commonly used depression instruments, including the Center for Epidemiological Studies Depression Scale, the Beck Depression Inventory, and the Patient Health Questionnaire (Choi, Schalet, Cook, & Cella, 2014; Pilkonis et al., 2014). The 4-item PROMIS depression scale asked participants how frequently in the past 7 days they had felt hopeless, worthless, helpless, or depressed (Pilkonis et al., 2011). Each item was scored on a 5-point Likert scale ranging from 1 to 5, corresponding to responses of *Never* (1), *Rarely* (2), *Sometimes* (3), *Often* (4), and *Always* (5). The resulting composite scale ranged from 4 to 20 and served as the dependent variable in our models. Because of the skewed and non-normal distribution of this variable, we could not use it as a continuous variable. Therefore, based on the distribution of our data and to improve interpretability of results, we operationalized this variable in two ways. First, we used the standard cutoff for depression of 11, which corresponds to the T-score of 60.5 (Cella, Gershon, Bass, & Rothrock, 2015), indicating moderate depressive symptoms based on the recommendation of the American Psychiatric Association (American Psychiatric Association, 2013). Because the PROMIS scale is also designed to assess level of depressive symptoms, we also collapsed scores into three roughly equal categories—low (4); medium (5–8); and high (9–20)—to create an ordered categorical outcome. For our primary analyses, we used the depression cutoff of 11, and for our secondary analyses, we used the three-level variable.

### 2.3.2 | Positive and negative experiences on SM (independent variables)

We assessed positive and negative experiences on SM by directly asking participants to estimate what percentage of their SM experiences involved positive and negative experiences, respectively. Participants interpreted the meaning of positive and negative experiences, a decision made after focus groups suggested that offering interpretations would be counterproductive. We presented participants with sliders ranging from 0 to 100 as the response choice for each item. The resulting two scores served as independent variables. For logistic regression analyses, we transformed responses into a 10-point scale (1 point for every 10%), based on the natural distribution of responses around these anchors and to improve interpretability of results.

### 2.3.3 | Sociodemographic factors (covariates)

We asked participants to report their age, sex, race/ethnicity, highest level of education, relationship status, and living situation. We provided participants with open response formats for reporting age, sex, and race/ethnicity. We assessed age as a continuous variable in years (18 to 30) and collapsed race/ethnicity into two categories: (1) White, non-Hispanic; and (2) non-White. We used multiple choice items to assess relationship status (single, dating, in a committed relationship) and living situation (with parent/guardian, with significant other, with friends, alone, other). We collapsed categories with <5% responses for model stability in analyses.

## 2.4 | Analysis

For primary analyses, we only included individuals with complete data for our dependent variable (depressive symptoms) and independent variables (positive and negative experiences on SM). Of the 1,228 eligible participants, 49 (4%) were excluded because of missing data.

We performed chi-square tests for sex, race/ethnicity (categorical variables) and *t*-tests for age (continuous variable) to assess patterns of missing data and determine if there were any sociodemographic differences between those with complete and those with incomplete data. There were no significant differences by age ( $P = .50$ ), race/ethnicity ( $P = .27$ ), or sex ( $P = .19$ ).

We described our sample by reporting counts and percentages. In order to make sure we had met appropriate assumptions for our analytic models, we also screened our data. We screened all six multivariable models for collinearity among covariates, and an average variance inflation factor (VIF) of 1.34 indicated no issues of multicollinearity among each independent variable. All three models using ordered logistic regression met the proportional odds assumption, indicated by nonsignificant *P*-values ranging from .95 to .97.

We then assessed bivariable and multivariable associations between each independent and dependent variable using logistic regression and ordered logistic regression based upon both a dichotomous and three-level ordered categorical scale of our dependent variable. We decided a priori to adjust for all sociodemographic covariates in our multivariable models regardless of significance level in bivariable analyses. We defined statistical significance with a two-tailed  $\alpha$  of .05 and analyzed all data using Stata 14 (StataCorp, 2016). Our primary multivariable model included both positive experiences and negative experiences in the same model. However, we also conducted analyses with each of these independent variables in different models in order to triangulate findings.

We conducted three sets of sensitivity analyses to examine robustness of results. First, we conducted all analyses using continuous variables when they were available (e.g., for age). Second, we re-conducted all analyses using only covariates with a  $P < .20$  association with the outcome in order to ensure that we were not overcontrolling. Third, we re-conducted all analyses using other depression cutoffs (i.e., 8, 9, 10, and 12) to ensure results were consistent with primary models. Because all of these additional analyses demonstrated similar results to primary models, only primary results are presented in the current manuscript.

## 3 | RESULTS

Our final sample consisted of 1,179 individuals. As shown in Table 1, the majority of our sample was female (62%), 37% identified as male, and 1% identified as “other” gender. The majority of participants were White, non-Hispanic (72%), hereafter referred to as “White.” Our sample ranged in age from 18 to 30 years old, with a mean age of 20.9 ( $SD = 2.9$ ). Median age was 20 (inter-quartile range (IQR) = 19–22). About half of participants reported being single (51%)

**TABLE 1** Whole sample characteristics and bivariable associations between independent variables, covariates, and depressive symptoms as a dichotomous variable ( $N = 1,179$ )

Independent variable/covariate	Whole sample	Depressive symptoms		$p^b$
		No	Yes	
Positive experience, mean ( <i>SD</i> )	71 (31)	72 (31)	68 (31)	.046
Positive experience, median (IQR)	85 (50, 96)	85 (52, 97)	80 (46, 95)	.04
Negative experience, mean ( <i>SD</i> )	11 (16)	10 (15)	15 (20)	<.001
Negative experience, median (IQR)	5 (1, 14)	5 (0, 11)	5 (1, 20)	<.001
Age, $y$ , $n$ (%)				.95
18	264 (22)	210 (23)	54 (22)	
19–20	394 (33)	311 (33)	83 (33)	
21–24	377 (32)	297 (32)	80 (32)	
25–30	144 (12)	111 (12)	33 (13)	
Sex, $n$ (%) <sup>a</sup>				.001
Male	439 (37)	360 (39)	79 (32)	
Female	726 (62)	563 (61)	163 (65)	
Other	14 (1)	6 (1)	8 (3)	
Race/ethnicity, $n$ (%) <sup>a</sup>				.007
White, non-Hispanic	843 (72)	682 (74)	161 (65)	
Non-White <sup>c</sup>	331 (28)	244 (26)	87 (35)	
Education				.15
High school diploma or less	268 (23)	224 (24)	44 (18)	
Some college	591 (50)	453 (49)	138 (55)	
Two-year/technical degree	193 (16)	153 (16)	40 (16)	
Bachelor's degree	127 (11)	99 (11)	28 (11)	
Relationship status, $n$ (%) <sup>a</sup>				.34
Single	606 (51)	470 (51)	136 (54)	
Dating	322 (27)	253 (27)	69 (28)	
In a committed relationship <sup>d</sup>	251 (21)	206 (22)	45 (18)	
Living situation, $n$ (%) <sup>a</sup>				.67
With a parent or guardian	172 (15)	139 (15)	33 (13)	
With a significant other	122 (10)	101 (11)	21 (8)	
With friends	564 (48)	436 (47)	128 (51)	
Alone	202 (17)	159 (17)	43 (17)	
Other	119 (10)	94 (10)	25 (10)	

<sup>a</sup>Column percentages may not total 100 due to rounding.

<sup>b</sup>Significance level determined using the non-parametric Kruskal–Wallis test for continuous independent variables and chi-square tests for categorical sociodemographic variables.

<sup>c</sup>Includes Black, Hispanic, Asian, Native American, and Multiracial.

<sup>d</sup>Included being engaged, married, or in a domestic partnership.

and about half reported living with friends (48%). Variables significantly associated with depression as a dichotomous variable in bivariable analyses included positive experiences, negative experiences, sex, and race/ethnicity (Table 1). When depression was operationalized in tertiles, variables significantly associated with depressive symptoms included positive experiences, negative experiences, sex, and living situation (Table 2).

Internal consistency of the four depressive symptom items was high ( $\alpha = .91$ ). Data were skewed to the right, with a mean of 7.6 ( $SD = 3.7$ ) and median of 7 (IQR = 4–10) on the composite scale ranging from 4 to 20. About one third of our sample (30%) was in the low

depressive symptoms group and a similar percentage was in the high group (34%).

The distribution of each independent variable was skewed. Participants reported that about 71% ( $SD = 31$ ) of their SM experiences were positive. This corresponded with a median of 85% (IQR = 50–96). However, participants reported that about 11% ( $SD = 16$ ) of their SM experiences were negative, and this corresponded with a median of 5% (IQR = 1–14).

Our first set of multivariable models explored associations with depressive symptoms as a dichotomous variable. In the model only including positive experiences, each 10% increase in positive

**TABLE 2** Whole sample characteristics and bivariable associations between independent variables, covariates, and depressive symptoms operationalized in tertiles ( $N = 1,179$ )

Independent variable/covariate	Whole sample	Depressive symptoms			$p^b$
		Low (4)	Medium (5–8)	High (9–20)	
Positive experience, mean (SD)	71 (31)	74 (31)	73 (30)	67 (31)	.004
Positive experience, median (IQR)	85 (50, 96)	90 (60, 99)	86 (52, 97)	80 (46, 95)	<.001
Negative experience, mean (SD)	11 (16)	10 (16)	9 (13)	14 (19)	<.001
Negative experience, median (IQR)	5 (1, 14)	4 (0, 10)	5 (0, 10)	5 (1, 20)	<.001
Age, $\gamma$ , $n$ (%)					.37
18	264 (22)	87 (25)	94 (22)	83 (21)	
19–20	394 (33)	106 (31)	149 (35)	139 (35)	
21–24	377 (32)	120 (35)	130 (30)	127 (32)	
25–30	144 (12)	34 (10)	58 (13)	52 (13)	
Sex, $n$ (%) <sup>a</sup>					<.001
Male	439 (37)	152 (44)	166 (38)	121 (30)	
Female	726 (62)	191 (55)	264 (61)	271 (68)	
Other	14 (1)	4 (1)	1 (0)	9 (2)	
Race/ethnicity, $n$ (%) <sup>a</sup>					.096
White, non-Hispanic	842 (72)	252 (73)	320 (74)	271 (68)	
Non-White <sup>c</sup>	331 (28)	93 (27)	110 (26)	128 (32)	
Education					.31
High school diploma or less	268 (23)	95 (27)	92 (21)	81 (20)	
Some college	591 (50)	164 (47)	214 (50)	213 (53)	
Two-year/technical degree	193 (16)	54 (16)	75 (17)	64 (16)	
Bachelor's degree	127 (11)	34 (10)	50 (12)	43 (11)	
Relationship status, $n$ (%) <sup>a</sup>					.43
Single	606 (51)	171 (49)	217 (50)	218 (54)	
Dating	322 (27)	102 (29)	113 (26)	107 (27)	
In a committed relationship <sup>d</sup>	251 (21)	74 (21)	101 (23)	76 (19)	
Living situation, $n$ (%) <sup>a</sup>					.02
With a parent or guardian	172 (15)	58 (17)	59 (14)	55 (14)	
With a significant other	122 (10)	37 (11)	48 (11)	37 (9)	
With friends	564 (48)	177 (51)	183 (42)	204 (51)	
Alone	201 (17)	53 (15)	89 (21)	60 (15)	
Other	119 (10)	22 (6)	52 (12)	45 (11)	

