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Factors mediating social media-induced fear of missing out (FoMO) and social media fatigue: A comparative study among Instagram and Snapchat users

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A R T I C L E   I N F O

A B S T R A C T

The proliferation of social media platforms has provided researchers with ample opportunities to explore the implications of these platforms' positive and negative use. Focusing on the latter, the literature has highlighted the severe implications of the fear of missing out (FoMO) and its associations with negative aspects of social media use, such as the problematic use of social media, phubbing, and reduced well-being. Our study investigates the association between FoMO and social media fatigue, which is mediated by information and communication overload, online subjective well-being (OSWB), and compulsive social media use (compulsive use). The proposed model is grounded strongly in self-determination theory (SDT), the theory of compensatory Internet use (TCIU), and the limited-capacity model of motivated mediated message processing (LC4MP). We tested the model using two independent cross-sectional data sets collected from Instagram and Snapchat users. Our findings, which align with TCIU, suggest that FoMO is positively associated with information overload and compulsive use for both Instagram and Snapchat users. For Snapchat users, FoMO is also positively associated with communication overload and OSWB. The overuse aspect associated with TCIU is explained in the strong positive associations between FoMO and compulsive use among both Instagram and Snapchat users. In addition, OSWB, information overload, and compulsive use are positively associated with social media fatigue for users of both platforms. In contrast, communication overload significantly predicts social media fatigue for Snapchat users only.

1. Introduction

Recently published data have confirmed an appreciable increase in the number of daily active Snapchat users—from 190 million in the first quarter of 2019 to 280 million in the first quarter of 2021 (Statista, 2022). Similarly, in January 2019, Instagram had 500 million daily active Story users, which represents an increase of 100 million since June 2018 (Statista, 2022). This drastic expansion of online social media platforms (SMPs) has noticeably impacted all stakeholders and attracted researchers' interest (Dhir et al., 2018; Kaur et al., 2021c). Scholars have extensively examined the positive facets of SMP use, including improvements in self-esteem, social connection and support, and relationship management as well as commercial benefits (Nadeem et al., 2015; Phua et al., 2017; Piwek and Joinson, 2016). However, researchers have increasingly begun to investigate the negative impact of SMP use, or the "dark side of social media use" (Dhir et al., 2021; Salo et al., 2018), on individual well-being. This "dark side" includes problematic usage patterns (Blackwell et al., 2017), such as social media

stalking (Dhir et al., 2021; Kaur et al., 2021b; Tandon et al., 2020), sleep-related issues (Kaur et al., 2021a; Milyavskaya et al., 2018; Tandon et al., 2020), and poor psychosocial well-being manifested in depression, anxiety, and loneliness (Baker et al., 2016; Bodhi et al., 2021a).

Prior studies have argued that affordable access to SMPs has increased their use to almost addictive levels (Dhir, 2015), making them contributory agents toward the diminished well-being of SMP users (Gezgin et al., 2017). In addition, many researchers have acknowledged an anxious psychological state, i.e., fear of missing out (FoMO), as a root cause of users' high SMP engagement (Rosen et al., 2018; Wolniewicz et al., 2017). Scholars have also recognized FoMO as an antecedent of various (a) problematic behavioral manifestations, such as compulsive social media use (Blackwell et al., 2017; Dhir et al., 2018) and phubbing (Chotpitayasunondh and Douglas, 2016; Tandon et al., 2022; Yousaf et al., 2022), and (b) irresponsible behaviors, such as messaging while driving (Appel et al., 2019; Przybylski et al., 2013; Tandon et al., 2021a). While most past research has confirmed these findings among Facebook users, the literature has left other SMPs, such as Instagram and Snapchat, relatively understudied (Moore and Craciun, 2021; Rozgonjuk et al., 2020; Tandon et al., 2021c).

A brief literature review on FoMO, thus, reveals two critical research gaps that limit our current understanding of FoMO: (a) insufficient evidentiary knowledge of FoMO's manifestation and possible variations in user behavior and well-being in the context of Instagram and Snapchat (Tandon et al., 2021a) and (b) limited knowledge of the underlying complex associations between FoMO and the emerging adverse consequences of SMP use, such as overload, fatigue, and compulsive social media use (Tandon et al., 2021c; Wang, 2021). Furthermore, relatively few studies have investigated FoMO as a factor predicting individuals' experience of the dark side of social media phenomena, including fatigue (Tandon et al., 2021a).

