

ORIGINAL RESEARCH

Fear of Missing Out, Internet Addiction and Their Relationship to Psychological Symptoms

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Main Points

- The current study explores the relationships among internet addiction, fear of missing out (FoMO), and psychological symptoms.
- The findings revealed that internet addiction acts as a mediator in the link between FoMO and psychological symptoms.
- Greater FoMO is linked to higher levels of psychological symptoms both directly and indirectly through internet addiction.
- Based on the study findings, it can be argued that young people's pervasive anxiety associated with the feeling that one is missing out on others' satisfying experiences and problematic internet use are risk factors for their psychological well-being.
- The present study provides an insight into our understanding of the psychological and behavioral aspects of internet addiction, and thus, makes an important contribution to the promotion of psychological well-being.

Abstract

Internet addiction has become one of the most important problems of today's youth and received considerable attention from scholars. Research demonstrated significant impairments in psychological and social functioning among internet dependents. Given this, the present study aimed to investigate the relationship between fear of missing out (FoMO), internet addiction, and psychological symptoms. Based on research demonstrating that FoMO, the pervasive anxiety associated with the feeling that one is missing out others' satisfying experiences, increases social media engagement, it was expected that FoMO would relate to internet addiction, which in turn would be linked to poor psychological well-being. The sample consisted of 322 undergraduate students who filled out items measuring FoMO, internet addiction and psychological symptoms. The regression analysis revealed that internet addiction acts as a mediator in the link between FoMO and psychological symptoms. That is, the participants' greater FoMO is linked to higher levels of psychological symptoms both directly and indirectly through a higher level of internet addiction. Overall, the present study provides an insight into our understanding of the psychological and behavioral aspects of internet addiction, and thus, makes an important contribution to the promotion of mental health.

Keywords: Addiction, fear of missing out, internet, internet addiction, psychological symptoms, psychological well-being

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Introduction

With the advances in information and communication technologies and the widespread availability of the Internet, the number of Internet users worldwide reached 3.58 billion in 2017 (Statista Facts on Social Networks, 2019). According to the Turkish Statistical Institute's (2018) research findings, 72.9% of people use the Internet in Turkey. In this context, the prevalence of addicted Internet users has greatly increased

(Ko, Yen, Yen, Chen, & Chen, 2012; Kuss, Griffiths, Karila, & Billieux, 2014), and Internet addiction has been receiving considerable attention from clinicians and researchers. To date, numerous studies have been conducted on understanding the psychological and social correlates of problematic Internet use (Kuss et al., 2014), and researchers have revealed its negative impact on academic work, professional performance, and social life (Chou, Condrón, & Belland, 2005). They have also demonstrated its association with psychi-

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Metin-Orta İ. FoMO and Internet Addiction

atric symptoms (Dalbudak & Evren, 2014; Ko, et al., 2012). Given these adverse consequences, scholars agree that understanding the factors underlying the development and maintenance of this global mental health problem is crucial (Kuss et al., 2014).

In today's digital world, one of the most popular activities young people extensively engaged in is social media use, specifically social networking (Kuss & Griffiths, 2017). According to a recent survey conducted in 2017, 71% of Internet users are social network users, and this rate is expected to increase in the future (Statista Facts on Social Networks, 2019). The growing interest in social networking sites (SNSs) and the increased popularity of digital devices that provide unlimited access to the Internet have brought out an impulsive desire among teens and young adults to stay continuously connected with what others are doing. For instance, the ubiquity of mobile devices allows individuals permanent access to social media, thus making interacting with others at any time and checking their activity constantly possible (Choi et al., 2015; Montag et al., 2015; Wegmann, Oberst, Stodt, & Brand, 2017). The omnipresence of smartphones in everyday life has been able to increase the potential for people to miss out on any information or communication from others that occurs online. Accordingly, scholars have introduced a new concept, Fear of Missing Out (FoMO; Przybylski, Murayama, DeHaan, & Gladwell, 2013), which may be considered an important factor behind high levels of Internet use.

