



# Problematic social media use and social support received in real-life versus on social media: Associations with depression, anxiety and social isolation

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## ABSTRACT

Social media platforms allow people to connect with each other and obtain social rewards. In some individuals, these reinforcing rewards can induce maladaptive, problematic social media use, with symptoms similar to substance use disorders. This problematic social media use has been associated with poorer mental health. Previous studies have demonstrated that social support can protect against poor mental health. People can receive social support both in real-life and on social media, however, so we investigated whether these two types of social support mediate the relationship between problematic social media use and poor mental health. We conducted an online survey, collecting measures of problematic social media use and mental health (depression, anxiety, and social isolation), as well as measures of real-life social support and social support received on social media. We then performed a path analysis on these data. Our analysis revealed that problematic social media use was significantly associated with decreased real-life social support and increased social support on social media. Importantly, real-life social support was then associated with reduced depression, anxiety, and social isolation, while social support on social media was not associated with these mental health measures. Our findings reveal the value of real-life social support when considering the relationship between problematic social media use and mental health. Implications for further research and practice are discussed.

## 1. Introduction

Over 3.5 billion people worldwide currently use online social media platforms like Instagram, Snapchat, Tik Tok, and Facebook (Statista, 2021). On these sites, people observe and interact with others, connecting and obtaining social rewards (Meshi, Tamir, & Heekeren, 2015). These social rewards act as reinforcers, bringing people back to these sites repeatedly and for substantial durations of time (Stewart, 2016). Importantly, some people's social media use may become maladaptive and problematic, causing distress and impairment in daily functioning (Griffiths, Kuss, & Demetrovics, 2014). The symptoms of this problematic social media use mirror substance use disorders (Griffiths et al., 2014). For example, these individuals may be preoccupied with social media and use it to modify their mood, or they may try to quit social media and then display withdrawal symptoms and possibly relapse. Similar to substance use disorders, problematic social media use has also been associated with aberrations in executive functions and decision making (Delaney, Stein, & Gruber, 2018; Meshi et al., 2020; Meshi, Elizarova, Bender, & Verdejo-Garcia, 2019; Müller et al., 2021; Turel,

He, Brevers, & Bechara, 2018), and in some cases this maladaptive social media use may lead to clinical treatment (Griffiths et al., 2014; Karaiskos, Tzavellas, Balta, & Paparrigopoulos, 2010). To note however, problematic social media use is not currently included in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (American Psychiatric Association, 2013), and the appropriateness of an official clinical diagnosis has been discussed in the literature (Brand, Jürgen, Demetrovics, Müller, Stark, King & Potenza, 2020; Carbonell & Panova, 2017). In line with this, we use the term problematic social media use, rather than social media addiction or disordered social media use.

Problematic social media use has also been consistently linked with negative mental health. For example, a meta-analysis concluded that greater problematic Facebook use is associated with greater levels of depression and anxiety (Marino, Gini, Vieno, & Spada, 2018). Another more recent meta-analysis focused on problematic use of any social media platform, not just Facebook, and demonstrated the same relationships, in that greater problematic social media use is associated with greater depression, anxiety, and loneliness (Huang, 2020). Interestingly, this association seems to hold across age groups, as researchers

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recently found a positive association between problematic social media use and social isolation in older adults as well (Meshi, Cotten, et al., 2020). Importantly however, the above research is correlational, and a causal relationship between problematic social media use and poor mental health has not been established. Recent longitudinal research, specifically investigating time spent on social media not problematic social media use, has attempted to address a causal link with poor mental health – several studies have found that more time on social media leads to either greater depressive symptoms (Primack, Shensa, Sidani, Escobar-Viera, & Fine, 2020) or reduced affective wellbeing (Kross et al., 2013; Verduyn et al., 2015), while another study found no causal association (Coyne, Rogers, Zurcher, Stockdale, & Booth, 2020). Researchers have also theorized that worse mental health leads to problematic social media use (Brand et al., 2019; Wegmann & Brand, 2019), or that a bidirectional relationship exists (Elhai, Levine, & Hall, 2019). Taken together, the literature demonstrates a specific link between problematic social media use and mental health, but that more research is needed to better understand this relationship.