<sup>a</sup>Column percentages may not total 100 due to rounding.

<sup>b</sup>Significance level determined using the non-parametric Kruskal–Wallis test for continuous independent variables and chi-square tests for categorical sociodemographic variables.

<sup>c</sup>Includes Black, Hispanic, Asian, Native American, and Multiracial.

<sup>d</sup>Included being engaged, married, or in a domestic partnership.

experiences on SM was associated with a 4% decrease in depressive symptoms (adjusted odds ratio [AOR] = 0.96; 95% confidence interval [CI] = 0.91–1.002; Table 3, Model 1). This was statistically insignificant, indicating that H1 was not upheld. In the model only including negative experiences, each 10% increase in negative experiences on SM was associated with a 20% increase in depressive symptoms (AOR = 1.20; 95% CI = 1.11–1.31; Table 3, Model 2). This was statistically significant, indicating that H2 was upheld. When independent variables were in the same model, results were only slightly different (Figure 1; Table 3, Model 3). Each 10% increase in positive experiences was associated with a 2% decrease in odds of depressive symptoms

(AOR = 0.98; 95% CI = 0.93–1.03), which was statistically insignificant. Although each 10% increase in negative experiences was associated with a 19% increase in odds of depressive symptoms (AOR = 1.19; 95% CI = 1.10–1.30), which was statistically significant. In all three models, covariates significantly associated with depressive symptoms included negative experiences, sex (“Female” and “Other”), race/ethnicity (“Non-White”), and education (“Some college”; Table 3).

In the second set of multivariable models, which explored associations with depressive symptoms operationalized in tertiles, results were generally similar to those with depressive symptoms as a dichotomous variable. In the model only including positive experiences,

**TABLE 3** Multivariable associations between independent variables, covariates, sociodemographic characteristics, and depressive symptoms as a dichotomous variable ( $N = 1,179$ )

Independent variable/covariate	Depressive symptoms		
	Model 1 <sup>a</sup> AOR (95% CI) <sup>b</sup>	Model 2 <sup>a</sup> AOR (95% CI) <sup>b</sup>	Model 3 <sup>a</sup> AOR (95% CI) <sup>b</sup>
Positive experiences <sup>c</sup>	0.96 (0.91–1.002)	–	0.98 (0.93–1.03)
Negative experiences <sup>c</sup>	–	1.20 (1.11–1.31)	1.19 (1.10–1.30)
Age			
18	Reference	Reference	Reference
19–20	0.77 (0.48–1.23)	0.78 (0.49–1.26)	0.78 (0.49–1.25)
21–24	0.84 (0.49–1.44)	0.87 (0.51–1.49)	0.86 (0.50–1.47)
25–30	1.01 (0.48–2.11)	1.10 (0.52–2.31)	1.07 (0.51–2.26)
Sex			
Male	Reference	Reference	Reference
Female	1.41 (1.03–1.93)	1.49 (1.09–2.05)	1.50 (1.09–2.06)
Other	5.55 (1.79–17.17)	6.27 (2.00–19.63)	5.94 (1.88–18.74)
Race/ethnicity			
White, non-Hispanic	Reference	Reference	Reference
Non-White <sup>d</sup>	1.45 (1.06–1.98)	1.42 (1.04–1.94)	1.41 (1.03–1.93)
Education			
High school diploma or less	Reference	Reference	Reference
Some college	1.77 (1.11–2.82)	1.78 (1.11–2.84)	1.78 (1.12–2.85)
Two-year/technical degree	1.53 (0.79–2.97)	1.62 (0.83–3.16)	1.64 (0.84–3.20)
Bachelor's degree	1.53 (0.73–3.19)	1.43 (0.68–3.00)	1.47 (0.70–3.08)
Relationship status			
Single	Reference	Reference	Reference
Dating	0.96 (0.68–1.34)	0.97 (0.69–1.36)	0.97 (0.68–1.36)
In a committed relationship <sup>e</sup>	0.71 (0.45–1.10)	0.70 (0.45–1.10)	0.70 (0.44–1.09)
Living situation			
With a parent or guardian	Reference	Reference	Reference
With a significant other	0.94 (0.46–1.91)	0.87 (0.42–1.77)	0.86 (0.42–1.76)
With friends	1.19 (0.75–1.87)	1.17 (0.74–1.85)	1.16 (0.73–1.84)
Alone	1.05 (0.61–1.82)	0.99 (0.57–1.72)	0.99 (0.57–1.72)
Other	1.07 (0.59–1.95)	0.99 (0.54–1.84)	0.99 (0.54–1.83)

<sup>a</sup>Model 1 includes positive experiences and all covariates included in the table. Model 2 includes negative experiences and all covariates included in the table. Model 3 includes both of these independent variables and all covariates included in the table.

<sup>b</sup>AOR, adjusted odds ratio; CI, confidence interval; adjusted for age, sex, race/ethnicity, education, relationship status, and living situation.

<sup>c</sup>Each independent variable indicates the proportion of participants' SM experiences they perceive as being positive or negative. Associated odds represent the increase in depression for every 10% increase in the independent variable.

<sup>d</sup>Includes Black, Multiracial, Hispanic, Asian, and Native American.

<sup>e</sup>Included being engaged, married, or in a domestic partnership.

each 10% increase in positive experiences was associated with a 6% decrease in depressive symptoms, and this was statistically significant (AOR = 0.94; 95% CI = 0.91–0.97; Table 4, Model 1). In the model only including negative experiences, each 10% increase in negative experiences was associated with a 16% increase in depressive symptoms (AOR = 1.16; 95% CI = 1.08–1.25; Table 4, Model 2). Model 3, which included both independent variables, demonstrated results that were similar in magnitude and significant to Model 1 and Model 2 (Table 4, Model 3). In all three models, female sex was significantly associated with depressive symptoms. For example, being female was associated with an increase in the odds of depressive symptoms (e.g., AOR = 1.68;

95% CI = 1.34–2.12; Table 4, Model 3). In some models, relationship status and living situation were weakly associated with depressive symptoms (Table 4).

## 4 | DISCUSSION

This study of university students found that having positive experiences on SM was only weakly associated with lower depressive symptoms, whereas having negative experiences on SM was strongly associated with higher depressive symptoms. Because 83% of SM users



**TABLE 4** Multivariable associations between independent variables, covariates, sociodemographic characteristics, and depressive symptoms operationalized in tertiles ( $N = 1,179$ )

Independent variable/covariate	Depressive symptoms		
	Model 1 <sup>a</sup> AOR (95% CI) <sup>b</sup>	Model 2 <sup>a</sup> AOR (95% CI) <sup>b</sup>	Model 3 <sup>a</sup> AOR (95% CI) <sup>b</sup>
Positive experiences <sup>c</sup>	0.94 (0.91–0.97)	–	0.95 (0.92–0.99)
Negative experiences <sup>c</sup>	–	1.16 (1.08–1.25)	1.14 (1.06–1.23)
Age			
18	Reference	Reference	Reference
19–20	1.16 (0.82–1.66)	1.18 (0.83–1.68)	1.17 (0.82–1.67)
21–24	1.02 (0.68–1.54)	1.06 (0.70–1.59)	1.02 (0.68–1.54)
25–30	1.40 (0.80–2.45)	1.47 (0.83–2.58)	1.42 (0.81–2.49)
Sex			
Male	Reference	Reference	Reference
Female	1.63 (1.30–2.05)	1.65 (1.31–2.07)	1.68 (1.34–2.12)
Other	2.61 (0.83–8.26)	3.13 (0.98–9.94)	2.74 (0.85–8.81)
Race/ethnicity			
White, non-Hispanic	Reference	Reference	Reference
Non-White <sup>d</sup>	1.18 (0.93–1.51)	1.19 (0.93–1.51)	1.16 (0.91–1.48)
Education			
High school diploma or less	Reference	Reference	Reference
Some college	1.32 (0.94–1.84)	1.32 (0.94–1.85)	1.32 (0.94–1.86)
Two-year/technical degree	1.26 (0.78–2.05)	1.31 (0.81–2.14)	1.33 (0.82–2.17)
Bachelor's degree	1.25 (0.72–2.14)	1.20 (0.70–2.08)	1.25 (0.72–2.15)
Relationship status			
Single	Reference	Reference	Reference
Dating	0.86 (0.66–1.11)	0.86 (0.67–1.12)	0.86 (0.67–1.11)
In a committed relationship <sup>e</sup>	0.72 (0.52–0.99)	0.74 (0.54–1.02)	0.72 (0.53–0.9996)
Living situation			
With a parent or guardian	Reference	Reference	Reference
With a significant other	1.02 (0.62–1.69)	0.98 (0.59–1.62)	0.96 (0.58–1.59)
With friends	1.10 (0.79–1.53)	1.09 (0.78–1.53)	1.08 (0.77–1.51)
Alone	1.02 (0.69–1.53)	0.997 (0.67–1.49)	0.98 (0.65–1.46)
Other	1.57 (1.02–2.43)	1.53 (0.99–2.36)	1.52 (0.98–2.34)

<sup>a</sup>Model 1 includes positive experiences and all covariates included in the table. Model 2 includes negative experiences and all covariates included in the table. Model 3 includes both of these independent variables and all covariates included in the table.

<sup>b</sup>AOR, adjusted odds ratio; CI, confidence interval; adjusted for age, sex, race/ethnicity, education, relationship status, and living situation.

<sup>c</sup>Each independent variable indicates the proportion of participants' SM experiences they perceive as being positive or negative. Associated odds represent the increase in depression for every 10% increase in the independent variable.

<sup>d</sup>Includes Black, Multiracial, Hispanic, Asian, and Native American.

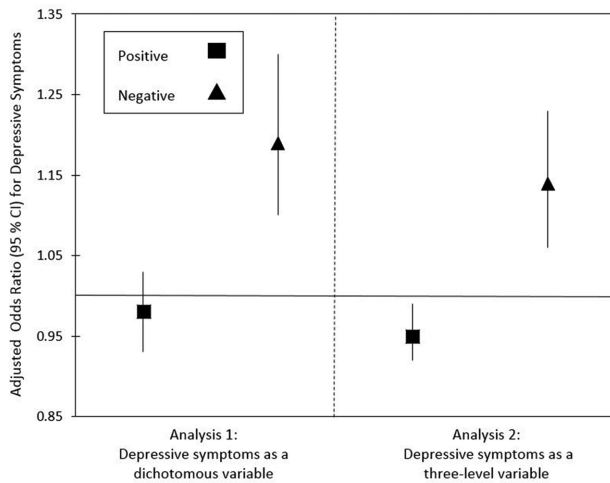
<sup>e</sup>Included being engaged, married, or in a domestic partnership.

are within the age range of our study population (Duggan & Brenner, 2013), it is valuable to know that the valence of online experiences may be associated with important outcomes such as depressive symptoms in this population. These findings may encourage individuals to pay closer attention to their online exchanges and experiences, and assist development of interventions.

It should be noted that one important caveat of our findings is that, because we used a cross-sectional methodology, we cannot determine whether negative interactions engender depressive symptoms, whether depressive symptoms draw individuals into negative

interactions, or some combination of the two. Future longitudinal and/or qualitative research may help to elucidate directionality.

One potential explanation for the association between valence of SM experiences and depressive symptoms is that individuals use and experience SM in different ways, including social engagement, information seeking, passing time, relaxation, or entertainment (Whiting & Williams, 2013). In these various contexts, some users tend to have positive exchanges that bolster their feelings of connectedness and positivity, whereas others engage in negative exchanges and arguments that may leave them feeling disconnected or depressed.



**FIGURE 1** Adjusted odds ratios with 95% confidence intervals of the association between both positive and negative experiences of social media (SM) with depressive symptoms, measured in two separate ways: (1) as a dichotomous variable and (2) as a three-level ordered categorical variable. Overall, positive experiences on SM (“positive”) are associated with lower odds of depressive symptoms and negative experiences on SM (“negative”) are associated with higher odds of depressive symptoms. This association holds true when depressive symptoms were divided into a dichotomous variable or a three-level variable. Depressive symptoms were assessed using a 4-item PROMIS scale and operationalized as a dichotomous variable using the standard cutoff for depression of 11, as well as a three-level categorical variable—low (<4); medium (5–8); and high (9–20). Positive and negative experiences on social media were assessed by directly asking participants to estimate which percent of their SM experiences involved positive and negative experiences, respectively. Responses were transformed into a 10-point scale (1 point for every 10%) based on the natural distribution of responses and to improve interpretability. Results are reported as an adjusted odds ratio, for which each 10% increase in positive and/or negative experiences is associated with odds of depressive symptoms. All analyses were adjusted for age, gender, and race/ethnicity.

Our findings are consistent with *social network theory* (Granovetter, 1973; Krackhardt, 1992), which suggests that “strong ties” based on trust and affection are more likely to manifest in positive experiences and greater levels of emotional support. On the other hand, “weak ties” are helpful for finding new information, but they may provide low levels of intimacy and relationship intensity (Granovetter, 1973; Krackhardt, 1992). In the complex milieu of SM—where the average Facebook user has 217 “friends” (Acar, 2008) and the average size of a real-life social network is around 125 (Hill & Dunbar, 2003)—frequent engagement with weak ties may increase misunderstandings and negative experiences, leading to greater depressive symptoms. The additional “friends” that SM sites facilitate may actually foster disconnectedness rather than engender meaningful connections.

In our model including both independent variables, each 10% increase in positive experiences on SM was associated with a 2% decrease in depressive symptoms. Although the result was not statistically significant, its direction is consistent with studies demonstrating the value of SM in developing and maintaining social capital and connectedness, entities that inversely correlate with depressive

symptoms (Ellison et al., 2007; Steinfield et al., 2008). However, the magnitude of the finding was much stronger for negative experiences. Each 10% increase in *negative* experiences was associated with a 19% increase in odds of depressive symptoms. Additional analyses, which operationalized depressive symptoms in tertiles, demonstrated similar results. Because the effect size for negative experiences seems to be higher than that for positive experiences, one might conclude that negative SM experiences may be more “potent” than positive experiences. This reasoning is consistent with *negativity bias*, a concept which purports a tendency for humans to give greater emphasis to negative entities (e.g., events, objects, personal traits) compared with positive ones (Rozin & Royzman, 2001). This may be particularly relevant in the context of SM use. For example, although positive experiences may be associated with fleeting positive reinforcement, negative experiences such as public SM arguments may rapidly escalate due to a need to shape or defend one’s “digital identity” (Cover, 2015) and may in turn leave a lasting, potentially traumatic impression on the individual.

Because these data are cross-sectional, it may also be that individuals with depressive symptoms tend to subsequently have more negative and fewer positive experiences on SM. This explanation is plausible, because depressed and/or anhedonic individuals may seek out SM relationships due to their tendency to shun in-person social opportunities (Caplan, 2003). It may also be that the association between SM experiences and depressive symptoms is bi-directional in nature.

