



## Full length article

## Fear of missing out: Testing relationships with negative affectivity, online social engagement, and problematic smartphone use



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## ARTICLE INFO

## Keywords:

Fear of missing out  
Smartphone addiction  
Depression  
Anxiety  
Rumination  
Social connectedness

## ABSTRACT

In the present study, we empirically examined the “fear of missing out” (FOMO) construct and its association with psychopathology-related and technology use measures. We carried out an internet-based survey with 296 undergraduate participants and administered self-report questionnaires of FOMO, frequency and type of smartphone use, problematic smartphone use (PSU), and scales of negative affectivity including depression, anxiety, stress, proneness to boredom, and rumination. The results demonstrated that FOMO was related to demographic characteristics (age, sex, race, and relationship status) but with small effect sizes. FOMO was related to all measures of negative affectivity, social use of a smartphone, as well as the severity of PSU. Tests of mediation indicated that each negative affectivity construct mediated the relationship between FOMO and PSU severity, and only rumination mediated relations between FOMO and smartphone use frequency. When reversing the predictor and mediating variables, FOMO mediated relations between negative affectivity and PSU severity. Finally, results demonstrated some support for a single-factor latent construct for FOMO, but male and female participants had a different pattern of factor loadings. Negative affectivity may be a key mechanism by which FOMO may drive PSU, but future research should clarify the directionality among these variables. Gender-related social connectedness differences characterize FOMO.

## 1. Introduction

“Fear of missing out” (FOMO) is a psychological construct defined by an apprehension of being absent from other people's rewarding experiences and the desire to stay connected with others' experiences constantly (Przybylski, Murayama, DeHaan, & Gladwell, 2013). Furthermore, such desire to stay connected can involve digital technology as the medium (Wegmann, Oberst, Stodt, & Brand, 2017). Several studies in recent years have empirically examined the validity of FOMO and its relations with online social engagement variables. However, aside from depression and anxiety, FOMO has not yet been widely examined in relation to psychopathology-related constructs.

## 1.1. Background

FOMO was first discussed in popular media outlets in the early 2010s, describing it as a long-standing problem but with a particular salience and exacerbation within the modern digital age (Fake, 2011, March 15; Morford, 2010, August 4). Specifically, the availability of checking one's social networking site (SNS) accounts and messaging applications renders it easy to learn (and worry) about the rewarding experiences one is missing. Furthermore, popular media has described learning about such missed rewarding experiences as anxiety-provoking (Fake, 2011, March 15; Morford, 2010, August 4).

Several recent empirical studies have examined FOMO's validity by exploring its associations with relevant variables.

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### 1.1.1. Quality of life

FOMO is inversely associated with constructs involving the perceived quality of life. For example, FOMO demonstrated a small inverse relationship with life satisfaction (Błachnio & Przepiórka, 2018; Przybylski et al., 2013), and moderate inverse correlations with psychological need satisfaction (Przybylski et al., 2013), well-being (Stead & Bibby, 2017), and mindful attentional awareness (Baker, Krieger, & LeRoy, 2016).

### 1.1.2. Negative affectivity

Additional studies have examined FOMO in relation to variables involving the underlying negative affectivity and emotional distress dimension of psychopathology that drives numerous depressive and anxiety disorders (Watson, 2009). FOMO has generally revealed small to moderate correlations with negative affect and mood (Przybylski et al., 2013; Wolniewicz, Tiamiyu, Weeks, & Elhai, 2018), depression severity (Baker et al., 2016; Dhir, Yossatorn, Kaur, & Chen, 2018; Elhai, Levine, Dvorak, & Hall, 2016; Oberst, Wegmann, Stodt, Brand, & Chamarro, 2017), and impaired behavioral activation associated with depression (Elhai et al., 2016). FOMO also demonstrated moderate to large associations with anxiety severity (Blackwell, Leaman, Tramosch, Osborne, & Liss, 2017; Dhir et al., 2018; Elhai et al., 2016; Oberst et al., 2017; Scalzo & Martinez, 2017), including the fear of negative evaluation associated with social anxiety (Wolniewicz et al., 2018). FOMO is also related to low self-esteem (Buglass, Binder, Betts, & Underwood, 2017).

### 1.1.3. Social engagement

Researchers have discovered relationships between FOMO and social engagement variables. Large relationships were found for FOMO with the need for popularity and need to belong (Beyens, Frison, & Eggermont, 2016). Specific to online social engagement, moderate to large associations have been found for FOMO with SNS use (Alt, 2015; Blackwell et al., 2017; Buglass et al., 2017; Fuster, Chamarro, & Oberst, 2017; James, Lowry, Wallace, & Warkentin, 2017; Oberst et al., 2017; Przybylski et al., 2013), including Facebook use specifically (Beyens et al., 2016). Wolniewicz et al. (2018) revealed a small but significant association between FOMO and social use of a smartphone.

### 1.1.4. Problematic internet use (PIU) and problematic smartphone use (PSU)

Other studies examined FOMO in relation to different types of excessive internet use. In order to provide some definitions, first, PSU (reviewed in Elhai, Dvorak, Levine, & Hall, 2017) involves excessive phone use with associated functional impairment and symptoms observed in substance use disorders, such as withdrawal and tolerance (Billieux, Maurage, Lopez-Fernandez, Kuss, & Griffiths, 2015). Second, problematic internet use (PIU) is a similar construct to PSU, involving excessive internet use and functional impairment, with symptoms such as tolerance and withdrawal from non-use, lack of control, and escapism, but with usage not limited to one's smartphone (reviewed in Kuss, Griffiths, Karila, & Billieux, 2014). Additionally, problematic SNS use has been examined and thus should also be mentioned (Kuss & Griffiths, 2011). Despite the similarities between these constructs related to excessive internet use, they are found to be distinct, with differential adverse outcomes (Baggio et al., 2018; Kiraly et al., 2014).

Research studies have revealed small to medium effects for FOMO in relation to levels of PIU (Stead & Bibby, 2017; Wegmann et al., 2017). Moderate to large associations were found for FOMO with PSU severity (Chotpitayasunondh & Douglas, 2016; Elhai et al., 2016; Fuster et al., 2017; Oberst et al., 2017; Wolniewicz et al., 2018) and problematic SNS use (Błachnio & Przepiórka, 2018; Blackwell et al., 2017; Dhir et al., 2018; James et al., 2017).

## 1.2. Gaps in the prior literature

Based on the literature discussed above, it is evident that FOMO is associated with lower perceived quality of life, and greater negative affectivity, social engagement, and PIU/PSU. However, neglected in this empirical literature are the following lines of inquiry for FOMO: a) associations with other negative affectivity variables beyond depression and anxiety, b) assessment of negative affectivity as potential mediating variables between FOMO and both frequency of and PSU, and c) the construct, factorial validity of FOMO and its measurement invariance across sex.

## 1.3. Theory

We conceptualized the construct of FOMO using Self-Determination Theory (SDT) (Deci & Ryan, 1985; Ryan & Deci, 2000). SDT focuses on understanding individuals' psychological needs in driving motivation and personality formation. SDT distinguishes intrinsic from extrinsic motivation. Intrinsic motivation is especially important to psychological health, involving the proclivity toward seeking out new experiences, exploration and learning, without external reward. Intrinsic motivation is particularly promoted by having one's innate need for socialization and human connection ("relatedness") met (Deci & Ryan, 1985; Ryan & Deci, 2000). Thus, in SDT, social relatedness is conceptualized as driving intrinsic motivation, in turn driving emotional well-being.

FOMO can be conceptualized within SDT as a negative emotional state arising from an individual's relatedness needs not being met (Przybylski et al., 2013). That is, individuals with satisfied relatedness needs should experience lower levels of FOMO, while those with unmet relatedness needs should experience more FOMO. One notable individual difference that is relevant to both relatedness needs and FOMO is gender. In contrast to men, women report greater relatedness satisfaction (Kashdan, Mishra, Breen, & Froh, 2009), and greater engagement in relationship maintenance within their social networks (reviewed in Kawachi & Berkman, 2001), including with online social networks (Kimbrough, Guadagno, Muscanell, & Dill, 2013; Muscanell & Guadagno, 2012). Women also report more intrinsic motivation (Alt, 2015). Thus, women should experience less FOMO.

As a result of frequent or intense FOMO experiences, negative affectivity can be the consequence (Beyens et al., 2016). The few available studies on relations between FOMO and negative affectivity (albeit cross-sectional) have only tested the reverse relationship; that is, negative affectivity predicts FOMO (Oberst et al., 2017; Wegmann et al., 2017). However, FOMO involves social relatedness problems, and the overwhelming literature finds that social impairments drive negative affectivity rather than the other way around (reviewed in Kawachi & Berkman, 2001; Santini, Koyanagi, Tyrovolas, Mason, & Haro, 2015). Specifically, the availability of social networks and ties appears to play a substantial role in offsetting mental health problems such as depression, improving mood and affect (Kawachi & Berkman, 2001). Therefore, we conceptualized negativity affectivity as a byproduct of FOMO. Though we should note that in some instances, negativity could drive FOMO, and thus this alternative directionality may be possible.

Experiencing FOMO, in light of unmet relatedness needs, would, therefore, represent an aversive state of negative emotion. In an attempt to meet such relatedness needs, people experiencing FOMO may engage in internet and SNS use, in order to gain socialization skills and to deepen social connections (Przybylski et al., 2013). However, more severe FOMO can lead the individual to overuse the internet and SNS, excessively engaging in such use.

Compensatory Internet Use Theory (CIUT) (Karddefelt-Winther, 2014) aims to understand the motivations for engaging in excessive internet use. CIUT conceptualizes the use (and problematic use) of internet technology as a means by which some people regulate their negative emotion in modern times. CIUT is careful not to over pathologize

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