FoMO in general refers to the pervasive apprehension that one might miss an opportunity for social interaction, potentially rewarding experiences, or satisfying events with others (Przybylski et al., 2013). Some scholars have argued FoMO to be a complex construct with more than one aspect. General trait-FoMO is a relatively stable characteristic of disposition that involves fear and worry about being out of touch with others' experiences, whereas state-FoMO is a specific online-form (Wegmann et al., 2017). The current study addresses the latter, which involves anxiety and fear when being offline and is characterized by an irresistible desire to stay continuously connected (Przybylski et al., 2013; Tomczyk & Selmanagic-Lizde, 2018). Empirical research has shown FoMO to be related to problematic internet use (Alt & Boniel-Nissim, 2018a; 2018c), particularly problematic use of (Gil, Chamarro, & Oberst, 2016; Przybylski et al., 2013) and addiction to SNSs (Al-Menayes, 2016; Blackwell, Leaman, Tramposch, Osborne, & Liss, 2017). Drawing upon the theory of compensatory Internet use, which proposes that Internet users are motivated toward online activity in order to cope with life stressors (Kardefelt-Winther, 2014), lower levels of psychosocial well-being (i.e., FoMO) can be said to act as an important precursor to problematic Internet use (Alt & Boniel-Nissim, 2018a; 2018c). Following this line of thought, the current study aims to examine the possible links among FoMO, Internet addiction, and psychological symptoms.

Despite the considerable research on Internet addiction, the research on FoMO is relatively new, and its role in the development and continuance of Internet addiction has not yet been fully understood. In addition, Internet addiction has not been previously addressed as a mediator in explaining the link between FoMO and psychological symptoms. Such an investigation would shed light on understanding the psychological and behavioral aspects of Internet addiction (Alt & Boniel-Nissim, 2018c) and identifying its risk factors. Thus, it would contribute to clinicians, educators, and policymakers in terms of providing new perspectives for preventing and protecting from Internet addiction as well as promoting mental health.

Internet Addiction and Psychological Symptoms

Internet addiction has been traditionally conceptualized as a type of behavioral (non-chemical) addiction that involves human-machine interaction (Griffiths, 1996b; Widyanto & Griffiths, 2006). It is a problematic behavior similar to pathological gambling (Savcı & Aysan, 2016). Several terminologies exist in the related literature that describe Internet addiction as Internet addiction disorder (Kardefelt-Winther, 2014), Internet dependency (Scherer, 1997), pathological Internet use (Davis, 2001; Morahan-Martin & Schumacker, 2000; Young, 1998), and problematic Internet use (Davis, Flett, & Besser, 2002). According to Young (1998, 1999), internet addiction covers a wide variety of behaviors including compulsive web surfing; using adult web sites; obsessive online gaming, gambling, or shopping; online affairs; and impulse-control problems. Furthermore, Internet addiction is characterized by symptoms such as obsessive thoughts about the Internet, tolerance, withdrawal, uncontrolled impulses, and the inability to stop using the Internet (Young, 1998; 1999). Other scholars have proposed similar criteria for the operational definition of Internet addiction such as salience (dominating influence of Internet use over an individual's feelings, behaviors, and thoughts), mood modification (subjective experiences as a result of Internet use), tolerance (increasing amounts of Internet use are required to achieve previous moods), withdrawal symptoms (unpleasant feelings or physical effects when Internet use is stopped), conflict (conflicts around daily activities or individuals due to excessive Internet use), and relapse (repeated reversions to earlier patterns of Internet use) (Griffiths, 2005; Griffiths, Pontes, & Kuss, 2016, pp. 2-3).

Internet addiction has not yet been recognized as an official clinical disorder by the American Psychiatric Association (2013) but as a possible non-substance addiction within the Substance Use and Addictive Disorders category in the latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). However, Internet gaming disorder (IGD) has been proposed as a condition that is in need of further research in DSM-5 (Kuss et al., 2014). Moreover, a debate is still ongoing about its operational definition, diagnostic criteria, classification, and assessment. Nevertheless, researchers have adapted IGD's theoretical framework for defining Internet addiction and have shown support for its inclusion as a clinical entity (Kuss et al., 2014; Pontes & Griffiths, 2016).

Research on Internet addiction started with Griffith's (1996a; 1996b) and Young's (1996; 1998) studies, one of which revealed dependent individuals to spend eight times as many hours online (38.5 hours per week) as non-dependents (4.9 hours per week) and to experience more personal, familial, academic, and occupational problems (Young, 1998). Because these initial efforts indicated an emerging mental health problem, research into Internet addiction has greatly increased. Scholars in particular have addressed various demographic variables (gender, education, income), internet use variables (frequency and length of Internet use), psychosocial variables (personality characteristics, well-being, social support), and psychological symptoms and disorders (alcohol and substance use, social anxiety, social phobia, ADHD) in relation to Internet addiction among adolescents and adults (Dalbudak & Evren, 2014; Ko et al., 2012; Kuss et al., 2014).