To address these gaps, this study aims to answer the following research questions: *RQ1. To what extent do overload, online well-being and compulsive social media use mediate FoMO's effect on social media fatigue (SMF)? RQ2. Do Snapchat and Instagram users experience SMF differently, and if so, how?* The present study attempts to answer these questions by proposing a model to test the association of FoMO with social media fatigue (SMF) while also considering the mediating roles of overload, well-being, and compulsive social media use. We draw upon three popular theoretical frameworks from psychology and communication—self-determination theory (SDT; Deci and Ryan, 1985), the theory of compensatory Internet use (TCIU; Kardefelt-Winther, 2014), and the limited-capacity model of motivated mediated message processing (LC4MP; Lang, 2006)—to ground some of the proposed associations. We test the research model using two independent cross-sectional data sets collected from Instagram ($N = 349$) and Snapchat ($N = 543$) users.

The novelty of this study is its tripartite extension of the prior emerging literature on FoMO. First, most prior studies on FoMO have examined Facebook users (Stead and Bibby, 2017) and SMPs in general (Barry et al., 2017; Gezgin et al., 2017; Oberst et al., 2017), and most of these studies have considered FoMO as an indirect influencer (Tandon et al., 2021b). Our study extends the extant literature by investigating FoMO's direct impact on the variables mentioned above for Instagram and Snapchat, which are relatively understudied platforms. Second, Instagram and Snapchat differ from other SMPs in terms of the affordances and features they offer. Therefore, it is worth investigating whether users' behavior changes across platforms. Although the prior literature has suggested the limited likelihood of behavioral manifestations changing from one platform to another (Dhir, 2015; Rozgonjuk et al., 2020), we enrich the current knowledge by conducting a comparative study to confirm or challenge this proposition. Third, Instagram and Snapchat are quite popular among young people, a particularly active group of social media users. Therefore, the negative consequences of FoMO on these users' well-being cannot be ignored. Our study thus has the potential to advance the current understanding of

FoMO's manifestation on these platforms in the context of their most popular users, i.e., young adults.

The remainder of the paper is structured as follows. Section 2 reviews the literature regarding the research model's constructs. Section 3 provides the theoretical underpinnings and presents the proposed research model. Sections 4 and 5 explain the research methodology and the results from the data analysis, respectively. Section 6 discusses the results, and Section 7, finally, concludes the study by highlighting its theoretical and practical implications and limitations.

2. Concepts and background

2.1. Fear of missing out (FoMO)

FoMO represents social media users' continuous apprehension that others may be enjoying more fulfilling experiences when they are not connected with them in the online space (Przybylski et al., 2013). FoMO thus drives users to remain continuously connected to online platforms, leading to excessive use (Cao et al., 2018; Rosen et al., 2018) and associated adverse behaviors (Stead and Bibby, 2017). Notably, prior research has equated FoMO with a form of "*technological anxiety*," representing the unease that users feel when they are unable to engage with technological devices (Rosen et al., 2018). FoMO can be understood as an expression of an individual's need to seek relatedness and connection, which has been intrinsically associated with the use of SMPs and allied networking platforms (Przybylski et al., 2013). Although recognized less than a decade ago (Tandon et al., 2021a), FoMO is rooted in one of the critical theories of psychology—SDT (Deci and Ryan, 1985). SDT argues that individuals' constant desire for social support makes them turn to their social connections to fulfill relatedness needs. This supposition may be a crucial reason for FoMO's strong emergence among SMP users seeking personal connections. Following the recognition of FoMO, moreover, research has shown its link to adverse consequences that transcend mental health issues (Barry et al., 2017) and individual well-being outcomes (Błachnio and Przepiórka, 2018), including social media addiction (Wolniewicz et al., 2017), academic consequences (Alt, 2015), and work-related outcomes (Bodhi et al., 2022; Tandon et al., 2021b).

2.2. Social media fatigue

SMF describes the negative emotions (e.g., stress, exhaustion, and lack of energy) that arise from social media use (Maier et al., 2012; Ravindran et al., 2014; Ballerini et al., 2022). SMF is a subjective measure of an individual's level of tiredness, boredom, or burnout from social media usage (Zhu and Bao, 2018). Based on these two conceptualizations, SMF can manifest physically and psychologically. However, the "subjective" nature of SMF is an underlying commonality of various definitions for the concept, which means that different individuals will experience different levels of fatigue under the same circumstances (Zhu and Bao, 2018).

In the past five years, scholars have studied a variety of issues associated with SMF, including privacy concerns and user confidence (Bright et al., 2015), psychological well-being (Dhir et al., 2018), platform, community, and individual factors (Ravindran et al., 2014), and overload (Shin and Shin, 2016; Zhang et al., 2016). Past research has shown that SMF is a multi-faceted construct that can affect individuals in various ways. However, the current information on this construct is drawn primarily from Facebook-related studies, thus underscoring a lacuna in knowledge related to SMF's manifestation across other SMPs (Zheng and Ling, 2021).