One potential mechanism mediating this relationship could be the amount of social support that an individual receives. Researchers have speculated that more time on social media means a lack of face-to-face social interaction, and that this lack of in-person social support may be responsible for the association between problematic social media use and negative mental health (Shensa et al., 2017). Indeed, more time spent on social media has been associated with less perceived real-life social support (McDougall et al., 2016; Shensa, Sidani, Lin, Bowman, & Primack, 2016). Meanwhile, greater problematic social media use has been associated with greater perceived online social support (Tang, Chen, Yang, Chung, & Lee, 2016). Tang and colleagues speculate that this finding results from an increased motivation for certain individuals to maintain interpersonal relationships, which leads to problematic social media use. Therefore, it appears that the more problematic one's social media use, the less real-life social support and more online social support one receives. In addition, the social support experienced through social media, while perceived to be similar in quality to in-person social support (Trepte, Dienlin, & Reinecke, 2015), may be detrimental to the extent that it displaces other beneficial forms of support, such as real-life social support – real-life social support has repeatedly been shown to protect against negative mental health outcomes, such as depression and anxiety (Harandi, Taghinasab, & Nayeri, 2017). Building on this, several studies have examined the role of both real-life and online social support in relation to mental health, but these studies did not examine problematic social media use. To begin with, a cross-sectional study revealed that both real-life and online social support are associated with lower levels of depression-related thoughts and feelings (Cole, Nick, Zekowitz, Roeder, & Spinelli, 2017). Conversely, two other cross-sectional studies demonstrated that real-life social support is associated with reduced depressive symptoms, while greater emotional social support received on Facebook is associated with greater depressive symptoms (McCloskey, Iwanicki, Lauterbach, Giammittorio, & Maxwell, 2015; Shensa et al., 2020). In line with this, a longitudinal study revealed that only real-life social support resulted in greater overall wellbeing, while social support provided over social media did not influence wellbeing (Trepte et al., 2015). Importantly, these studies did not examine problematic social media use, only self-reported time spent on social media.

To the best of our knowledge, only one study has investigated if social support mediates the relationship between problematic social media use and mental health. Lin and colleagues (2021) found that problematic social media use had indirect effects on both depression and anxiety via perceived real-life social support. These researchers found that the greater one's problematic social media use, the less one's perceived real-life social support, and the worse one's mental health. Importantly however, these researchers did not individually assess and analyze the contributions of both real-life social support and social support provided over social media. Of note, other researchers have

previously examined the mediating role of both real-life and online social support in regard to the relationship between mental health and a different type of problematic media use, problematic video gaming (Tham, Ellithorpe, & Meshi, 2020). In this video game context, these researchers found that real-world social support mediated the relationship between problematic gaming and both depression and anxiety, in that greater problematic gaming led to reduced real-world social support, and worse mental health. Importantly however, in-game social support did not mediate this relationship. With this in mind, we conducted an exploratory study, modeled on the previous mediation literature (Lin, Namdar, Griffiths, & Pakpour, 2021; Tham et al., 2020) to answer the following research question: Could social support provided in both real-life and over social media insulate against the negative mental health symptoms associated with problematic social media use?

## 2. Methods

### 2.1. Sample

Undergraduate students at a large Midwestern U.S university participated for course credit. Our final sample size was 403 participants (female = 255, 63.3%; male = 148, 36.7%), after excluding 22 cases for the following reasons: 13 cases were duplicates; five participants were missing data; two participants failed a survey attention check; and two participants self-identified as gender non-binary or preferring their own terminology so we excluded them due to the inability to statistically account for such a small number. The average age of our final sample was 20.25 years (SD = 1.92; range = 18 to 38), and all individuals reported using at least one social media platform.