Previous research focusing on the relationship between Internet addiction and psychological well-being has revealed higher levels of depression and anxiety (Bernardi & Pallanti, 2009; Dalbudak & Evren, 2014; Ko, et al., 2009; Ozdemir, Kuzucu, & Ak, 2014), real-life and virtual environment loneliness (Batıgün & Hasta, 2010; Ozdemir et al., 2014; Ümmet & Ekşi, 2016), and lower levels of life satisfaction (Stead

& Bibby, 2017) and self-esteem (Buglass, Binder, Betts, & Underwood, 2017; Fioravanti, Dèttore, & Casale, 2012) among those dependent on the Internet. Overall, the aforementioned research has indicated addictive Internet use to be associated with detrimental outcomes on psychological well-being. Based on this, the current study proposes:

Hypothesis 1: Internet addiction positively relates to psychological symptoms.

FoMO, Internet Addiction, and Psychological Symptoms

FoMO is the pervasive anxiety associated with feeling that one is missing out on others’ satisfying experiences (Przybylski et al., 2013). It involves an irresistible desire to stay continuously connected, receive online messages, and actively or passively participate in exchanging information on SNSs, which in turn promotes social media engagement (Hetz, Dawson, & Cullen, 2015; Przybylski et al., 2013; Tomczyk & Selmanagic-Lizde, 2018). Accordingly, online social networking has been argued to be potentially addictive and FoMO to play a crucial role in developing addiction to SNSs (Kuss & Griffiths, 2017). As FoMO is a new area of scientific research, the amount of research that has addressed individual differences in FoMO is still limited. In these studies, scholars have shown younger males, individuals lacking satisfaction of psychological needs (competence, autonomy, and relatedness), those with lower levels of general mood and life satisfaction (Przybylski et al., 2013), and those with lower levels of conscientiousness and emotional stability (Alt & Boniel-Nissim, 2018c; Stead & Bibby, 2017) to experience greater FoMO.

Although limited in number, several studies have addressed FoMO in relation to SNS use. They have shown higher FoMO levels to be associated with more intense SNS use (Oberst, Wegmann, Stodt, Brand, & Chamarro, 2017), problematic SNS use (Gil et al., 2016; Przybylski et al., 2013), and social media addiction (Al-Menayes, 2016; Blackwell et al., 2017). In particular, individuals with high FoMO levels use SNSs inappropriately in class and dangerously while driving; they experience mixed feelings (Przybylski et al., 2013) and increased perceived stress (Beyens, Frison, & Eggermont, 2016) when using social media. Because SNSs provide an effective way to satisfy the need to be connected with others and to keep up to date on what they are doing (Casale & Fioravanti, 2015), people with high FoMO levels tend to gravitate more towards social networking.

Additionally, FoMO plays a mediating role in explaining the link between neuroticism (Alt & Boniel-Nissim, 2018c), parent-adolescent communication problems (Alt & Boniel-Nissim, 2018b), surface learning characterized by poor self-regulation (Alt & Boniel-Nissim, 2018a), and problematic Internet use. It also mediates the link between psychopathological symptoms and the negative consequences of maladaptive SNS usage on mobile devices (Oberst et al., 2017). Furthermore, FOMO has been found

to have a mediating role on extrinsic motivation (Alt, 2015), maladjustment to college life (Alt, 2018), deficits in need satisfaction (Przybylski et al., 2013), needing to belong or be popular (Beyens et al., 2016), and excessive social media use. Taken together, previous research has indicated that FoMO may be a precursor for problematic SNS use (Kuss & Griffiths, 2017) and problematic Internet use in general (Alt & Boniel-Nissim, 2018a; 2018c).

The theory of compensatory Internet use also assumes people to be motivated to go online to compensate for their psychosocial problems (Kardefelt-Winther, 2014). In other words, they engage in online activities as a coping strategy to alleviate the negative feelings they experience due to real life stressors or a lack of social stimulation. Eventually, they feel a strong desire to spend too much time online, which in turn leads to negative outcomes. In line with this assumption, negative feelings such as FoMO may cause excessive Internet use. Based on this, the current study also proposes:

Hypothesis 2: FoMO positively relates to Internet addiction.