Aside from positive and negative SM experiences, one covariate—sex—was associated with depressive symptoms across all analytic models. When compared to those who identified as male, participants who identified as female demonstrated a 50% increase in odds of depressive symptoms. This is consistent with other research demonstrating that females have higher rates of depression than males (World Health Organization, 2016).

Three additional covariates were associated with depressive symptoms in our primary analysis. First, participants who identified as “other,” when compared to those who identified as male, had nearly six-fold odds of increased depressive symptoms. This is consistent with research demonstrating that gender-fluid individuals tend to feel marginalized (Grubb, 2016). Second, participants who identified as “non-White” had 45% odds of increased depressive symptoms when compared to those who identified as “White.” Although this is consistent with reportedly higher rates of depression among non-White individuals (Pratt & Brody, 2014), it could also be due to factors not assessed such as income or access to health care which may be associated with depression in minorities. Third, compared to those with a high school diploma or less, participants with only some college—versus 2-year/technical degree or Bachelor’s degree—had 78% odds of increased depressive symptoms. It may be that individuals in 4-year degree programs are at increased risk of depressive symptoms due to high levels of stress. This is consistent with research showing that college students today, compared to 30 years ago, are more likely to report feeling overwhelmed and believe they are below average in mental and physical health (Twenge, 2015).

Although these early findings need to be replicated, they may be useful to public health practitioners. For example, educating the general public to be more aware of the risks associated with engaging in



negative encounters online may help interrupt a potential cycle of negative experiences and depressive symptoms. In a similar vein, cyberbullying occurs not only among adolescents but also among young adults and older adults (Cassidy, Faucher, & Jackson, 2017). Therefore, many possible venues—such as universities, workplaces, and community spaces—could be leveraged to increase awareness around positive and negative SM experiences.

These findings may also be useful for healthcare practitioners working with depressed individuals. Specific strategies to improve quality of online experiences include restricting time spent using SM, thereby reducing the time during which negative encounters could happen; removing one's membership from groups that have enabled negative SM experiences; and “de-friending” people who are contributors to negative experiences.

Although the association between positive experiences and lower depressive symptoms was not significant in our primary model—and only weakly significant in our secondary model—it still may be valuable for individuals to have positive SM experiences. Engaging in various forms of SM has been shown to enhance communication, social connection, and even technical skills among children and adolescents (O'Keeffe & Clarke-Pearson, 2011). Effective SM use—such as communication and knowledge transfer, maintenance of existing connections, and fellowship building—can also lend itself to positive experiences, which may in turn lead to lower depressive symptoms.

## 5 | LIMITATIONS

The major limitation of this study is the cross-sectional nature of these data. Future studies utilizing longitudinal designs and/or more rigorous qualitative components would be useful to explore directionality of results. However, regardless of directionality, knowledge of this association suggests that interventions may be valuable to interrupt this potential cycle. Additionally, it is important to acknowledge that we focused on a convenience sample of young adult university students. Therefore, results cannot be generalized to a more diverse population, such as older or non-university adults. It is also possible participants may have under-reported depression due to the sensitive nature of this topic. We attempted to minimize this by assuring participants of confidentiality and having participants self-administer the survey. In addition, it should be noted that we assessed depressive symptoms using a self-report scale rather than the gold standard, which would have involved interview with a psychiatric professional. Finally, this study was purely observational; future work comparing negative and positive experiences in the online milieu to the real world may be useful.

## 6 | CONCLUSIONS

Having positive experiences on SM is associated with lower depressive symptoms and having negative experiences is associated with higher depressive symptoms. However, the magnitude of effect seems to be more substantial and significant for negative encounters. Therefore, it

may be useful to increase awareness of the importance of avoiding negative SM encounters to reduce the risk of depressive symptoms.

## ACKNOWLEDGMENT

We acknowledge Michelle Woods for editorial assistance.

## FUNDING

We acknowledge funding from the Fine Foundation.

## CONFLICT OF INTEREST

The authors have no conflict of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from the Institutional Review Board of the University of West Virginia.

