JSPR

Full Research Report

Fear of missing out (FoMO): A generational phenomenon or an individual difference?

Journal of Social and Personal Relationships
1–15

DOI: 10.1177/0265407520945394
journals.sagepub.com/home/spr
SAGE

Christopher T. Barry
Megan Y. Wong
Washington State University, USA

Abstract

Fear of missing out (FoMO) regarding activities within one's social circle is a potential downside of the advent of social media and more rapid forms of communication. To examine potential generational or individual implications of FoMO, this study considered age cohort differences and self-perception correlates of FoMO. Participants were 419 individuals from throughout the U.S. who were members of 14- to 17-year-old, 24- to 27-year-old, 34- to 37-year-old, or 44- to 47-year-old cohorts. There were no cohort differences in overall FoMO, FoMO regarding close friends, or FoMO regarding family members. Across age cohorts, low self-esteem and loneliness were each associated with high levels of FoMO, particularly for individuals who were also engaged in relatively greater social media activity. Thus, the present findings indicate that FoMO concerning others' activities may be particularly problematic for some individuals who are highly engaged with social media.

Keywords

Fear of missing out, self-compassion, social media engagement

Social media applications allow users to convey their activities to others and view what others are doing in real time; consequently, these platforms raise a possibility of distress

Corresponding author:
Christopher T. Barry, Department of Psychology, Washington State University, PO Box 644820, Pullman, WA 99164, USA.
Email: chris.barry@wsu.edu

for some individuals. This distress may take the form of fear of missing out (FoMO) and may be a function of one's degree of social media activity or other individual differences. FoMO is conceptualized as "the desire to stay continually connected with what others are doing" and feeling worried that others are having a good time without them (Przybylski et al., 2013, p. 1841). Thus, FoMO may uniquely capture the deleterious impact of social media use on certain individuals' affect or self-perception, but it may also be a phenomenon that is particularly evident at specific developmental stages.

With the advent of social media and other forms of rapid communication, the possibility of experiencing FoMO appears to have increased. Further, FoMO is related to both frequency and maladaptive forms of smartphone use (Elhai et al., 2020). Concomitantly, nearly 90% of young adults report being active users of at least one social media platform, with 85% reporting using six or more such applications (Villanti et al., 2017). Overall, more than 75% of U.S. adults under the age of 50 report using at least one social media application (Pew Research Center, 2019). Because FoMO is particularly tied to high engagement in social media (Oberst et al., 2017), and younger generations engage with social media quite frequently (Boyd & Ellison, 2007; Przybylski et al., 2013; Villanti et al., 2017), there may be cohort differences in FoMO. However, considering FoMO as necessarily a function of development or social media engagement negates the potential role of individual differences in this form of distress, an issue that was directly addressed in the present study.

First, concerning potential developmental differences, FoMO may be a by-product of relatedness needs that emerge during adolescence and continue into adulthood, with FoMO demonstrating a negative correlation with age in a sample of adults ages 22–65 (Przybylski et al., 2013). Due to the ubiquitous presence of social media and developmental needs to connect with others, FoMO may be more typical of the experiences of present-day adolescents and young adults relative to older adults. Theoretically, it is also possible that the type of relationship that engenders FoMO may change over time such that missing out on activities of close friends may be more distressing at a younger age, whereas feeling left out of family activities may be more concerning for older adults, an issue investigated in the present study.

Nevertheless, despite theoretical reasons why FoMO may be a developmental phenomenon and shift based on certain close relationships, previous research has not directly addressed whether it is more a function of age/generational differences or individual variability in self-perception. For example, in experience sampling methodology, FoMO was related to negative affect and fatigue (Milyavskaya et al., 2018). Moreover, online communication or engagement may have positive benefits in terms of greater, not less, feelings of connectedness to others. Still, FoMO may heighten efforts for some individuals to try to connect with others (Roberts & David, 2019). As described below, potential correlates of FoMO including loneliness, lower self-esteem, and lower self-compassion have clear relevance for psychological well-being. Therefore, further exploration of these constructs as correlates of FoMO is important. To expand on prior work in this area, the present study considered the relation between FoMO and these self-perception variables across age-groups and whether these relations might be exacerbated (i.e., moderated) by greater social media engagement during daily activities.

Of the self-perception variables of interest, loneliness is perhaps most theoretically close to FoMO (Barry et al., 2017; Pittman & Reich, 2016). Similar to proposed cohort differences in FoMO, a separate line of research is suggestive of increased loneliness in the most recent cohort of young adults (Pittman & Reich, 2016; Twenge et al., 2019), yet the role of online exposure and relationships with increasing or decreasing loneliness is complex (Coget et al., 2002). Loneliness tends to be moderately to highly correlated with self-reported FoMO, and individuals high in FoMO and loneliness tend to be more highly engaged with social media (Alt, 2015; Barry et al., 2017; Blackwell et al., 2017). Thus, loneliness and, by extension, FoMO may be particularly common in the current generation of adolescents and young adults, even considering developmental factors that might portend a decline in these attributes as one continues through adulthood and achieves a more stable sense of self.

Aside from FoMO as a specific concern in social domains, it may also have implications for broader self-appraisals such as self-esteem and more general life satisfaction. For example, FoMO was negatively correlated with self-esteem across a sample ranging from 13 to 77 years of age (Buglass et al., 2017) and with life satisfaction in adults ages 22–65 (Przybylski et al., 2013). Thus, existing evidence suggests that FoMO corresponds to indicators of negative self-perception or subjective well-being, independent of age.

It is important to note, however, that the relations of FoMO with loneliness, self-esteem, or life satisfaction could very well be bidirectional or could be heightened for individuals with higher social media engagement. Social media exposure is related to lower self-esteem when upward social comparisons are activated (Vogel et al., 2014). Among individuals who feel more social isolation or have relatively low self-appraisals, social media may elicit more upward social comparisons and feelings that others' lives are more exciting or interesting. Thus, FoMO might be most pronounced as a function of higher social media engagement along with greater loneliness, lower self-esteem, or lower life satisfaction. The present study investigated the extent to which such interactions between negative self-perception and social media engagement contributed variance to FoMO but did not consider their temporal connections.

Furthermore, because FoMO is connected to negative and/or insecure self-perception, it may be incompatible with self-compassion. According to Neff and Vonk (2009), self-compassion involves relatively accurate self-perceptions that are not susceptible to negative social events. Individuals with high levels of self-compassion tend to be less self-conscious and regard setbacks as opportunities for self-improvement (Neff & Vonk, 2009). Self-compassion is negatively associated with symptoms of social anxiety disorder and with fear of social evaluation (Werner et al., 2012), and FoMO is positively related to anxiety and depression in adolescents (Oberst et al., 2017). Therefore, preoccupation with being left out of others' activities would render oneself vulnerable to fluctuations in self-appraisal and increased social anxiety. Self-compassion, on the other hand, would enable individuals to move past such potentially threatening social events. More specifically, self-compassion involves the capacity to see oneself as connected with—rather than isolated from—others, to refrain from overidentifying with one's negative emotions, and to make positive self-appraisals even in the face of negative outcomes (Neff, 2003a). It includes three positive dimensions (i.e., feeling a sense of common humanity with others, being patient with oneself after setbacks, and

mindfulness) as well as three dimensions inversely associated with the self-compassion construct (i.e., feeling isolated from others, viewing oneself harshly after setbacks, and being overly focused on negative emotions or the implications of negative events for oneself; Neff, 2003a). Each of the positive elements of self-compassion is suggestive of limited distress in being left out, an issue that was investigated in the present study, with the expectation that FoMO would correspond to lower overall self-compassion and, relatedly, would be associated with the negative dimensions of self-compassion.

Lastly, from a health standpoint, FoMO could also have implications for sleep disturbance. The vast majority of adolescents have access to electronic devices in their bedrooms (Cain & Gradisar, 2010), and greater use of electronic devices before bedtime, including social media use specifically, is associated with sleep difficulties (Cain & Gradisar, 2010; Woods & Scott, 2016). Further, young adults may seek out media to cope with difficulties sleeping, perhaps exacerbating the problem (Dijk, 2014). Specific to the aims of the present study, young adults and adolescents appear to demonstrate sleep disturbance as a function of FoMO such that FoMO may influence late night social media use and cognitive arousal (Milyavskaya et al., 2018; Scott & Woods, 2018), making it more difficult to achieve consistent, adequate sleep. Continued poor sleep could exacerbate FoMO, and to the extent that adolescents are concerned with missing out on social activities, they may still monitor social media more regularly, including at night in lieu of regular sleep. This process could further perpetuate FoMO itself. No prior work has investigated this relation beyond adolescence and early adulthood.

Hypotheses

It was hypothesized that overall FoMO would be relatively lower in older age-groups (Hypothesis 1). FoMO regarding close friends was expected to be higher than FoMO regarding family members in participants in their teens and 20s, whereas the converse was expected for participants in their 30s and 40s (Hypothesis 2). In addition, FoMO was expected to be correlated with lower self-esteem, lower self-compassion, higher loneliness, lower life satisfaction, and greater self-reported sleep difficulties (Hypothesis 3). FoMO was also expected to be associated with higher social media engagement (Hypothesis 4). Lastly, the relations stated in Hypothesis 3 were expected to be moderated by social media use during daily activities, such that, for example, the relation between loneliness and FoMO was expected to be highest among individuals (independent of cohort) whose social media use occurred more frequently in the midst of daily activities (e.g., during meals, just before bedtime; Hypothesis 5).

Method

Participants

Participants were 419 individuals (98 males, 318 females, 3 nonspecified) from across the U.S. Recruitment was targeted at obtaining approximately an equal number of participants across age cohorts, with 105 individuals (49 males, 54 females) between the ages of 14 and 17 (mean age = 15.57, $SD = 1.19$), 105 individuals (12 males, 90 females, 2 other) between the ages of 24 and 27 (mean age = 25.56, $SD = 1.08$), 105 individuals

(20 males, 84 females, 1 other) between the ages of 34 and 37 (mean age = 35.44, *SD* = 1.13), and 104 individuals (17 males, 87 females) between the ages of 44 and 47 (mean age = 45.51, *SD* = 1.20) completing the study. Most participants (72.5%) self-reported that they were White/Caucasian, with 15.3% identifying as Black/African American, 4.1% multiracial, 3.3% Hispanic/Latinx, 2.4% Asian, and 2.3% as Other.