In addition to Internet addiction, the current study examines the influence of FoMO on psychological symptoms. In the emergent literature, not much research has been published that explicitly examines how FoMO influences mental and physical health. One study did scrutinize whether FoMO is associated with depressive symptoms, mindful attention, and physical symptoms (Baker, Krieger, & LeRoy, 2016). The results of that study showed FoMO to be positively associated with physical symptoms and depressive symptoms, while negatively associated with mindful attention. Another study examined the short- and long-term consequences of FoMO among freshman university students (Milyavskaya, Saffran, Hope, & Koestner, 2018). In that experimental study, the researchers revealed the frequent experience of FoMO to be linked to greater negative affect, stress, and fatigue and more sleep problems and physical symptoms. Based on these findings, FoMO can be argued to be related to worse physical, emotional and cognitive health. Based on this, the current study proposes:

Hypothesis 3: FoMO positively relates to psychological symptoms.

Thus, a mediated relationship is expected to exist among variables.

Hypothesis 4: Internet addiction mediates the relationship between FoMO and psychological symptoms (Figure 1).

Methods

Participants

Data have been collected from 322 university students (198 females, 124 males) with a mean age of 22.16 years (SD=±2.72, Range of 38 – 18=20). The participants were selected from two universities located in urban areas of Ankara, Turkey, using the convenience sampling method. The participants are mostly undergraduate students enrolled in the departments of Business and Administration (n=213), Psychology (n=104), and Sociology (n=5). The sample consists of 65 freshmen (20.2%), 135 sophomores (41.9%), 51 juniors (15.8%), 50 seniors (15.5%), and 21 graduate students (6.5%). Of the sample, 316 students (98%) have smartphones, 286 (88.8%) have laptops, and 148 (46%) have tablets. The majority of students (n=89; 27.6%) spend 3-4 hours a day on the Internet or using mobile technologies.

Methods

Fear of Missing Out (FoMO) Scale

The participants’ fear of missing out was assessed by the 10-item scale

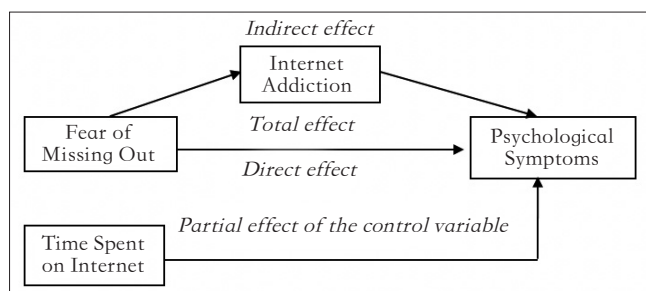


Figure 1. The hypothesized mediation model (Hayes, 2013).

developed by Przybylski et al. (2013). Participants report how true each item is (i.e., “I fear others have more rewarding experiences than me”) using a 5-point Likert scale (from 1 = “Not at all true” to 5 = “Extremely true”). FoMO scores are generated by averaging all items with higher scores indicating more fear of missing out. The scale was adapted into Turkish by Gökler, Aydın, Ünal, and Metintaş (2016) and demonstrates adequate internal consistency (Cronbach’s $\alpha = 0.81$) and validity. The current study’s Cronbach’s α is 0.76.

Internet Addiction (IA) Scale

Participants’ internet addiction has been assessed with the 20-item scale developed by Young (1998). They report how frequently they use the Internet (i.e., “How often do you choose to spend your time online rather than going out with others?”) using a 6-point Likert scale (from 1 = “Never” to 6 = “Always”). Internet addiction scores are generated by averaging all items with higher scores indicating a higher level of Internet addiction. The scale was adapted into Turkish by Bayraktar (2001) and demonstrates good internal consistency (Cronbach $\alpha=0.91$). The short-form of the scale also reveals adequate reliability and validity among Turkish university students and adolescents (Kutlu, Savcı, Demir, & Aysan, 2016). The current study’s Cronbach’s alpha is 0.90.

Brief Symptom Inventory (BSI)

The participants’ psychological symptoms are assessed using the short version (27-items) of the Brief Symptom Inventory developed by Derogatis (1977). They report how frequently they experience psychological symptoms (i.e., feeling alone, hopeless about future) using a 5-point Likert scale (from 1=“Not at all” to 5=“Extremely”). The BSI score is generated by averaging all items with higher scores indicating higher levels of experiencing psychological symptoms. The short version of the BSI was adapted into Turkish by Şahin, Batıgün, and Uğurtaş (2002) with reliability coefficients revealed between 0.70 and 0.88. The current study’s Cronbach’s alpha is 0.94.

Procedure

The participants initially filled out an informed consent form followed by the items assessing FoMO, Internet addiction, psychological symptoms, and demographic information (age, gender, department, university, grade level, and time spent on the Internet or using mobile technology). Data collection started after obtaining the approval from Atilim University Ethics Committee approval and took about 20 minutes. Students received extra credit for their voluntary participation.

Results

Preliminary Analysis

Prior to the substantive analysis, data were checked for normality and outliers. Upon examination, skewness (<2.00) and kurtosis values (<2.00) showing acceptable ranges indicates univariate normality (Klein, 2011). No outliers have been found. Missing cases have been replaced by mean imputation at random as only a few missing cases (less than 5%) occurred. The bivariate correlations have revealed time spent on the Internet to be positively correlated with FoMO, internet addiction, and psychological symptoms (Table 1). This indicates that as students spend more time on the Internet, they experience greater FoMO levels and show higher levels of psychological symptoms and Internet addiction. In addition, Internet addiction has been positively correlated with FoMO and psychological symptoms, and FoMO has been negatively correlated with students’ grade level, indicating those in higher grades to experience less FoMO. Finally, psychological symptoms have been negatively correlated with students’ age and gender and positively correlated with FoMO.

In order to examine whether individuals differ according to the study variables based on gender and age, independent samples t-test analyses have been conducted. The results show significant gender differences for BSI ($t_{(320)}=2.72, p<0.01$), with females ($M=2.16, SD=\pm 0.72$) experiencing more psychological symptoms than males ($M=1.95, SD=\pm 0.61$). However, females and males do not significantly differ according to the other variables of the study. Furthermore, the sample has been divided into two groups based on the median score of participants’ age. The results reveal significant age differences only for FoMO scores ($t_{(320)}=2.39, p<0.05$) with participants under 22 years of age ($M=2.80, SD=\pm 0.66$) showing greater FoMO than those 22 years or older ($M=2.63, SD=\pm 0.64$).

Hypothesis Testing

In order to test Hypothesis 4, which proposes that Internet addiction mediates the relationship between FoMO and psychological symptoms (Figure 1), a simple mediation analysis has been conducted using the SPSS process (Hayes, 2013). When using the time spent on the Internet as the covariate, simple mediation analysis shows FOMO to be a significant predictor of Internet addiction and Internet addiction to be a significant predictor of psychological symptoms. These predictors account for 23% of the variance in psychological symptoms ($R^2=0.23, F_{(3,318)}=30.78, p<0.001$). The indirect effect of FoMO on psychological symptoms has been tested

Table 1.
Bivariate Correlations and Descriptive Statistics

| Variable | Gender | Grade | Time | Age | FoMO | IA | BSI |
|----------|---------|--------|--------|--------|--------|--------|------|
| Gender | 1 | | | | | | |
| Grade | 0.23** | 1 | | | | | |
| Time | 0.02 | -0.02 | 1 | | | | |
| Age | 0.29** | 0.67** | -0.03 | 1 | | | |
| FoMO | -0.05 | -0.12* | 0.21** | -0.09 | 1 | | |
| IA | -0.06 | -0.09 | 0.29** | -0.07 | 0.33** | 1 | |
| BSI | -0.15** | -0.09 | 0.19** | -0.12* | 0.36** | 0.40** | 1 |
| M | | | | 22.16 | 2.71 | 2.60 | 2.07 |
| SD | | | | 2.72 | 0.65 | 0.75 | 0.69 |

* $p<0.05$; ** $p<0.01$; Time: time spent using the Internet or mobile technologies; IA: internet addiction; FoMO: fear of missing out; BSI: brief symptom inventory; SD: standard deviation.

Table 2.
Mediation Analysis for FoMO on Psychological Symptoms through Internet Addiction

| | Psychological Symptoms | | |
|-----------------|------------------------|------|------------|
| | B | SE | 95% CI |
| FoMO | | | |
| FoMO to IA | 0.32* | 0.06 | 0.20, 0.44 |
| Total Effect | 0.36* | 0.06 | 0.25, 0.47 |
| Direct Effect | 0.27* | 0.06 | 0.16, 0.38 |
| IA | | | |
| Direct Effect | 0.28* | 0.05 | 0.19, 0.38 |
| Indirect Effect | 0.09* | 0.03 | 0.05, 0.15 |

* $p < .001$; IA: internet addiction; FoMO: fear of missing out.

using a bootstrap estimation approach with 5,000 samples (Hayes, 2013). As shown in Table 2, both the direct and indirect effects of FoMO on psychological symptoms are significant, which thus provides support for partial mediation. This indicates a link among participants who have greater fear of missing out and their having higher levels of psychological symptoms both directly and indirectly to their having higher levels of Internet addiction (Figure 1).

Discussion

Internet addiction is a serious mental health problem and has received considerable attention from scholars. The current study aims to explore the relationships among Internet addiction, fear of missing out, and psychological symptoms. Supporting the hypothesized model, the results show greater fear of missing out to be linked to individuals' higher levels of psychological symptoms both directly and indirectly through higher levels of Internet addiction. These findings are consistent with previous research that has shown more social media engagement (Alt, 2015; 2018; Gil et al., 2016; Oberst et al., 2017; Przybylski et al., 2013) or problematic Internet use (Alt & Boniel-Nissim, 2018a; 2018b; 2018c; Stead & Bibby, 2017) among individuals who experience higher levels of FoMO.

In line with the theory of compensatory Internet use (Kardefelt-Winther, 2014), which proposes negative feelings to have a mediating role on online activities, the findings indicate experiencing anxiety and fear to not only act as a precursor for social media engagement but also for addictive Internet use (Stead & Bibby, 2017). This supports the notion of the Internet being used as a tool for coping with negative emotions such as fear and anxiety (Weinstein et al., 2015). A previous study conducted among Turkish adolescents (Savcı & Aysan, 2016) and another study testing the social-emotional model of Internet addiction among Turkish young adults (Savcı & Aysan, 2017) have also shown a link between negative emotions and Internet addiction.

The present study has highlighted Internet addiction to be a mediator in the relationship between FoMO and psychological well-being, which is inconsistent with the study of Stead & Bibby (2017), which revealed no evidence for the mediating role of problematic internet use in linking FoMO to subjective well-being (life satisfaction). In previous studies, scholars have demonstrated the mediating role of FoMO between deficits in need satisfaction (Przybylski et al., 2013), deficits in academic motivation (Alt, 2015), maladjustment to college life (Alt, 2018), and social media engagement. Furthermore, FoMO has been shown to act as a mediator between personality traits (Alt & Boniel-Nissim, 2018c), surface learning characterized

by poor self-regulation (Alt & Boniel-Nissim, 2018a) and/or parent-adolescent communication problems (Alt & Boniel-Nissim, 2018b), and problematic Internet use. The current study, however, elaborates by demonstrating FoMO's role in developing Internet addiction and confirming its negative impact on psychological well-being, as in prior studies (Baker et al., 2016; Milyavskaya et al., 2018). Based on these findings, it can be argued that pervasive anxiety associated with the feeling that one is missing out on others' satisfying experiences (Przybylski et al., 2013) and addictive internet use are risk factors for young people's mental health.

Practical Implications

In general, university students are considered to be at high risk for developing Internet addiction due to having more access to the Internet, more free time, more encouragement by and expectations from educators to fully use Internet resources, and less parental control over online behaviors (Kandell, 1998; Young, 2004). Therefore, recognizing the role of FoMO as a precursor to Internet addiction among young adults has provided important implications for educators and policy makers to improve health through interventions that prevent FoMO. For instance, increasing parents' and professionals' awareness on FoMO's warning signs and symptoms (Tomczyk & Selmanagic-Lizde, 2018; Wegmann et al., 2017), offering alternatives to students for connecting with others (Wegmann et al., 2017), differentiating among online activities (Tomczyk & Selmanagic-Lizde, 2018), and improving students' skills at coping with negative affects (Savcı & Aysan, 2016) may be effective strategies in preventing FoMO or minimizing its negative consequences. Furthermore, preventive interventions such as designing media education may be beneficial in increasing students' knowledge about digital threats and promoting their digital competencies (Tomczyk & Selmanagic-Lizde, 2018). Implementing these preventive interventions has great necessity particularly among risky groups such as students studying abroad as they may experience feelings of disconnect and anxiety due to less frequent face-to-face interaction with friends and family members while away (Hetz et al., 2015).

In addition, this study's findings emphasize the importance of developing preventive strategies for reducing internet addiction. A comprehensive review of preventive programs indicates programs that develop conscious and effective Internet use; increase self-esteem and academic motivation; reduce anxiety; improve communication, decision-making and problem-solving skills; make individuals aware of their strengths, emotions, peer effects, and the different types, symptoms, and consequences of addiction; and programs that develop interpersonal skills to be effective in preventing Internet addiction during adolescence (Bağatarhan & Siyez, 2017). In line with the current finding concerning the link between FoMO and Internet addiction, clinicians, especially those working with individuals suffering from Internet addiction, can be suggested to implement treatment tools that aim to eliminate negative feelings that arise when they network online.

Limitations and Directions

Several limitations of this study warrant mentioning. First, the sample consists of university students who are considered at high risk for developing Internet addiction (Kandell, 1998; Young, 2004). However, whether or not the identified relationships among FoMO, Internet addiction, and psychological symptoms exist or are the same among broader populations with different age groups (i.e. adolescents or middle-aged adults) and in different contexts (i.e. occupational settings) is not known. Therefore, the current sample limits generalizability of the findings. Second, the cross-sectional

study design prevents making causal inferences. In fact, these relationships may be reciprocal such that psychological symptoms may also trigger FoMO (Oberst et al., 2017) and addictive Internet use (Ozdemir et al., 2014). A vicious cycle may also possibly occur in which individuals use the Internet more the more they fear missing out on something happening online. As a consequence of compulsive Internet use, its negative effects might increase (Wegmann et al., 2017). Therefore, longitudinal or experimental research designs are needed to test the causal order of these relationships. Another limitation pertains to the use of self-reports, which might increase common method bias. Future research should employ different approaches in the survey method, such as behavioral techniques (i.e., Lai, Altavilla, Ronconi, & Aceto, 2016) for assessing the neurobiological correlates of FoMO and for collecting data from other resources to reduce the possible effect of social desirability bias.

In addition, because individuals use the Internet for different online activities, examining which activities may be more problematic than others would be interesting in future studies (Kuss et al., 2014). Researchers may also examine the possible predictors of FoMO, personality traits as moderators, other psychological processes (i.e., nomophobia, Bragazzi & Del Puente, 2014), and specific addictions (i.e., SNS addiction, Kuss & Griffiths, 2017) in relation to psychological symptoms. The previous research has shown the personality traits of conscientiousness and emotional stability/neuroticism to be correlated with FoMO (Alt & Boniel-Nissim, 2018c; Stead & Bibby, 2017), and the personality traits of conscientiousness, extraversion, emotional stability/neuroticism and agreeableness to be associated with problematic Internet use and overall subjective well-being (Stead & Bibby, 2017). Given this, scholars may examine the Big-Five personality traits to see whether they provide additional explanatory value to psychological symptoms while examining the effects of FoMO and internet addiction in their future research. It is also worth examining whether these relations are stronger among individuals who have a clinical disorder (i.e., mood, anxiety, or impulse-control disorders), as the current study did not consider the sample's clinical statuses. Finally, this study has only addressed psychological symptoms; however, including other indicators of health is greatly needed to uncover its link to FoMO and Internet addiction. Despite these limitations, the present findings build upon previous work by pointing out that individuals with greater fear of missing out may show more addictive behaviors and poorer psychological well-being. Thus, the present study provides an insight into our understanding of the psychological and behavioral aspects of Internet addiction (Alt & Boniel-Nissim, 2018c) and thus makes an important contribution to promoting mental health. Nevertheless, the increasing rates of Internet addiction necessitates further research for a better understanding of its precursors and for the development of effective intervention strategies.

Ethics Committee Approval: Ethics committee approval was received for this study from Atilim University Ethics Committee (date: 08.05.2018; no: 59394181-604.01.01-2822).

Informed Consent: Written informed consent was obtained from the individuals who participated in this study.

Peer-review: Externally peer-reviewed.

Conflict of Interest: The author has no conflicts of interest to declare.

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