## ORCID

Brian A. Primack MD, PhD  <http://orcid.org/0000-0002-5962-0939>

## REFERENCES

- Acar, A. (2008). Antecedents and consequences of online social networking behavior: The case of Facebook. *Journal of Website Promotion*, 3(1-2), 62–83. <https://doi.org/10.1080/15533610802052654>
- American Psychiatric Association. (2013). *LEVEL 2—Depression—Adult (PROMIS emotional distress—depression—Short form)*. Retrieved from <https://www.webcitation.org/6eVeBFb6E>
- Becker, M. W., Alzahabi, R., & Hopwood, C. J. (2013). Media multitasking is associated with symptoms of depression and social anxiety. *Cyberpsychology, Behavior, and Social Networking*, 16(2), 132–135. <https://doi.org/10.1089/cyber.2012.0291>
- Bickham, D. S., Hswen, Y., & Rich, M. (2015). Media use and depression: Exposure, household rules, and symptoms among young adolescents in the USA. *International Journal of Public Health*, 60(2), 147–155. <https://doi.org/10.1007/s00038-014-0647-6>
- Cain, M. S., Leonard, J. A., Gabrieli, J. D. E., & Finn, A. S. (2016). Media multitasking in adolescence. *Psychonomic Bulletin & Review*, 23, 1932–1941. <https://doi.org/10.3758/s13423-016-1036-3>
- Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic Internet use and psychosocial well-being. *Communication Research*, 30(6), 625–648. <https://doi.org/10.1177/0093650203257842>
- Cassidy, W., Faucher, C., & Jackson, M. (2017). Adversity in university: Cyberbullying and its impacts on students, faculty and administrators. *International Journal of Environmental Research and Public Health*, 14(8). <https://doi.org/10.3390/ijerph14080888>
- Cella, D., Gershon, R., Bass, M., & Rothrock, N. (2015). *Assessment center user manual: PROMIS depression scoring manual*. Retrieved from <https://www.webcitation.org/6sDme4hIP>
- Cella, D., Riley, W., Stone, A., Rothrock, N., Reeve, B., Yount, S., ... Hays, R. (2010). The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005–2008. *Journal of Clinical Epidemiology*, 63(11), 1179–1194. <https://doi.org/10.1016/j.jclinepi.2010.04.011>
- Choi, S. W., Schalet, B., Cook, K. F., & Cella, D. (2014). Establishing a common metric for depressive symptoms: Linking the BDI-II, CES-D, and

- PHQ-9 to PROMIS depression. *Psychological Assessment*, 26(2), 513–527. <https://doi.org/10.1037/a0035768>
- Chou, H. T. G., & Edge, N. (2012). "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives. *Cyberpsychology, Behavior and Social Networking*, 15(2), 117–121. <https://doi.org/10.1089/cyber.2011.0324>
- Cover, R. (2015). *Digital identities: Creating and communicating the online self*. London, England: Elsevier.
- Duggan, M., & Brenner, J. (2013). *The demographics of social media users—2012*. Washington, DC: Pew Research Center. Retrieved from <https://pewinternet.org/Reports/2013/Social-media-users.aspx>
- Ellison, N. B., Heino, R., & Gibbs, J. (2006). Managing impressions online: Self-presentation processes in the online dating environment. *Journal of Computer-Mediated Communication*, 11, 415–441. <https://doi.org/10.1111/j.1083-6101.2006.00020.x>
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook "friends": Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143–1168. <https://doi.org/10.1111/j.1083-6101.2007.00367.x>
- Ellison, N. B., Steinfield, C., & Lampe, C. (2011). Connection strategies: Social capital implications of Facebook-enabled communication practices. *New Media & Society*, 13(6), 873–892. <https://doi.org/10.1177/1461444810385389>
- Ellison, N. B., Vitak, J., Gray, R., & Lampe, C. (2014). Cultivating social resources on social network sites: Facebook relationship maintenance behaviors and their role in social capital processes. *Journal of Computer-Mediated Communication*, 19(4), 855–870. <https://doi.org/10.1111/jcc4.12078>
- Gottfried, J., & Shearer, E. (2016). *News use across social media platforms 2016*. Washington, DC: Pew Research Center.
- Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, 78(6), 1360–1380. <https://doi.org/10.1086/225469>
- Greenberg, P. E., Fournier, A.-A., Sisitsky, T., Pike, C. T., & Kessler, R. C. (2015). The economic burden of adults with major depressive disorder in the United States (2005 and 2010). *Journal of Clinical Psychiatry*, 76(2), 155–162. <https://doi.org/10.4088/JCP.14m09298>
- Greenwood, S., Perrin, A., & Duggan, M. (2016). *Social media update 2016*. Washington, DC: Pew Research Center. Retrieved from <https://www.webcitation.org/6r4NbnGd>
- Grubb, H. M. (2016). Marginalization of transgender identities: Implications for health equity. *Psychiatric Annals*, 46(6), 334–339. <https://doi.org/10.3928/00485713-20160418-01>
- Hill, R. A., & Dunbar, R. I. M. (2003). Social network size in humans. *Human Nature*, 14(1), 53–72. <https://doi.org/10.1007/s12110-003-1016-y>
- Kim, J., & Lee, J. R. (2011). The Facebook paths to happiness: Effects of the number of Facebook friends and self-presentation on subjective well-being. *Cyberpsychology, Behavior and Social Networking*, 14(6), 359–364. <https://doi.org/10.1089/cyber.2010.0374>
- Krackhardt, D. (1992). The strength of strong ties: The importance of Philos in organizations. In N. Nohria & R. Eccles (Eds.), *Networks and organizations: Structure, form, and action*. Cambridge, MA: Harvard Business School Press.
- Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., ... Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PLOS One*, 8(8), e69841. <https://doi.org/10.1371/journal.pone.0069841>
- Lin, L. Y., Sidani, J. E., Shensa, A., Radovic, A., Miller, E., Colditz, J. B., ... Primack, B. A. (2016). Association between social media use and depression among U.S. young adults. *Depression and Anxiety*, 33(4), 323–331. <https://doi.org/10.1002/da.22466>
- Lou, L. L., Yan, Z., Nickerson, A., & McMorris, R. (2012). An examination of the reciprocal relationship of loneliness and Facebook use among first-year college students. *Journal of Educational Computing Research*, 46(1), 105–117. <https://doi.org/10.2190/EC.46.1.e>
- Lup, K., Trub, L., & Rosenthal, L. (2015). Instagram #instasad?: Exploring associations among Instagram use, depressive symptoms, negative social comparison, and strangers followed. *Cyberpsychology, Behavior, and Social Networking*, 18(5), 247–252. <https://doi.org/10.1089/cyber.2014.0560>
- Manago, A. M., Taylor, T., & Greenfield, P. M. (2012). Me and my 400 friends: The anatomy of college students' Facebook networks, their communication patterns, and well-being. *Developmental Psychology*, 48(2), 369–380. <https://doi.org/10.1037/a0026338>
- McDougall, M. A., Walsh, M., Wattier, K., Knigge, R., Miller, L., Stevermer, M., & Fogas, B. S. (2016). The effect of social networking sites on the relationship between perceived social support and depression. *Psychiatry Research*, 246, 223–229. <https://doi.org/10.1016/j.psychres.2016.09.018>
- National Institute of Mental Health. (2016). *Use of mental health services and treatment among children*. Retrieved from <https://www.webcitation.org/6gZH1xtay>
- O'Keeffe, G. S., & Clarke-Pearson, K. (2011). The impact of social media on children, adolescents, and families. *American Academy of Pediatrics*, 127(4), 800–804. <https://doi.org/10.1542/peds.2011-0054>
- Pantic, I., Damjanovic, A., Todorovic, J., Topalovic, D., Bojovic-Jovic, D., Ristic, S., & Pantic, S. (2012). Association between online social networking and depression in high school students: Behavioral physiology viewpoint. *Psychiatra Danubina*, 24, 90–93.
- Paxon, P. (1999). Is social capital declining in the United States? A multiple indicator assessment. *American Journal of Sociology*, 105(1), 88–127. <https://doi.org/10.1086/210268>
- Perrin, A. (2015). *Social media usage: 2005–2015*. Retrieved from <https://www.pewinternet.org/2015/10/08/social-networking-usage-2005-2015/#>
- Pilkonis, P. A., Choi, S. W., Reise, S. P., Stover, A. M., Riley, W. T., & Cella, D. (2011). Item banks for measuring emotional distress from the Patient-Reported Outcomes Measurement Information System (PROMIS®): Depression, anxiety, and anger. *Assessment*, 18(3), 263–283. <https://doi.org/10.1177/10731911111411667>
- Pilkonis, P. A., Yu, L., Dodds, N. E., Johnston, K. L., Maihoefer, C. C., & Lawrence, S. M. (2014). Validation of the depression item bank from the Patient-Reported Outcomes Measurement Information System (PROMIS) in a three-month observational study. *Journal of Psychiatric Research*, 56, 112–119. <https://doi.org/10.1016/j.jpsychires.2014.05.010>
- Pratt, L. A., & Brody, D. J. (2014). *Depression in U.S. household population, 2009–2012*. Hyattsville, MD: U.S. Department of Health & Human Services. Retrieved from <https://www.cdc.gov/nchs/data/databriefs/db81.pdf>
- Primack, B. A., Swainer, B., Georgiopoulos, A. M., Land, S. R., Fine, M. J., Swainer, B., ... Fine, M. J. (2009). Association between media use in adolescence and depression in young adulthood: A longitudinal study. *Archives of General Psychiatry*, 66(2), 181–188. <https://doi.org/10.1001/archgenpsychiatry.2008.532>
- Qualtrics. (2015). *Qualtrics*. Retrieved from <https://www.qualtrics.com>
- Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, 5(4), 296–320. <https://doi.org/10.1207/S15327957PSPR0504>
- SAMHSA. (2015). *Behavioral health trends in the United States: Results from the 2014 national survey on drug use and health*. Retrieved from <https://www.samhsa.gov/data/>