Of note, data collection started in January 2020 and continued through April 2020, however, due to the novel coronavirus pandemic, 475 survey responses after February 28, 2020 were excluded from the current analysis. This resulted in the above-reported sample size. We chose this exclusion date *a priori* to analysis because it was antecedent to significant life changes caused by the virus – February 28, 2020 was the last day of instruction before the university went on spring break, 11 days before a positive Covid-19 case was identified in the state, 12 days before the university closed in-person instruction.

### 2.2. Procedure

Participants were recruited for an online survey through the college participant pool. They provided informed consent, and then answered demographic questions, questions about social support, their social media use, and their mental health. The two measures of social support were presented one after the other, in random order. All procedures were approved by the university Institutional Review Board (ethics committee).

### 2.3. Measures

#### 2.3.1. Problematic social media use

Problematic social media use was measured with the 6-item Bergen Social Media Addiction Scale (Andreassen, Torsheim, Brunborg, & Pallesen, 2012; Bányaí et al., 2017). Participants were prompted with “Please answer the following questions with regard to your social media use over the past year” and each item assessed a commonly accepted core aspect of addiction: preoccupation, mood modification, tolerance, conflict, withdrawal, and relapse (Griffiths et al., 2014). For example, the item concerning withdrawal asked “Do you become restless or troubled if you are prohibited from using social media?” Participants responded on a 5-point Likert scale (1 = very rarely; 5 = very often), responses were summed, and the internal consistency of the measure with our sample was good (Cronbach's  $\alpha = 0.81$ ). To note, participants were not instructed which websites and mobile applications qualify as “social media” and different individuals use different sites. Therefore,

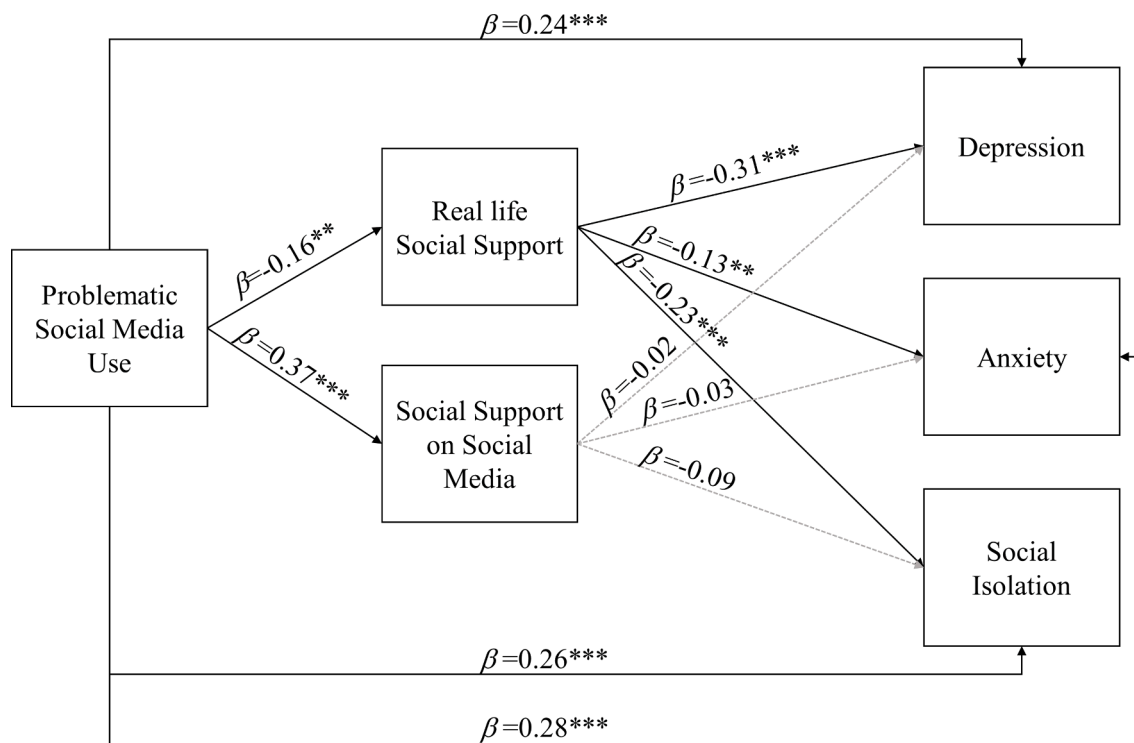


Fig. 1. Saturated path model representation. Reported coefficients are standardized. Not shown: covariates of sex and age predict all endogenous variables; covariances between endogenous variables. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