2.3. Technology overload

Overload refers to an individual's subjective evaluation of a condition wherein the number of tasks or requests exceeds the individual's threshold or ability such that he or she cannot handle additional requests

or information (Karr-Wisniewski and Lu, 2010; Lee et al., 2016a; Lee et al., 2016b). This conceptualization can also be extended to understand technology overload. Technology overload is defined in terms of the "*productivity paradox,*" which posits that a decline in knowledge and workers' productivity can be attributed to an increase in their use of information technology (Karr-Wisniewski and Lu, 2010). Technology overload incorporates three specific forms: communication, system-feature, and information (Karr-Wisniewski and Lu, 2010).

Communication overload refers to the constantly connected environment that technology creates, which produces situations where individuals can be overwhelmed by the communication demands they face (Cao and Sun, 2018). System-feature overload, which does not fall within the boundaries of our investigation, represents an individual's ability to cope with the number of features a system offers users to execute various tasks (Karr-Wisniewski and Lu, 2010). We chose to exclude this form from our study following Islam et al. (2018), who conceptualized social media overload only in the forms of information and communication overload. We also believe that young adults' proficiency in SMP usage in their daily lives should sufficiently familiarize them with the platforms' features and thus negate the possibility of them experiencing system-feature overload. The third type of technology overload—information overload—represents a person's ability to comprehend the large volume of information he or she receives through various forms of media (Karr-Wisniewski and Lu, 2010).

Scholars have suggested that social media users constantly experience overload because they are constantly bombarded by new information (Cao and Sun, 2018; Gezgin et al., 2017). For instance, Cao and Yu (2019) showed that excessive social and hedonic use of social media in a work environment increases technology–work conflict. According to the authors, this conflict results from the overload employees experience as a result of their social media use for work-related social, hedonic and cognitive activities. Because SMPs and IT are becoming integral components of individuals' personal and professional lives, it is imperative to investigate the impact of technology overload on well-being.

2.4. Online subjective well-being (OSWB)

Subjective well-being represents an individual's affirmative or adverse self-evaluation of his or her mental state or condition (OECD, 2013, p. 29). SWB is a broad multidimensional concept, which has been well studied in the context of offline space, i.e., real-life (Diener et al., 2015; Verduyn et al., 2017). However scholars have only recently begun examining various aspects of online SWB (OSWB), which is considered a vital issue among online social media users (Jung et al., 2017; Kaur et al., 2021c; Nisar and Shafiq, 2019; Verduyn et al., 2017).

OSWB refers to an individual's self-evaluation (positive or negative) of his or her own online social media life. For instance, if a person's online social media life is close to ideal and the person has gained something of importance from it, the person will evaluate his or her OSWB as excellent and satisfying (Kaur et al., 2021c). Given that scholars have devoted attention to the relationship between FoMO and various well-being measures, such as life satisfaction (Przybylski et al., 2013; Ayyıldız and Şahin, 2022), anxiety, (Dempsey et al., 2019) depression, and stress (Beyens et al., 2016; Kartol and Gündoğan, 2020), it may be beneficial to examine the potential associations between OSWB and FoMO-driven SMP usage and thus develop a more nuanced understanding of the complexities of SMP users' psychology and expected benefits.

2.5. Compulsive social media use

Compulsive behavior refers to an individual's lack of self-regulation over specific behaviors (Hirschman, 1992). In the past decade, scholars have examined the factors related to, and the consequences of, compulsive SMP use (Hsiao, 2017; Quinones and Griffiths, 2017; Yao and Cao, 2017). Scholars have variously conceptualized compulsive

SMP use as social media addiction (van den Eijnden et al., 2016) and problematic social media use (Wolniewicz et al., 2017), among others.

The compulsive use of social media is not necessarily associated with the medium but rather with the online activities themselves (van den Eijnden et al., 2016) and the expected gains associated with using the medium. For example, a study involving university students in Malaysia suggested that motivation to use YouTube for entertainment purposes lead to its compulsive use (Klobasa et al., 2018). Scholars have extensively investigated the associations of compulsive use with adverse behavioral aspects, such as interaction anxiety (Aladwani and Almarzouq, 2016; Richter, 2018), and with indicators of diminished mental well-being, such as mental disorders (Andreassen et al., 2017) and cognitive and emotional preoccupation (Cao et al., 2018). Meanwhile, researchers have paid relatively less attention to the association between compulsive social media use and FoMO. In one of these limited studies, for example, Dhir et al. (2018) found that FoMO mediated the relationship between compulsive social media use and SMF. We emphasize the need for additional studies to investigate the direct associations between these phenomena and thus gain in-depth knowledge on the underlying mechanisms that can cause SMP users to experience the dark side of social media phenomena.

3. Theory and research model

3.1. Theoretical background

3.1.1. The theory of compensatory Internet use (TCIU)

The TCIU proposes that people engage with Internet-based SMPs as a mechanism for coping with the adverse situations and negative feelings they experience (Kardefelt-Winther, 2014). The theory further suggests that such compensatory use can lead to the overuse of technology and produce negative outcomes. Past studies have applied the theory to understand FoMO (Wang et al., 2018) and excessive social media use (Wang et al., 2016). The present study utilizes this theory to explain how one negative manifestation, such as FoMO, can lead to other negative manifestations, such as compulsive social media use (Tandon et al., 2020), phubbing (Tandon et al., 2022), and fatigue (Tandon et al., 2021c).

3.1.2. Self-determination theory (SDT)

Propounded by Deci and Ryan (1985), SDT is comprised of six mini-theories. It discusses the inherent human need to grow and make sense of the self by gathering social support. The theory contends that supportive social conditions and feelings of relatedness, such as those individuals seek on SMPs, can improve individuals' performance and well-being (Tandon et al., 2020). The theory helps us to better elucidate FoMO, the most important construct in our model. It follows from SDT that individuals' constant desire to evolve with social support drives them toward social media for relatedness and connectedness (Talwar et al., 2019). Beyens et al.'s (2016) study supported this assertion that adolescents' increased need to belong and their increased need for popularity were related to their increased use of Facebook. Wang et al. (2018) reported that FoMO moderated adolescents' need to belong and adolescents' authentic self-presentation on social media sites.

3.1.3. The limited-capacity model of motivated mediated message processing (LC4MP)

LC4MP (Lang, 2006) combines communication research, psychology, and cognitive science to explain human communication and information-processing behaviors. A fundamental tenet of this model is that an individual's cognitive capacity to process received information is limited. The model describes three dimensions of information processing: encoding, storage, and decoding. Cognitive limitations can inhibit one or all of these dimensions, thereby influencing outcomes, such as persuasion, pleasure, and learning, that the received information could have produced. Among the arguments of the model is that limited

information-processing capacity imposes constraints on the ways in which messages are processed. We invoke this argument to hypothesize that FoMO is likely to result in information and communication overload for SMP users with high usage levels who are bombarded with excessive information and messages by their social connections. This volume of information challenges their processing ability and causes them stress; therefore, these SMP users experience adverse outcomes, such as fatigue (Tandon et al., 2021c) and exhaustion (Dhir et al., 2018).

3.2. Proposed research model

The current study examines FoMO as an antecedent of SMF while also considering the mediating influence of OSWB, compulsive social media use, and technology overloads (information and communication). Fig. 1 presents the proposed research model, indicating the hypothesized relationships that are, to the best of our knowledge, understudied in the extant literature.

3.3. FoMO and technology overload

A study by Gezgin et al. (2017) confirmed that the more social media accounts users have, the stronger their experience of FoMO. In this context, scholars have found that users with more than seven accounts experience the highest levels of FoMO because they continually receive updates and news from their connections (Gezgin et al., 2017). Brandtzæg (2012) likewise argued that having more than one social media account increases the possibility of information overload. Because both FoMO and information overload are related to high levels of social media use, it is important to examine whether the two exhibit any association. One of the reasons to anticipate such an association is that social media feeds the needs of individuals with a high level of FoMO by enabling them to remain continually connected to their social networks (Gezgin et al., 2017; Stead and Bibby, 2017). This continual connection generates a tremendous amount of information, resulting in overload, which is associated with stress and overwhelm (Lee et al., 2016b). This contention is consistent with the LC4MP. The above studies thus provide sufficient evidence to anticipate an association between information overload and FoMO. Therefore, we propose the following hypothesis:

H1. FoMO is positively associated with a high degree of information overload.

Scholars have shown that both high and low synchronous communication channels (i.e., computer-mediated communication) result in communication overload (Cho et al., 2011). Notably, social media, which provides a constantly connected environment, can also impede individuals' efforts to cognitively manage the demands imposed by such a communication-rich environment (Zhang et al., 2016). Because users' cognitive capacity to handle information is limited (Lang, 2006), the continuous communication enabled by SMPs may leave users overwhelmed (Cao and Sun, 2018) and adversely impact their psychological health and well-being (Reinecke et al., 2017). To the best of our knowledge, despite the intuitive link between the two, few studies have empirically confirmed FoMO's association with communication overload. For instance, