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Fear of Missing Out: Relationships With Depression, Mindfulness, and Physical Symptoms

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Concerns have been raised regarding the extensive use of social media sites by young adults and adolescents and the effects this use may have on their mental health and general functioning. However, definitions of health are expansive and diverse. In the present article we assess 3 broad areas of mental and physical health: depressive symptoms, mindful attention, and physical symptoms. Additionally, the fear of missing out (FoMO), which relates to social media use both in its experience and origins, has received a great deal of popular attention recently with relatively less attention from researchers. In order to test the associations between social media use, FoMO, and a range of mental and physical health outcomes, an online study was conducted with 386 undergraduates from a large, ethnically diverse university. Results of this study demonstrated that FoMO was positively associated with time spent on social media. Furthermore, experiencing higher levels of FoMO was associated with more depressive symptoms, less mindful attention, and more physical symptoms. Moreover, time spent on social media was no longer related to depressive symptoms and mindful attention when FoMO was included in the model. Findings from this study suggest that FoMO may be a more revelatory measure than simple assessments of social media use, and is associated with negative health outcomes.

Keywords: FoMO, depression, mindful attention, physical symptoms, social media

FoMO lures us out of our integrity with whispers about what we could or should be doing.

—*Brené Brown*

Nearly three quarters of young adults report experiencing unease when they felt at risk for missing out on what their peers are doing (J. Walter Thompson Intelligence, 2011, 2012). This sense of uneasiness, popularly referred to as “FoMO,” or the fear of missing out, may drive the use of social media in an attempt to avoid negative mood states and feeling out of the loop (Fox & Moreland, 2015). Importantly, FoMO may also be

an important phenomenon to study outside the context of social media, as it is also likely to occur “offline.” Przybylski, Murayama, DeHaan, and Gladwell (2013) defined FoMO as “a pervasive apprehension that others might be having rewarding experiences from which one is absent” which is “characterized by the desire to stay continually connected with what others are doing” (p. 1). Thus, social media use may be only one consequence of FoMO. For those high in FoMO, this drive to stay continually connected with others may have negative impacts on mental and physical health. Thus far, FoMO has only been studied in the context of social media. In the current study, we aim to investigate the impact of FoMO above and beyond social media outcomes alone; namely, we will investigate whether FoMO is associated with depressive symptoms, mindful attention, and physical symptoms.

Fear of Missing Out (FoMO)

FoMO appears to be a universal phenomenon across cultures. For example, the word *kiasu* originating from the Hokkien (Chinese) dialect, is generally translated as the “fear of missing out” or the fear of losing out to someone else

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Zachary G. Baker, Heather Krieger, and Angie S. LeRoy all contributed to the design and implementation of the research project. Zachary G. Baker scored and analyzed the results. Additionally, Zachary G. Baker wrote the Method and Results sections and edited the complete manuscript. Heather Krieger wrote the abstract, Discussion section, and references, as well as edited the complete manuscript. Angie S. LeRoy wrote the introduction and edited the complete manuscript.

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(Hodkinson & Poropat, 2014). Very few empirical investigations of FoMO exist. Researchers developed and statistically validated an individual difference measure for FoMO based on a review of popular industry writing (e.g., J. Walter Thompson Intelligence, 2011, 2012), and conducted additional studies to integrate FoMO with self-determination theory which seeks to understand motivation and well-being factors related to the phenomenon (Przybylski et al., 2013). These findings solidified (a previously nonempirical finding by popular industry writing) that not only was FoMO an issue among younger people, but it also worsened mood and overall life satisfaction. However, these studies did not investigate a broad range of health outcomes.

Social Media Use

FoMO relates to social media use both in its experience and origins (e.g., J. Walter Thompson Intelligence, 2011, 2012); thus, research on social media use is important to consider in the current investigation. With the increase in social media use over the last decade, parents and researchers have become concerned over whether social media use may harm more than it may help, perpetuating a host of research investigations related to negative consequences stemming from social media use. Social media research paints two different pictures of the effects of social media: One illustrates social media as a budding resource of positive effects on the psyche (e.g., boosting self-worth, self-integrity, & self-esteem; Gentile et al., 2012; Toma & Hancock, 2013); the other offers a darker, more negative outlook (e.g., social media negatively affecting emotional states; Saggio-glou & Greitemeyer, 2014). When we evaluate the specific outcomes examined, however, it appears that the extent to which researchers have investigated psychological factors does not extend far past basic positive and negative emotions. Measures used in previous studies (e.g., the Positive and Negative Affect Schedule), although emotionally related, may not be clinically relevant measures. For example, how the research related to social media and positive and negative emotions extends to clinical psychological disorders such as depression has been examined in only two studies, which did not include FoMO (Moreno et al., 2011; Steers,

Wickham, & Acitelli, 2014). Additionally, while the psychological impact of social media has been examined, cognitive factors and physical health outcomes have gone almost completely unexamined.

FoMO and Clinically Relevant Health Outcomes

Just as FoMO affects emotional factors (i.e., negative mood; Przybylski et al., 2013), it also likely affects other aspects of health including cognitive and physical health outcomes. However, the field still lacks an understanding of how FoMO influences a broad range of health outcomes. In addition, no research has demonstrated how FoMO relates to mental and physical health while also taking into account overall social media use (Przybylski et al., 2013). This study is the first to utilize a comprehensive measurement approach in investigating the health consequences of FoMO: depressive symptoms, mindful attention, and physical symptoms.

Physical Symptoms

The formation and maintenance of social bonds is imperative for humans' well-being and survival (Baumeister & Leary, 1995). Social monitoring theories posit that individuals are able to detect social threat (e.g., Sociometer hypothesis; Leary et al., 1995) and monitor the degree to which others are likely to exclude or reject them. FoMO may activate the social monitoring system, as feeling as though one "missing out" on what others are doing, threatens their social connections with others. The activation of social monitoring systems can have physical effects; for example, when an individual anticipates being rejected from a group, they feel social pain. Social pain has been proposed to have common neural correlates (Eisenberger et al., 2003) and somatic experiences as physical pain (Kross et al., 2011). In addition to pain, distressing social situations can also lead to other somatic issues. For example, psychological stress can induce sickness behaviors (e.g., sleepiness, reductions in general activity; Dantzer, Bluthé, Kent, & Goodall, 1993). Because distressing social situations often lead to psychosomatic issues, being highly fearful of

missing out may also have physical health consequences.

Assessments of physical symptoms have been used as an indicator for physical health for quite some time (Pennebaker, 1982). Unfortunately, we are aware of no research in which they have been used as a physical health indicator in the context of social media use or FoMO.

Depressive Symptoms

Those high in FoMO report lowered general mood and increased social media engagement (Przybylski et al., 2013). An increase in social media engagement could prompt a cyclical loop of negative outcomes. For example, social media usage (e.g., using Facebook) may trigger mild depression or dysphoria (Blease, 2015); the more time spent on social networking sites, the more depressed people feel (Pantic et al., 2012). For those who are depressed, insecure striving (i.e., the belief that one must strive to compete for their place in the social world and avoid mistakes and inferiority) is highly related to fears of missing or “losing” out. People experiencing symptoms of depression may feel they are losing the competitions of social life such as competing for care, acceptance, and social support from others (Gilbert et al., 2009). Thus, feeling depressed may also make individuals susceptible to FoMO. Thus, it is important that we understand the relationship between FoMO and depressive symptoms, but previous research has investigated only overall mood and affect, not specific depressive symptomatology.

Mindful Attention and Awareness

Trait mindfulness is significantly positively correlated with psychological well-being (Fiocco & Mallya, 2015). Mindful attention and awareness may be one way in which researchers can measure the cognitive aspect of well-being. Mindful attention and awareness is the self-regulation of attention and orientation toward one's experiences (Malinowski, 2008). Mindfulness may directly enhance well-being through its ability to enhance these moment-to-moment experiences (Brown & Ryan, 2003). Cognitive flexibility, one aspect of mindfulness, may be a key component of cognitive health

(Moore & Malinowski, 2009). Cognitive flexibility is the ability to adapt cognitive processing strategies to new and unexpected conditions (Cañas, Quesada, Antolí, & Fajardo, 2003). Mindfulness may be important in disengaging from automated thoughts, habits, and unhealthy behavior patterns which, in turn, may promote informed self-endorsed behavior regulation which is associated with well-being (Ryan & Deci, 2000). Hence, being mindful strengthens cognitive flexibility, a healthy attribute, and weakens unhealthy automated thoughts. Mindfulness meditation can also improve performance on cognitive tasks (Wang et al., 2012). These research findings support the notion that mindfulness is an indicator of positive health. However, no research that we know of has been published looking at the relationship between FoMO and mindfulness.

Based on the empirical literature, being mindful appears to be a healthy attribute. Do those with FoMO tend to be more or less mindfully attentive? On one hand, FoMO may make individuals more sensitive to what is going on around them, enhancing their attention. On the other hand, the obsession with what they may be missing may distract individuals in a way that decreases their ability to be mindfully attentive. Previous research demonstrated that dispositional mindfulness predicted more self-regulated behavior (Brown & Ryan, 2003) and lower levels of social anxiety (Rasmussen & Pidgeon, 2011). Teaching individuals mindfulness-based stress reduction techniques can also lower anxiety (e.g., Goldin & Gross, 2010). Thus, based on previous research, we might expect that the fear of missing out will be associated with lower dispositional mindfulness, as FoMO is likely an anxiety-provoking experience that tends to prompt impulsive social media use (the opposite of self-regulating behavior). Understanding how FoMO is related to mindfulness is one important piece in our understanding of how the fear of missing out affects health.

Present Study

To address the lack of evidence regarding the associations between social media use, FoMO, and a broad range of clinically relevant health outcomes, an online study was conducted to determine if and how FoMO is associated with

depressive symptoms, mindful attention, and physical symptoms. Each analysis also included the amount of time an individual spent on social media given the associations between social media use FoMO research demonstrated in the past. Specifically, we expected individuals who reported a higher fear of missing out, would also report experiencing greater depressive symptoms and greater physical symptoms. We did not have specific hypotheses for mindful attention in this study; thus, we examined the association between mindful attention and FoMO as an exploratory analysis.

Method

Participants

Three hundred eighty-six participants (80.84% female, 19.16% male) from a large southwestern university enrolled in the present study. Participants were recruited via an online management system (i.e., SONA) and all procedures took place online. The sample was somewhat older than a typical college sample with a mean age of 21.98 ($SD = 5.22$, range = 18–64) and was ethnically diverse: 49.86% White/Caucasian, 27.79% Asian, 12.53% Black/African America, 8.17% multi-ethnic, 1.36% Native American/Alaskan Native, and 0.27% Native Hawaiian/Pacific Islander. Of the sample, 96.75% reported using social media daily. Participants were eligible if they were currently enrolled at the university, were at least 18 years of age, and provided informed consent. Participants received course credit in exchange for their participation. Participants reported checking social media an average of 16.47 times per day ($SD = 57.15$).

Procedure

Upon signing up for the survey via an online research management system, participants were directed to an informed consent document, which outlined the nature of the study. If they provided informed consent, they then proceeded to the survey, which took approximately 1 hr to complete.

Measures

Measures in the current study included fear of missing out, time spent social networking, and several indicators of health, discussed below. Means, standard deviations, and correlations among study variables are reported in Table 1.

Fear of missing out was assessed using the Fear of Missing Out Scale (FoMOs) from Przybylski et al. (2013). This 10-item measure asks participants to indicate how true each statement is of their general experiences (1 = *not at all true of me*, 5 = *extremely true of me*). Example items include “I fear others have more rewarding experiences than me,” and “When I have a good time it is important for me to share the details online (e.g., updating status).” Items were averaged to derive an overall score ($\alpha = .88$).

Time spent social networking was assessed with three items asking participants to indicate in hours and minutes (e.g., 3 hr and 6 min) how much time they “spend social networking each day.” The items were designed to assess general use of social media including Facebook, Twitter, and Instagram. Items were “Looking at others’ social networking information (e.g., looking at others pictures, status updates, tweets, etc.)”; “Updating your own social networking information (e.g., updating status, posting picture, etc.)”; and “Doing

Table 1
Means, Standard Deviations, and Correlations Among Study Variables

Variable	1	2	3	4	5
1. Physical symptoms	—				
2. Depressive symptoms	.41***	—			
3. Mindful attention	-.25***	-.41***	—		
4. Social network time	.19**	.09	-.15**	—	
5. Fear of missing out	.21***	.36***	-.37***	.30***	—
Mean	20.12	23.73	3.84	3.85	2.32
Standard deviation	7.85	12.56	.85	3.37	.82

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

something that does not fit into the above categories.” To derive an overall score, minutes for each question were transformed to hours and added to the hours reported for each score. Therefore, this variable is in the metric of hours per day throughout the present study. We then summed across all three items for each participant. Two participants were removed from analyses for indicating that they spent more than 24 hr social networking each day.

Physical symptoms were observed with the Physical Symptoms Checklist (Pennebaker, 1982). Participants selected each of 10 physical symptoms they had experienced over the past 7 days including headaches, shortness of breath, sore throat, and chest pain. Items were summed to reflect overall reports of physical symptoms ($\alpha = .70$), with higher scores reflecting experiencing more negative physical symptoms.

Depressive symptoms were assessed using the Center for Epidemiological Studies—Depression Scale (CES-D; Lewinsohn et al., 1997). This 20-item measure asks participants to answer on a scale from 1 (*rarely or none of the time* [less than 1 day]) to 4 (*most or all of the time* [5–7 days]) how often they have felt or behaved in certain ways during the past week. Example items include “I felt that I could not shake off the blues even with help from my family or friends” and “I felt that I was just as good as other people” (reverse coded). Items were summed to reflect overall depressive symptoms ($\alpha = .89$), with higher scores indicating experiencing more symptoms of depression.

Mindful attention was measured with the 15-item Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). This scale has participants rate the frequency with which they have several experiences from 1 (*almost always*) to 7 (*almost never*). Items include “I could be experiencing some emotion and not be conscious of it until sometime later” and “I find it difficult to stay focused on what’s happening in the present.” Items were averaged, then reverse scored to reflect more mindful attention ($\alpha = .88$), with higher scores signifying experiencing more mindful attention.

Results

Table 1 reports correlations, means, and standard deviations for all study variables. All variables were significantly related to one another in

the expected directions with the exception of the association between depressive symptoms and social network time, which was not significant. Notably, social network time and FoMO were moderately related ($r = .30, p < .001$), supporting the perspective that social network time should be included in all analyses evaluating the relationship between FoMO and health. Additionally, we examined relationships between each of our outcomes and demographic information including age and gender. We evaluated the association between age and the outcomes via correlations. Physical symptoms and depressive symptoms were not significantly related to age ($ps > .126$), but age was significantly related to mindful attention ($r = .11, p = .032$); therefore we controlled for age in the mindful attention analyses. *t*-tests revealed that reports for each of the outcome measures did not differ in the basis of gender ($ps > .242$).

To test our hypothesis that FoMO would be positively related to physical symptoms, depressive symptoms, and mindful attention, controlling for time spent on social media, a series of structural equation models were estimated in which FoMO and time spent on social media were entered as predictors and our health indicators were entered as outcomes (see Table 2 for results of these model estimations and Figure 1 for a conceptual representation of our models). All estimates reported in the text are unstandardized, while Table 2 presents unstandardized and standardized estimates. Results revealed support for our hypotheses such that FoMO was associated with more physical symptoms and more depressive symptoms. Our results also revealed that FoMO is related to less-mindful attention. Our analyses revealed that FoMO uniquely accounted for 7% of the variance in physical symptoms, 13% of the variance in depressive symptoms, and 14% of the variance in mindful awareness beyond the other predictors included in the model.

In the first model that we ran, we found that FoMO was significantly associated with reports of physical symptoms, when controlling for social networking time (unstandardized $b = 1.57, p = .002$). Our second model, which regressed depressive symptoms onto FoMO and time spent on social media, revealed that one’s FoMO was significantly associated with more depressive symptoms, such that those with a greater fear of missing out also reported greater

Table 2
Estimates for Models in Which FoMO and Social Networking Time Predict Well-Being

Predictor	Physical symptoms				Depressive symptoms				Mindful attention			
	<i>b</i>	<i>SE</i>	β	<i>p</i>	<i>b</i>	<i>SE</i>	β	<i>p</i>	<i>b</i>	<i>SE</i>	β	<i>p</i>
Fear of missing out	1.57	.52	.16	.002	5.59	.79	.36	<.001	-.36	.05	-.35	<.001
Social network time	<.01	<.01	.15	.018	<.01	<.01	<.01	.986	<.01	<.01	-.05	.407
	$R^2 = .07$ [.02, .11]				$R^2 = .13$ [.07, .19]				$R^2 = .14$ [.07, .20]			

Note. *N* = 386 for each model. The 95% confidence intervals are presented next to each R^2 estimate. FoMO = fear of missing out; *b* = unstandardized regression coefficient; β = standardized regression coefficient. Bolded findings are significant findings or primary interest.

depressive symptoms (unstandardized *b* = 5.59, *p* < .001). Finally, we explored FoMO's relation to mindful attention. We found that when controlling for time spent social networking and age, FoMO is associated with lesser mindful attention (unstandardized *b* = -.36, *p* < .001). These results demonstrate that individuals who reported more FoMO also reported being higher in physical and depressive symptoms as well as less mindfully attentive.

Discussion

This study provided evidence that the fear of missing out (FoMO) relates to depressive symptoms, mindful attention, and physical symptoms. Specifically, the findings of this study indicate that people with a greater fear of missing out experienced more physical symptoms, more depressive symptoms, and less mindful attention, which are suggestive of worse physical, emotional, and cognitive health. These relationships hold even while accounting for the total amount of time individuals spend engaging with social networks, indicating that they are important above and beyond social media use alone.

The finding that FoMO was related to worse physical symptoms and depressive symptoms is consistent with the study hypotheses and previous

literature. Past research, to our knowledge, has not explored the relationship between mindful attention and FoMO, but this study demonstrates that FoMO does relate to less mindful attention. FoMO has been linked to less successful development of face-to-face relationships (Chaudhry, 2015), worse academic performance (Filippou et al., 2014), and lowered personal motivation (Alt, 2015). The relationship between FoMO and poor health, in part, can be explained by the suggestion that modern technologies have changed several facets of the human experience and that digital communication mediums can impair self-reflection and degrade well-being (Turkle, 2011). Given these changes in technology and these research findings, academic counselors and practitioners working with individuals experiencing academic or interpersonal problems should recognize the impact social media use and FoMO have on those problems and incorporate discussions of social media and FoMO into one-on-one conversations.

The results of this study combined with the small body of previous research suggests that FoMO is an important factor in understanding outcomes related to social media use. This study proposes FoMO as a more informative metric, which may explain the mixed relationship between social media use and individual well-being in previous research. Future research should identify how the fear of missing out is associated with other emotional, cognitive, and physical health outcomes including anxiety and health behaviors (e.g., drinking or safe sex). Furthermore, as this is a cross-sectional study, there are limits to the conclusions that can be drawn. Causal direction of these relationships cannot be determined, so it is unclear if greater physical symptoms led to more social media use and therefore more FoMO or if greater FoMO leads to experiencing more physical symptoms. Researchers interested in FoMO

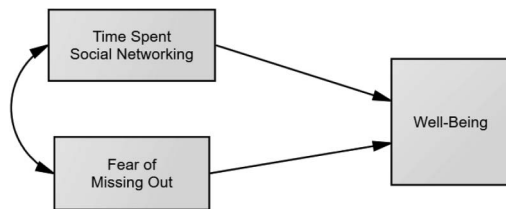


Figure 1. Conceptual model of the associations being tested.

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should consider conducting longitudinal studies to better explain how experiencing FoMO influences behaviors and health over time, and to establish directional relationships between FoMO, social media use, and health. Cohort specific studies may also be useful to determine if FoMO is experienced more often in younger generations which have been shown to use social media sites at higher rates (e.g., Lenhart, Purcell, Smith, & Zickuhr, 2010). Additionally, over 95% of our sample used social media daily—the associations found in this study need to be examined in samples with different rates of social media use. Finally, while the measures of health used in this study do not represent all-encompassing conceptualizations, the inclusion of multiple health indicators provides a broader evaluation of health outcomes. More research is needed to understand what components of health are most influenced by FoMO and how health may be improved through interventions to reduce FoMO.

Conclusion

This study adds to a small but growing literature on the fear of missing out (e.g., Alt, 2015; Chaudhry, 2015; Filippou et al., 2014). It demonstrates the association between time spent on social media and FoMO. Additionally, it establishes relationships between FoMO and depressive symptoms, mindful attention, and physical symptoms above and beyond time spent on using social media. These findings provide foundational work to understand these relationships from which future research on social media use can build. FoMO appears to be an important factor in understanding health outcomes associated with social media use.

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