the scale assesses overall problematic social media use agnostic to individual differences in definitions and platform use. This is similar to a scale that assesses problematic alcohol use but remains agnostic to whether the participant ingests beer, wine, or hard liquor.

2.3.2. Real-life social support

Real-life social support was measured with the 12-item Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988). Participants were prompted with “The following statements are specifically about your real-life, in-person social interactions, as they pertain to your family, friends and others. Please indicate how you feel about each statement” and a sample item is “There is a special person who is around when I am in need”. Participants responded on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree), responses were averaged, and the internal consistency of the measure with our sample was excellent (Cronbach’s  $\alpha = 0.95$ ).

2.3.3. Social support on social media

Social support received on social media was assessed with the same scale as real-life social support, but the prompt stated “The following

statements are specifically about your interactions on social media as they pertain to your family, friends and others. Please indicate how you feel about each statement”. Where relevant, the phrase “on social media” was added to the items, for example, “There is a special person who is around on social media when I am in need”. The internal consistency of the measure with our sample was excellent (Cronbach’s  $\alpha = 0.95$ ).

2.3.4. Depression

Depression was measured using the 4-item short form of the PROMIS depression scale (Pilkonis et al., 2011). Participants were prompted with “In the past 7 days, how frequently did you experience the following” and a sample item is “I felt hopeless”. Participants responded on a 5-point Likert scale (1 = never; 5 = always), responses were summed, and the internal consistency of the measure with our sample was excellent (Cronbach’s  $\alpha = 0.94$ ).

2.3.5. Anxiety

Anxiety was measured using the 4-item short form of the PROMIS anxiety scale (Pilkonis et al., 2011). Participants were prompted with “In the past 7 days, how frequently did you experience the following” and a

Table 1  
Central tendency and Pearson’s pairwise bivariate correlation matrix of all model variables (N = 403).

	1.	2.	3.	4.	5.	6.	7.	8.
Mean	15.52	5.70	3.90	7.59	8.97	9.30	20.25	
SD	4.59	1.10	1.43	3.76	3.93	3.92	1.92	
1. Problematic Social Media Use	–	–0.13**	0.36***	0.31***	0.29***	0.30***	–0.03	0.18***
2. Real-Life Social Support		–	0.20***	–0.34***	–0.17***	–0.28***	–0.08	0.09
3. Social Media Social Support			–	0.02	0.05	0.03	0.03	0.06
4. Depression				–	0.78***	0.73***	0.03	0.18***
5. Anxiety					–	0.68***	0.04	0.16**
6. Social Isolation						–	–0.02	0.14**
7. Age							–	–0.05
8. Sex								–

Note: Correlations of continuous variables with the dichotomous sex variable are point-biserial correlations. Sex was coded as male = 1, female = 2. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

**Table 2**  
Model regression results predicting real-life social support (RLSS), social media social support (SMSS), depression, anxiety, and social isolation (N = 403).

