



Full length article

Use of multiple social media platforms and symptoms of depression and anxiety: A nationally-representative study among U.S. young adults



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ABSTRACT

Introduction: While increased time spent on social media (TSSM) has been associated with depression and anxiety, the independent role of using multiple social media (SM) platforms is unclear.

Methods: We surveyed a nationally-representative sample of 1787 U.S. young adults ages 19–32. Depression and anxiety symptoms were measured using the Patient-Reported Outcomes Measurement Information System (PROMIS). We assessed use of multiple SM platforms with an adapted Pew Internet Research scale. We used ordered logistic regression models to assess associations between use of multiple SM platforms and mental health outcomes while controlling for eight covariates, including overall TSSM.

Results: Compared to those who used 0–2 social media platforms, participants who used 7–11 social media platforms had substantially higher odds of having increased levels of both depression (Adjusted Odds Ratio [AOR] = 3.0, 95% CI = 1.9–4.8) and anxiety symptoms (AOR = 3.2, 95% CI = 2.0–5.1). Associations were linear ($p < 0.001$ for all) and robust to all sensitivity analyses.

Conclusions: Use of multiple SM platforms is independently associated with symptoms of depression and anxiety, even when controlling for overall TSSM. These associations are strong enough that it may be valuable for clinicians to ask individuals with depression and anxiety about multiple platform use and to counsel regarding this potential contributing factor.

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1. Introduction

Depression and anxiety are associated with substantially increased morbidity and mortality (Kessler et al., 2010; Mathers & Loncar, 2006). Additionally, poor health outcomes related to these psychiatric disorders are increasing. For example, suicide in the U.S. is now at its highest level in 30 years (Curtin, Warner, & Hedegaard, 2016). Furthermore, the World Health Organization estimates that depression is now the second leading cause of worldwide disability adjusted life years (World Health Organization, 2016). One reason for being associated with such substantial overall morbidity is that

depression and anxiety affect many people in young adulthood, at a prime stage regarding productivity (World Health Organization, 2016).

Young adults are also increasingly engaged with social media. About 90% of young adults in the U.S. use social media, and the majority of users visit these sites at least once a day (Pew Research Center, 2015). There is some controversy as to whether social media use may exacerbate or alleviate conditions such as depression and anxiety. Engagement via platforms such as Facebook, Twitter, Reddit, Instagram, Snapchat, and Tumblr may provide opportunities for keeping in touch with family and friends as well as other social interactions that may increase social capital and alleviate depression and anxiety (Bessiere, Pressman, Kiesler, & Kraut, 2010; Ellison, Steinfield, & Lampe, 2007; de la Pena & Quintanilla, 2015). Similarly, use of social media may facilitate forming connections

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among people with potentially stigmatizing health conditions, including depression and anxiety (Evans, 2008; Merolli, Gray, & Martin-Sanchez, 2014). Moreover, against prevailing assumptions that in-person interaction is strictly needed for emotional contagion, it appears that emotional states can be transferred among participants of social media via observation of others' positive experiences (Kramer, Guillory, & Hancock, 2014).

However, most large-scale empiric work in this area suggests associations between time spent on social media (TSSM) and increased symptoms of depression and anxiety and decline in subjective well-being (Andreassen et al., 2016; Block et al., 2014; Kross et al., 2013; Lin et al., 2016; Woods & Scott, 2016). This may in part be because frequent users may substitute social media for face-to-face social interactions (Baek, Bae, & Jang, 2013; Marar, 2012). Similarly, frequent exposure to highly curated, unrealistic portrayals on social media may give people the impression that others are living happier, more connected lives, which may make people feel more socially isolated in comparison (Shensa, Sidani, Lin, Bowman, & Primack, 2016).