Measures

Fear of missing out survey (FoMOS). The FoMOS is a 10-item measure that assesses the extent to which respondents are concerned with missing out on activities in their social circle on a 5-point response scale from *not at all true of me* to *extremely true of me* (Przybylski et al., 2013). For the present study, participants completed three versions of the FoMOS: the standard FoMOS for overall FoMO, as well as versions with items reworded to focus on relationships with "close friends" and with items reworded emphasizing "family" relationships (e.g., "I get worried when I find out my friends/close friends/family are having fun without me"). Nine of the 10 items from the original FoMOS were used. One item (i.e., "I fear my friends have more rewarding experiences than me") was excluded because of its overlap with another item (i.e., "I fear others have more rewarding experiences than me"), particularly when altering the wording to reflect close friends. In the present sample, internal consistency coefficients for these three versions were $\alpha = .88$ for the standard version, $\alpha = .90$ for FoMOS scores reflecting family members, and $\alpha = .91$ for FoMOS scores reflecting close friends.

UCLA Loneliness Scale-3 (UCLA-3). Loneliness (e.g., "How often do you feel alone?") was assessed via the UCLA-3, a 20-item self-report inventory (Russell, 1996). Responses range from *Never* to *Often* on a 4-point scale. In the present sample, the internal consistency was $\alpha = .95$.

Rosenberg Self-Esteem Scale (RSES). The RSES is a widely used 10-item measure of global self-esteem. Items (e.g., "I feel I do not have much to be proud of.") are rated on a 4-point scale from *strongly disagree* to *strongly agree* (Rosenberg, 1965). Internal consistency was $\alpha = .83$.

Satisfaction With Life Scale (SWLS). The SWLS measures overall life satisfaction with 5 items (e.g., "I am satisfied with life") on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale (Diener et al., 1985). The internal consistency of SWLS scores in the present sample was $\alpha = .92$.

Self-compassion scale (SCS). The SCS consists of 36 items rated on a 5-point scale from *almost never* to *almost always* (Neff, 2003b). Some items assess low self-compassion (e.g., "I'm disapproving and judgmental about my own flaws and inadequacies") and others (e.g., "When something upsets me, I try to keep my emotions in balance") that reflect high self-compassion. Three subscales (i.e., Self-Judgment, Overidentification, Isolation) capture low self-compassion, and three subscales (i.e., Self-Kindness, Mindfulness, Common Humanity) are oriented toward higher self-compassion. To calculate an overall self-

compassion score, the former three subscales are inversely scored and then summed with scores from the latter three subscales. Internal consistency for overall SCS scores was $\alpha =$ .92. For the subscales, internal consistency ranged from $\alpha = .76$ to $\alpha = .88$.

Sleep condition indicator (SCI). Sleep quality was measured by the 8-item SCI (e.g., "Thinking about a typical night in the past month, how long does it take you to fall asleep? "How would you rate your sleep quality?"), with response options on a 5-point scale for each item (Espie et al., 2014). The items on the SCI are meant to assess different indicators of insomnia; thus, items are scored, so that higher scores indicate greater sleep disturbance. The internal consistency of SCI scores was $\alpha = .91$.

Social media engagement. Social media engagement was assessed by items asking participants how frequently they check social media on a 7-point response scale from *never* to *more than 10 times/day* and the number of social media accounts they have on a 5-point scale from *0* to *more than 7*. Participants were given a list of popular social media sites (e.g., Facebook, Twitter, Instagram, Snapchat, etc.) and asked to indicate which that they use. This item provided context so that participants could ascertain what was meant by "social media" in this assessment. In addition, participants indicated whether they check social media during certain activities (e.g., during meals, in the 15 min before going to sleep, when out with friends) on 5 items, which were combined to form a composite of social media use during daily activities. This composite score demonstrated good internal consistency, $\alpha = .86$.

Procedure

This study was approved by the institutional review board at the authors' university. Participants were recruited through survey panels based on their living in the U.S. and meeting the age requirements for this study. Prospective participants were invited to complete a survey-based study on "factors that affect people's perception of their own social lives compared to others." For the 14- to 17-year-old cohort, parents were contacted and asked to provide consent for their child to be contacted regarding participation. Minors provided assent, and adult participants provided informed consent, prior to completing the measures online on Qualtrics, a secure web-based survey platform. Recruitment was discontinued as soon as possible after 100 completed responses were submitted within each age cohort.

Results

Cohort differences and correlational analyses

Descriptive statistics are presented in Table 1. The *mean* item rating of 2.13 on the FoMOS across the entire sample was consistent with the range of mean item ratings (i.e., 1.81–2.56) reported by Przybylski et al. (2013) from their large samples of adults ages 18–65. A one-way analysis of variance was conducted to compare the four age cohorts on the different areas of FoMO (i.e., overall, with family members, with close friends). These analyses demonstrated that there were no differences between any age cohorts

Table 1. Descriptive statistics across age cohorts.

Age cohort					
Variable		14–17	24–27	34–37	44–47
FoMO	*M* (*SD*)	22.06 (7.95)	22.34 (8.43)	20.10 (7.84)	20.72 (7.53)
	Range	9–45	9–45	9–45	9–45
FoMO close friends	*M* (*SD*)	22.01 (7.85)	21.67 (9.10)	20.06 (8.76)	19.98 (8.29)
	Range	9–45	9–45	9–45	9–45
FoMO family	*M* (*SD*)	22.30 (7.85)	23.76 (8.14)	21.00 (9.25)	21.88 (8.62)
	Range	9–45	9–45	9–45	9–45
Loneliness	*M* (*SD*)	39.32 (13.14)^{a}	50.37 (11.46)^{b}	49.17 (12.85)^{b}	46.56 (14.14)^{b}
	Range	20–80	22–79	22–78	21–75
Self-esteem	*M* (*SD*)	21.04 (5.83)^{b}	17.45 (6.06)^{a}	16.93 (7.30)^{a}	18.85 (6.72)^{a,b}
	Range	2–30	4–30	1–30	0–30
Self-compassion	*M* (*SD*)	2.00 (0.62)^{b}	1.77 (0.49)^{a}	1.76 (0.62)^{a}	1.87 (0.60)^{a,b}
	Range	0.45–3.39	0.48–3.42	0.45–3.42	0.42–3.32
Life satisfaction	*M* (*SD*)	23.60 (7.11)^{b}	20.54 (7.48)^{a}	19.80 (8.77)^{a}	20.35 (8.01)^{a}
	Range	5–35	5–35	5–35	5–35
Sleep disturbance	*M* (*SD*)	16.74 (7.88)^{a}	23.52 (8.01)^{b}	22.79 (8.37)^{b}	21.58 (8.99)^{b}
	Range	8–39	8–40	8–40	8–40
# of social media accounts	*M* (*SD*)	2.41 (0.69)^{b}	2.42 (0.79)^{b}	2.32 (0.70)^{a,b}	2.18 (0.59)^{a}
	Range	1–5	1–5	1–5	1–4
Frequency of checking social media	*M* (*SD*)	4.94 (1.57)	5.07 (1.80)	4.78 (1.86)	4.69 (1.59)
	Range	1–7	1–7	1–7	1–7
Social media use during daily activities	*M* (*SD*)	10.89 (3.66)^{b}	12.20 (3.68)^{c}	10.34 (3.80)^{a,b}	9.43 (3.66)^{a}
	Range	5–19	5–20	5–20	5–20

Note. Means with different superscripts are different at $p < .05$. # of social media accounts is based on the following scale: 1 = *none*; 2 = *1–3*; 3 = *4–5*; 4 = *6–7*; 5 = >7. Frequency of checking social media: 1 = *<1 time/week*; 2 = *once per week*; 3 = *2–5 times a week*; 4 = *once per day*; 5 = *2–5 times/day*; 6 = *5–10 times/day*; 7 = *>10 times/day*. FoMO = fear of missing out.

in overall FoMO, $F(3, 415) = 1.91$, $p = .13$; FoMO regarding family members, $F(3, 415) = 1.94$, $p = .13$; or FoMO regarding close friends, $F(3, 414) = 1.62$, $p = .18$ (see Table 1) in contrast to Hypotheses 1 and 2. Of note, social media use during daily activities differed by cohort, $F(3, 414) = 10.24$, $p < .001$, with the second cohort (ages 24–27) reporting significantly more such use than individuals from the other three cohorts. The youngest cohort reported significantly higher life satisfaction, lower loneliness, and less sleep disturbance than the other three cohorts on average. There were no differences between males and females on FoMO.

Table 2 presents the correlations among the main individual difference variables measured in this study. Overall FoMO, FoMO with family members, and FoMO with close friends were all significantly interrelated (i.e., $r = .69–.87$, $p < .001$), indicating that participants did not differentiate between feelings of FoMO across relationship types. As presented in Table 2, self-perception variables, with the exception of life satisfaction, were associated with FoMO in the expected directions. Specifically, individuals who reported greater overall FoMO, FoMO with family members, and FoMO

Table 2. Correlates of FoMO across age cohorts.

	1.	2.	3.	4.	5.	6.	7.	8.
1. Overall FoMO	—							
2. FoMO with close friends	.87***	—						
3. FoMO with family members	.69***	.74***	—					
4. Loneliness	.26***	.23***	.18***	—				
5. Self-esteem	−.27***	−.23***	−.16**	−.74***	—			
6. Satisfaction with life	−.08	.03	−.01	−.60***	.65***	—		
7. Sleep disturbance	.21***	.22***	.19***	.56***	−.48***	−.43***	—	
8. Self-compassion	−.22***	−.19***	−.11*	−.66***	.66***	.57***	−.45***	—

Note. FoMO = fear of missing out.
*$p < .05$; **$p < .01$; ***$p < .001$.

Table 3. Correlations between FoMO and social media engagement across cohorts.

	Overall FoMO	FoMO with close friends	FoMO with family members
Number of social media accounts	.34***	.33***	.27***
Frequency of checking social media	.15**	.15**	.13**
Social media use during daily activities	.49***	.45***	.34***

Note. FoMO = fear of missing out.
**$p < .01$; ***$p < .001$.

with close friends also reported greater feelings of loneliness and lower levels of self-esteem and self-compassion. In addition, individuals who experienced FoMO reported more sleep disturbance. Generally, the magnitudes of these relations were small to moderate and in support of Hypothesis 3.