	RLSS			SMSS			Depression			Anxiety			Social isolation		
	$\beta$	95% CI	p	$\beta$	95% CI	p	$\beta$	95% CI	p	$\beta$	95% CI	p	$\beta$	95% CI	p
Problematic Social Media Use	-0.16	-0.25, -0.06	<0.001	0.37	0.28, 0.45	<0.001	0.24	0.15, 0.34	<0.001	0.26	0.16, 0.36	<0.001	0.28	0.19, 0.38	<0.001
Age	-0.08	-0.18, 0.01	0.09	0.05	-0.05, 0.14	0.33	0.02	-0.06, 0.11	0.61	0.04	-0.05, 0.13	0.38	-0.02	-0.11, 0.07	0.71
Sex	0.11	0.02, 0.01	0.02	-0.001	-0.09, 0.09	0.99	0.16	0.07, 0.25	<0.001	0.13	0.03, 0.22	<0.01	0.12	0.03, 0.21	0.009
RLSS	-	-	-	-	-	-	-0.31	-0.40, -0.22	<0.001	-0.13	-0.23, -0.04	0.006	-0.23	-0.33, -0.14	<0.001
SMSS	-	-	-	-	-	-	-0.02	-0.12, 0.08	0.68	-0.03	-0.13, 0.07	0.55	-0.09	-0.19, 0.01	0.07
R <sup>2</sup>	0.04			0.13			0.21			0.12			0.17		
<i>Indirect effects of Problematic Social Media Use</i>							<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI	
RLSS	-	-	-	-	-	-	0.04	0.02, 0.07		0.02	0.005, 0.04		0.03	0.01, 0.06	
SMSS	-	-	-	-	-	-	-0.01	-0.04, 0.02		-0.01	-0.05, 0.02		-0.03	-0.06, 0.001	

Note: Coefficients are standardized except for the indirect effect coefficients; indirect effects of problematic social media use on depression, anxiety, and social isolation through the mediators of real-life social support and social support on social media are estimated with 5000 bias-corrected bootstrap samples. Sex was coded as male = 1, female = 2.

sample item is “I felt fearful”. Participants responded on a 5-point Likert scale (1 = never; 5 = always), responses were summed, and the internal consistency of the measure with our sample was good (Cronbach’s  $\alpha = 0.89$ ).

2.3.6. Social isolation

Social isolation was measured using the 4-item short form of the PROMIS social isolation scale (Hahn et al., 2014). Participants were prompted with “In the past 7 days, how frequently did you experience the following” and a sample item is “I felt left out”. Participants responded on a 5-point Likert scale (1 = never; 5 = always), responses were summed, and the internal consistency of the measure with our sample was excellent (Cronbach’s  $\alpha = 0.92$ ).

2.4. Statistical analysis

Path analysis was used to test relationships between variables, using the SEM command in Stata. The model (Fig. 1) was saturated, so there are no fit indices to report. Participant age and sex (coded as male = 1, female = 2) were included as covariates (Casale, Fioravanti, Flett, & Hewitt, 2014). The error terms were allowed to correlate between the two types of social support, as well as between the three mental health outcome variables, in order to account for the relationships between them. Mediation analyses were conducted to quantify the indirect effects of problematic social media use on mental health outcomes through both kinds of social support using the nlcom program in Stata and 5000 bias-corrected bootstrapped samples.

3. Results

Descriptive statistics and bivariate correlations can be found in Table 1. Statistical results of our path analysis can be found in Fig. 1 and Table 2. Problematic social media use was significantly associated with reduced real-life social support and increased social support from social media. Problematic social media use was also significantly associated with increased depression, anxiety, and social isolation. Real-life social support was significantly associated with reduced depression, anxiety, and social isolation. However, social support on social media was not significantly associated with depression, anxiety, and social isolation. With regard to our research question, problematic social media use had a significant indirect effect on all three measures of mental health when mediated by real-life social support, such that an increase in problematic social media use was associated with increased depression, anxiety, and social isolation through reduced social support. Problematic social media use did not have a significant indirect effect on mental health when mediated by social support on social media.

4. Discussion

The present study yielded several notable findings. To begin with, we revealed several direct associations between problematic social media use and our measures of interest. For example, we found that problematic social media use is negatively associated with real-life social support while being positively associated with social support on social media. These findings replicate previous research demonstrating that more problematic social media is associated with reduced real-life social support (Lin et al., 2021), and also replicate previous research demonstrating that problematic social media use is associated with greater online social support (Tang et al., 2016). In addition, we replicated previous research demonstrating that problematic social media use is related to increased depression, anxiety, and social isolation (Huang, 2020; Meshi, Cotten, & Bender, 2020).

We also revealed several direct associations between the two types of social support and mental health. We found that real-life social support is significantly associated with reduced depression, anxiety, and social isolation. This aligns with much previous research on real-life social

support (Gariépy & Honkaniemi, 2016; Hinz et al., 2017; Salimi & Bozorgpour, 2012). With regard to social support on social media, we found no significant associations with mental health. This finding replicates similar research in a video game context (Tham et al., 2020) and aligns with previous work demonstrating that only real-life social support, but not social support provided over social media, results in greater overall wellbeing (Trepte et al., 2015). Of note, the direct associations we found between social support and mental health contrasts with a previous study demonstrating that online social support is associated with reduced depression (Cole et al., 2017), as well as previous studies demonstrating that greater emotional social support received on Facebook is associated with greater depressive symptoms (McCloskey et al., 2015; Shensa et al., 2020). However, these studies used different measures of depression, and different measures of online social support, such as specifically measuring emotional aspects of online social support.

Our mediation analysis also revealed indirect relationships between problematic social media use and mental health. These findings indicate that an increase in problematic social media use reduces real-life social support, which therefore is associated with increased depression, anxiety, and social isolation. The results with depression and anxiety directly replicate a previous study (Lin et al., 2021). In addition, we observed that an increase in problematic social media use increases social support over social media, however, this had no effect on mental health. We theorize that this overall finding could be due to the nature of communication over social media. To explain, typical interactions on social media consist of simple reactions (e.g., “likes” on posts) and written comments (although, some social media platforms have recently introduced video chat and live streaming functions). Typical social media interactions are therefore limited and may not allow for more substantial social interaction, which may be needed to provide the type of social support needed to protect against negative mental health. Future research will likely examine the depth and modality of online interactions to disentangle different contributions to social support and mental health.

Despite the insights provided by our research, the current study has limitations which should be mentioned. First, we recruited a convenience sample of undergraduate college students, so our study’s generalizability to other populations is limited. However, given the high prevalence of social media use in this age group (Pew Research Center, 2018), understanding social media use in this particular demographic is important. Next, we used a data cutoff date to exclude participants who may have been affected by the novel coronavirus pandemic in the spring of 2020. Although this exclusion cutoff date was conservative, we cannot be sure that certain participants were not affected by news of the spreading virus elsewhere in the country. This could have added noise to our data, so our results should be interpreted with caution. In addition, the scales in our study asked participants about varying time periods. For example, the Bergen Social Media Addiction Scale asks about symptoms over the last year, while the PROMIS mental health scales asks about symptoms over the last seven days. This disparity should be taken into account when interpreting our research. Finally, our data are cross-sectional in nature, so causality cannot be established even though we conducted a path analysis. For example, it could be that greater depression, anxiety, or social isolation places a person at greater risk for developing problematic social media use. Future longitudinal research will likely resolve the issue of causality, especially with respect to the mediating role of social support.

In sum, our findings reveal the value of social support in problematic social media use. We found that real-life social support insulates against the poor mental health associated with problematic social media use, while social support provided on social media does not. Clinicians should be aware of this relationship between problematic social media use, social support, and mental health. In addition, future research can build off our present findings to develop potential interventions for problematic social media users aimed at increasing real-life social support. The better our understanding of problematic social media use, the

more likely clinicians will be able to help individuals who display this maladaptive behavior.

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## 6. Contributors

DM conceptualized the study. DM collected the data and ME analyzed the data. Both DM & ME wrote the manuscript.

## CRedit authorship contribution statement

**Dar Meshi:** Conceptualization, Investigation, Supervision, Writing - original draft, Writing - review & editing. **Morgan E. Ellithorpe:** Formal analysis, Data curation, Writing - original draft, Writing - review & editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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