- Shensa, A., Sidani, J. E., Lin, L., Bowman, N., & Primack, B. A. (2016). Social media use and perceived emotional support among US young adults. *Journal of Community Health, 41*(3), 541–549. <https://doi.org/10.1007/s10900-015-0128-8>
- StataCorp. (2016). *Stata Statistical Software (Version 14)*. College Station, TX: StataCorp.
- Steinfeld, C., Ellison, N. B., & Lampe, C. (2008). Social capital, self-esteem, and use of online social network sites: A longitudinal analysis. *Journal of Applied Developmental Psychology, 29*(6), 434–445. <https://doi.org/10.1016/j.appdev.2008.07.002>
- Twenge, J. M. (2015). Time period and birth cohort differences in depressive symptoms in the U.S., 1982–2013. *Social Indicators Research, 121*(2), 437–454. <https://doi.org/10.1007/s11205-014-0647-1>
- Whiting, A., & Williams, D. (2013). Why people use social media: A uses and gratifications approach. *Qualitative Market Research: An International Journal, 16*(4), 362–369. <https://doi.org/10.1108/QMR-06-2013-0041>
- World Health Organization. (2016). *Depression fact sheet*. Retrieved from <https://www.who.int/mediacentre/factsheets/fs369/en/>
- Xu, S., Wang, Z., & David, P. (2016). Media multitasking and well-being of university students. *Computers in Human Behavior, 55*(Part A), 242–250. <https://doi.org/10.1016/j.chb.2015.08.040>

**How to cite this article:** Primack BA, Bisbey MA, Shensa A, et al. The association between valence of social media experiences and depressive symptoms. *Depress Anxiety*. 2018;1–11. <https://doi.org/10.1002/da.22779>