Associations between social media and self-reported depression and anxiety also may be related to the use of multiple social media (SM) platforms. The number of different social media platforms used is rising substantially. For example, use of 2 or more platforms increased by 10% in just one year, from 2013 to 2014 (Duggan, Ellison, Lampe, Lenhart, & Madden, 2014). In addition to their increase in number, social media platforms differ by type, functionality, and primary intended purpose. On one hand, increased use of multiple SM platforms may be associated with an increase in one's social capital and social support, which may subsequently be related to improvement of depression and anxiety symptoms (Ellison et al., 2007; Keitzmann, Hermkens, McCarthy, & Silvestre, 2011). However, it may also lead to multitasking between different SM platforms and/or increased multitasking between SM and other activities such as school or occupational work. Multitasking has been associated in the past with negative cognitive and mental health outcomes (Chen & Yan, 2016; Ophir, Nass, & Wagner, 2009). For example, multitasking has been related to decreased ability to sustain attention (Küsel, 2012; Litsa, 2014), poor academic performance (Cain, Leonard, Gabrieli, & Finn, 2016; Junco & Cotten, 2012; Rosen, Carrier, & Cheever, 2013), decreased subjective well-being (van der Schuur, Baumgartner, Sumter, & Valkenburg, 2015), and higher levels of depression and anxiety (Becker, Alzahabi, & Hopwood, 2013; Richards, Caldwell, & Go, 2015). Use of multiple SM platforms may also be related to negative mental health outcomes even if the different platforms are not all used at once. For example, the use of multiple SM platforms can lead to identity diffusion, which has been related to poor emotional health in the past (Marcia, 1980). It may also be related to additional opportunities for online misunderstandings, negative interactions, and/or feelings of being left out, each of which may be associated with negative mood states (Arnett, 1995).

Therefore, the purpose of this study was to assess multivariable associations between use of multiple SM platforms and self-reports of both depression and anxiety in a nationally-representative sample of U.S. young adults. We focused on young adults because of the particularly high levels of both time spent and usage of multiple SM platforms, in this population (Pew Research Center, 2015). We aimed to determine these associations while controlling for a comprehensive set of covariates. Based on the background noted above, we hypothesized that increased use of multiple SM platforms would be independently associated with both depression (Hypothesis 1) and anxiety (Hypothesis 2), even controlling for essential demographic and socioeconomic covariates (i.e., age, race/ethnicity, relationship status, living situation, household income, and education level), as well as overall TSSM.

2. Methods

2.1. Design, participants, and setting

A detailed description of overall study methods has been reported (Lin et al., 2016). In brief, we surveyed a nationally-representative sample of U.S. young adults aged 19 to 32 regarding social media use, depression, and anxiety. We drew our sample from a probability-based online non-volunteer research panel maintained by Growth from Knowledge (GfK), which recruited participants via random digit dialing and address-based sampling (GfK KnowledgePanel®, 2013). This sampling method randomly selects addresses from the US Postal Service's Delivery Sequence File using a probability-based, without replacement sampling approach. Potential panel participants are invited to join via a series of mailings, both in English and Spanish, and by telephone follow-up to non-responders. Using this process, they maintained a sampling frame including over 97% of the U.S. population (GfK KnowledgePanel®, 2013). At the time of the study, GfK KnowledgePanel® consisted of approximately 50,000 individuals ages 18 and older. Panel members are selected to be invited to participate in online surveys using a probability proportional to size weighted sampling approach, and are supplied with e-mail addresses, computers, and Internet access if needed. However, considering the ubiquitous nature of electronic communications in today's world, facilitated access is rarely needed. This GfK's sampling strategy is a statistically valid method for surveying and analyzing health indicators from a nationally representative sample (GfK KnowledgePanel®, 2013).

From October to November 2014, our web-based survey was sent via email to a random sample of 3048 non-institutionalized adults, ages 19 to 32 that had consented to participate in a previous study wave that held no specific criteria except that participants had to be between 18 and 30 years at baseline. Data for this research were collected at one point in time, during the 18-month follow-up of that study. Responses were received from 1787 participants (59%). This represented a strong response rate, because at 18 months, many of the baseline respondents were likely no longer in the GfK panel, which turns over participants every 2 years so as to prevent cohorts from becoming fatigued by surveys. Additionally, survey weights accounted for non-response, and there were no demographic differences between responders and non-responders. Both of these facts attest to the strong external generalizability of our current results.

GfK instituted multiple strategies to improve data quality. For example, they screened all data sets for patterns suggesting lack of effort. GfK also implemented procedures such as minimizing survey length, reducing the need for scrolling, and avoiding the use of long grids. The median time for survey completion was 15 min, and participants received \$15 for their participation. This study was approved by the [Name of University removed for blind version] Institutional Review Board and was granted a Certificate of Confidentiality from the National Institutes of Health.

2.2. Measures

Participants completed online survey items including depression and anxiety (dependent variables), use of multiple SM platforms (independent variable), and covariates.

2.2.1. Depression

We assessed depression using a 4-item scale developed by the Patient-Reported Outcomes Measurement Information System (PROMIS). PROMIS is a National Institutes of Health Roadmap initiative whose aim is to provide precise, valid, reliable, and

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