The relations of FoMO with indicators of social media engagement are presented in Table 3. In support of Hypothesis 4, all social media engagement variables were significantly related to FoMO, including FoMO regarding close friends and family members. Table 4 presents the correlations between dimensions of self-compassion and FoMO. The negative aspects of self-compassion (i.e., Overidentification, Isolation, Self-Judgment) were each moderately positively related to FoMO (see Table 4), whereas the correlations involving the positive dimensions of self-compassion were nonsignificant.

Regression analyses

To test Hypothesis 5, moderated multiple regression analyses were conducted through the PROCESS macro in SPSS (Hayes, 2013). Specifically, four models were examined to predict overall FoMO with the four predictors (i.e., self-esteem, loneliness, self-compassion, sleep disturbance) that demonstrated a bivariate relation with FoMO (see Table 2) and social media use during daily activities as the moderator. Significant

Table 4. Correlations between FoMO and self-compassion dimensions across age cohorts.

	Overall FoMO	FoMO with close friends	FoMO with family members
Self-judgment	.35***	.29***	.22***
Overidentification	.38***	.33***	.26***
Isolation	.41***	.37***	.30***
Self-kindness	.05	.07	.10
Mindfulness	−.03	−.05	.02
Common humanity	.01	.00	.08

Note. FoMO = fear of missing out.
***$p < .001$.

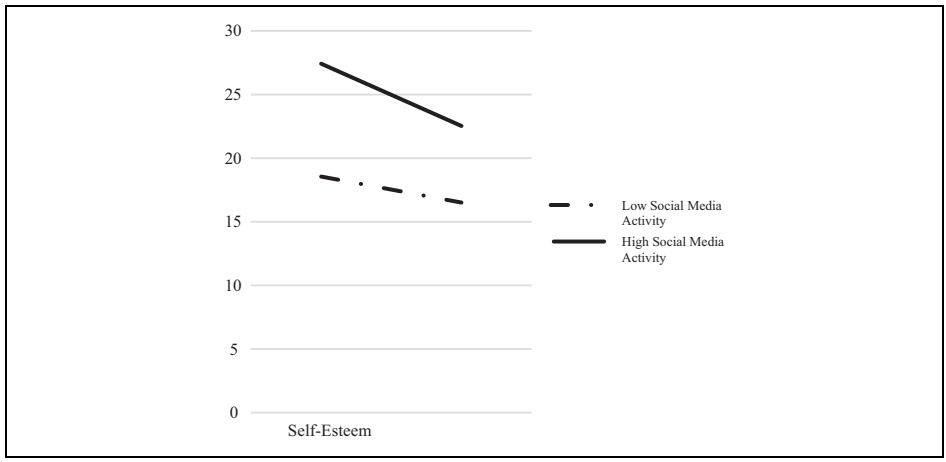

Figure 1. The interaction between self-esteem and social media use during daily activities to predict variance in FoMO. Low social media activity: $b = -.15$, $SE = .07$, $p = .02$; high social media activity: $b = -.37$, $SE = .07$, $p < .001$. FoMO = fear of missing out.

interaction effects were evident for Self-Esteem × Social Media Use During Daily Activities, $b = -.03$, $SE = .01$, $p = .02$, and for Loneliness × Social Media Use During Daily Activities, $b = .02$, $SE = .01$, $p = .01$. Post hoc probing of these interactions (Hayes, 2013) demonstrated that FoMO was highest for individuals with low self-esteem who also engaged in social media use during more daily activities (see Figure 1). A similar pattern was evident for loneliness in that higher loneliness along with more social media use during daily activities was related to relatively high FoMO (see Figure 2). The pattern of these interactions supported Hypothesis 5 but also reflect the separate main effects of social media activity, self-esteem, and loneliness in predicting FoMO.

Post hoc analyses

Alternative moderation models were also considered with social media use during daily activities as the criterion variable. Although the theoretical focus of the present study

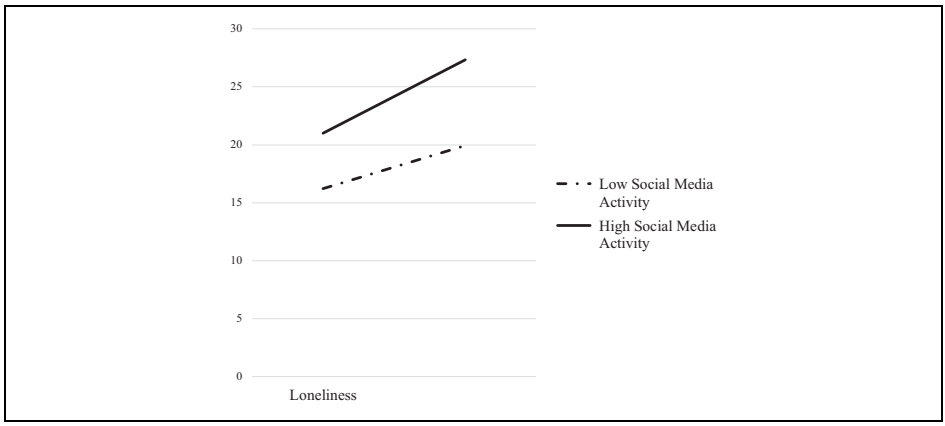

Figure 2. The interaction between loneliness and social media use during daily activities to predict variance in FoMO. Low social media activity: $b = .25$, $SE = .06$, $p < .001$; high social media activity: $b = 43$, $SE = .04$, $p < .001$. FoMO = fear of missing out.

was on the factors that might predict variance in FoMO, it is possible that FoMO and related individual difference variables interact to predict social media use. Again, four regression models were tested with FoMO as the moderator and self-esteem, loneliness, self-compassion, and sleep disturbance as predictors in separate models. Those models yielded no significant interaction effects.

In addition, to consider whether the main relations described above and depicted in Table 2 differed by cohort, moderated multiple regression analyses were conducted with cohort as the moderator and self-perception variables or social media use in daily activities as the predictor in separate models to predict variance in overall FoMO. That is, six regression models (predictors: self-esteem, loneliness, self-compassion, life satisfaction, sleep difficulties, social media use in daily activities) were analyzed. None of these moderations were significant.

Correlations within each cohort were analyzed to further probe for cohort-specific patterns. Only slight differences were evident from the results reported in Table 2 for the entire sample. In the youngest cohort, overall FoMO was significantly negatively correlated with life satisfaction, $r = -.24$, $p = .02$. FoMO with family members was unrelated to self-esteem, life satisfaction, or self-compassion. In the 24- to 27-year-old cohort, self-compassion was not significantly correlated with FoMO. A similar pattern was evident for the 34- to 37-year-old participants. Correlations within the 44- to 47-year-old cohort tended to follow the pattern of the entire sample in terms of magnitude (see Table 2).

Finally, to potentially shed further light on the relation between FoMO and sleep problems, we conducted a post hoc mediational analysis, whereby social media use in the 15 min before bedtime (i.e., a single item from the measure of social media use during daily activities) was considered as a potential mechanism through which the relation between FoMO and self-reported sleep problems occurred. The indirect effect of this model was significant, $b = .043$, $SE = .022$, CI: .004, .093, suggesting that the

connection between FoMO and reported sleep disturbance was at least partially mediated through the use of social media just before bedtime.

Discussion

As social media have been an almost ubiquitous part of daily life for adolescents and young adults, FoMO also stands to be a common source of distress for some individuals. Based on the present findings, FoMO does not appear to be endemic to a particular age-group. Instead, FoMO from adolescence to middle adulthood can be better understood as a correlate of other aspects of self-perception. More specifically, across age cohorts, having low self-esteem and low self-compassion as well as high levels of loneliness were each related to FoMO. Thus, FoMO may be more likely among individuals who do not think positively of themselves and/or feel socially isolated, independent of age, or developmental stage. Of course, the temporal sequence of these relations could be the inverse such that individuals with high levels of FoMO subsequently experience more global distress, such as greater loneliness, as well as lower self-esteem, self-compassion, and life satisfaction. Further, limiting social media use could subsequently lower the risk of FoMO and other aspects of self-perception assessed in this study (Hunt et al., 2018).

Another implication raised of our findings is that fostering self-compassion (e.g., viewing social or personal setbacks as an opportunity for growth, increasing acceptance of one's experiences) may be useful for reducing preoccupation with the experiences of others (e.g., FoMO), which may be exacerbated through social media. The cohort analyses in the present study do not suggest that self-compassion tends to increase with age. Thus, more specific individually based efforts at enhancing self-compassion (Neff & Germer, 2013) and/or reducing related social-cognitive tendencies (e.g., upward social comparisons; personal fable; e.g., Bluth & Blanton, 2015; Deri et al., 2017) may prove beneficial. Emerging research points to upward social comparisons as a significant form of stress for individuals engaged with social media. Specifically, individuals who view others' posts as indicative of a better or more idealistic life may demonstrate decreased self-esteem (Vogel et al., 2014) or heightened body image concerns (e.g., Choukas-Bradley et al., 2019). Therefore, promoting alternative approaches to social media engagement that deemphasize social comparisons may be warranted (Yang, 2016). In addition, curtailing social media activity in favor of face-to-face interactions may prove beneficial for individuals who are prone to feelings of loneliness or FoMO (Hunt et al., 2018; Twenge et al., 2019).

Consistent with previous research (e.g., Elhai et al., 2018), FoMO was connected to social media activity across age cohorts. Thus, social media activity is not necessarily a catalyst for FoMO within one generation more than another, and the commonality of online experiences across age cohorts might help explain this lack of a generational differences (Boase & Wellman, 2006). Further, independent of cohort, the connections of loneliness and low self-esteem with FoMO were somewhat stronger for individuals who were more engaged with social media during daily activities. It may be that social media activity exacerbates feelings of FoMO in individuals with negative self-perceptions, but alternatively, FoMO could motivate use of social media and subsequent feelings of isolation and negative self-esteem. The latter possibility was not

supported in follow-up regression models with social media activity as the criterion variable. However, the transactional relations among these variables could not be truly investigated in this study and are worthy of attention in longitudinal designs.

In addition, the relation of FoMO with higher reported sleep disturbance points to a potential health consequence of this preoccupation with others' experiences, one that echoes prior research (Scott & Woods, 2018). Post hoc analyses indicated that social media use just before bedtime might mediate this relation; however, caution is needed in interpreting this finding given the cross-sectional nature of the study design and the use of a single item to assess this aspect of social media use. Further research is needed on this issue, but intervention efforts such as those described above might also address the benefits of protective behavioral strategies (e.g., limiting electronic communication around bedtime) for reducing social stress connected to social media and for improving sleep. Interestingly, FoMO was not related to life satisfaction in the present sample which indicates that the potential effects of FoMO may be relatively narrow in scope. That is, FoMO appears to relate to lower self-esteem and a greater subjective sense of loneliness but may not have implications for overall life satisfaction. However, it is noteworthy that FoMO was negatively related to life satisfaction in the youngest cohort in the present study. It is conceivable that adolescents may indeed equate feeling left out of activities with their general sense of well-being. That is, FoMO may have larger implications for subjective well-being prior to adulthood.

In summary, because FoMO may be more closely connected to individuals' self-perception and approaches to appraising their relationships with others than to developmental or generational effects, it begs the question of what approaches might mitigate its potential negative psychological, social, or physical consequences. FoMO was related to social media engagement, as conceptualized in this study, but FoMO may be more evident for individuals highly immersed in social comparison activities on social media. One approach to reducing FoMO or related distress might be to consider oneself in comparison to a range of other relational targets rather than only those who more readily come to mind because of a greater social media presence. Alternatively, as the present findings suggest, increased self-compassion in the form of less harsh self-appraisals and rumination about one's emotions and feelings of isolation might translate to lower distress about others' activities. In short, the manner in which one engages with and interprets social cues, including via social media, likely plays a large role in the experience of FoMO and other forms of distress in response to those cues. The relevance of these interpretations for intervention efforts should be a target of future research.

There are several limitations that must be considered in interpreting the present findings. First, the relatively small sample size that consisted of mostly females and White/Caucasian individuals may diminish the generalizability of the results to the broader population. Thus, efforts should be made to determine whether the present findings are replicable in more diverse and gender-balanced samples. Furthermore, the reliance on self-report surveys may have inflated some relations among self-perception variables. The cross-sectional methodology also prevents any conclusions regarding the developmental relations among the variables of interest. For example, it is unclear whether individuals with FoMO gravitate more toward social media or whether viewing others' activities on social media might spark subsequent feelings of FoMO.

Future research should consider additional factors involved in the development of FoMO, use of additional methodological approaches (e.g., longitudinal designs, other informants, experience sampling methodology), and potential avenues for intervention in addressing distress related to FoMO. Because the generalizability of the present findings is uncertain, investigating these issues across racial/ethnic groups is important. It may be that FoMO and its connection to negative self-perception is relatively more problematic in groups for which social media are more easily accessible or more commonly used, consistent with other findings on FoMO and social media engagement (Alt, 2015; Oberst et al., 2017). Our preliminary results conclude that FoMO is rooted in other aspects of social and self-perception rather than differentially evident in adolescents and adults. That is, FoMO indicates more specific distress that is experienced via social media use independent of age. Thus, maladaptive uses of social media are an important target for further empirical inquiry and intervention efforts.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD


Christopher T. Barry https://orcid.org/0000-0003-0803-1269

Open research statement

This research was not pre-registered. The data and materials used in the research are available upon request by emailing chris.barry@wsu.edu.

References

Alt, D. (2015). College students' academic motivation, media engagement, and fear of missing out. *Computers in Human Behavior*, *49*, 111–119.

Barry, C. T., Sidoti, C. L., Briggs, S. M., Reiter, S. R., & Lindsey, R. A. (2017). Adolescent social media use and mental health from adolescent and parent perspectives. *Journal of Adolescence*, *61*, 1–11. https://doi.org/10.1016/j.adolescence.2017.08.005

Blackwell, D., Leaman, C., Tramposch, R., Osborne, C., & Liss, M. (2017). Extraversion, neuroticism, attachment style and fear of missing out as predictors of social media use and addiction. *Personality and Individual Differences*, *116*, 69–72. https://doi.org/10.1016/j.paid.2017.04.039

Bluth, K., & Blanton, P. W. (2015). The influence of self-compassion on emotional well-being among early and older adolescent males and females. *Journal of Positive Psychology*, *10*, 219–230. https://doi.org/10.1.1080/17439760.2014.936967

Boase, J., & Wellman, B. (2006). Personal relationships: On and off the Internet. In A. L. Vangelisti & D. Perlman (Eds.), *The Cambridge handbook of personal relationships* (pp. 709–723). Cambridge University Press. https://doi.org/10.1017/CBO9780511606632.039

Boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, *13*, 210–230. https://doi.org/10.1111/j.1083-6101.2007.00393.x

Buglass, S. L., Binder, J. F., Betts, L. R., & Underwood, J. D. M. (2017). Motivators of online vulnerability: The impact of social network site use and FOMO. *Computers in Human Behavior*, *66*, 248–255. http://dx.doi.org/10.1016/j.chb.2016.09.055

Cain, N., & Gradisar, M. (2010). Electronic media use and sleep in school-aged children and adolescents: A review. *Sleep Medicine*, *11*, 735–742. http://dx.doi.org/10.1016/j.sleep.2010.02.006

Choukas-Bradley, S., Nesi, J., Widman, L., & Higgins, M. K. (2019). Camera-ready: Young women's appearance-related social media consciousness. *Psychology of Popular Media Culture*, *8*, 473–481. https://doi.org/10.1037/ppm0000196

Coget, J., Yamauchi, Y., & Suman, M. (2002). The Internet, social networks, and loneliness. *IT & Society*, *1*, 180–201.

Deri, S., Davidai, S., & Gilovich, T. (2017). Home alone: Why people believe others' social lives are richer than their own. *Journal of Personality and Social Psychology*, *113*, 858–877. https://doi.org/10.1037/pspa0000105

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*, 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Dijk, D. (2014). Not so fast: Sleep and media use. *Journal of Sleep Research*, *23*, 363. https://doi.org/10.1111/jsr.12212

Elhai, J. D., Levine, J. C., Alghraibeh, A. M., Alafnan, A. A., Aldraiweesh, A. A., & Hall, B. J. (2018). Fear of missing out: Testing relationships with negative affectivity, online social engagement, and problematic smartphone use. *Computers in Human Behavior*, *89*, 289–298. https://doi.org/10.1016/j.chb.2018.08.020

Elhai, J., Yang, H., Fang, J., Bai, X., & Hall, B. (2020). Depression and anxiety symptoms are related to problematic smartphone use severity in Chinese young adults: Fear of missing out as a mediator. *Addictive Behaviors*, *101*. https://doi.org/10.1016/j.addbeh.2019.04.020

Espie, C. A., Kyle, S. D., Hames, P., Gardani, M., Fleming, L., & Cape, J. (2014). The sleep condition indicator: A clinical screening tool to evaluate insomnia disorder. *BMJ Open*, *14*, 1–5. https://doi.org/10.1136/bmjopen-2013-004183

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.

Hunt, M. G., Marx, R., Lipson, C., & Young, J. (2018). No more FOMO: Limiting social media decreases loneliness and depression. *Journal of Social and Clinical Psychology*, *37*, 751–768. https://doi.org/10.1521/jscp.2018.37.10.751

Milyavskaya, M., Saffran, M., Hope, N., & Koestner, R. (2018). Fear of missing out: Prevalence, dynamics, and consequences of experiencing FOMO. *Motivation and Emotion*, *42*, 725–737. https://doi.org/10.1007/s11031-018-9683-5

Neff, K. D. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, *2*, 85–101. https://doi.org/10.1080/15298860309032

Neff, K. D. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identity*, *2*, 223–250. https://doi.org/10.1080/15298860309027

Neff, K. D., & Germer, C. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology*, *69*, 28–44. https://doi.org/10.1002/jclp.21923

Neff, K. D., & Vonk, R. (2009). Self-compassion versus global self-esteem: Two different ways of relating to oneself. *Journal of Personality*, *77*, 23–50. https://doi.org/10.1111/j.1467-6494.2008.00537.x

Oberst, U., Wegmann, E., Stodt, B., Brand, M., & Chamarro, A. (2017). Negative consequences from heaving social networking in adolescents: The mediating role of fear of missing out. *Journal of Adolescence*, *55*, 51–60. https://doi.org/10.1016/j.adolescence.2016.12.008

Pew Research Center. (2019). Social media fact sheet. https://www.pewresearch.org/internet/fact-sheet/social-media/ April 26, 2020.

Pittman, M., & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior*, *62*, 155–167. https://doi.org/10.1016/j.chb.2016.03.084

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior*, *29*, 1841–1848. https://doi.org/10.1016/j.chb.2013.02.014

Roberts, J. A., & David, M. E. (2019). The social media party: Fear of missing out (FoMO), social media intensity, connection, and well-being. *International Journal of Human-Computer Interaction*. https://doi.org/10.1080/10447318.2019.1646517

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.

Russell, D. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment*, *66*, 20–40. https://doi.org/10.1207/s15327752jpa6601_2

Scott, H., & Woods, H. C. (2018). Fear of missing out and sleep: Cognitive behavioural factors in adolescents' nighttime social media use. *Journal of Adolescence*, *68*, 61–65. https://doi.org/10.1016/j.adolescence.2018.07.009

Twenge, J. M., Spitzberg, B. H., & Campbell, W. K. (2019). Less in-person social interaction with peers among U.S. adolescents in the 21st century and links to loneliness. *Journal of Social and Personal Relationships*. https://doi.org/10.1177%2F0265407519836170

Villanti, A. C., Johnson, A. L., Ilakkuvan, V., Jacobs, M. A., Graham, A. L., & Rath, J. M. (2017). Social media use and access to digital technology in US young adults in 2016. *Journal of Medical Internet Research*, *19*. https://doi.org/10.2196/jmir.7303

Vogel, E, Rose, J. P., Roberts, L., & Eckles, K. (2014). Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture*, *3*, 206–222. https://doi.org/10.1037/ppm0000047

Werner, K., Jazaieri, H., Goldin, P., Ziv, M., Heimberg, R., & Gross, J. (2012). Self-compassion and social anxiety disorder. *Anxiety, Stress, and Coping*, *25*, 543–558. https://doi.org/10.1080/10615806.2011.608842

Woods, H. C., & Scott, H. (2016). #Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression, and low self-esteem. *Journal of Adolescence*, *51*, 41–49. https://doi.org/10.1016/j.adolescence.2016.05.008

Yang, C. (2016). Instagram use, loneliness, and social comparison orientation: Interact and browse on social media, but don't compare. *Cyberpsychology, Behavior, and Social Networking*, *19*, 703–708. https://doi.org/10.1089/cyber.2016.0201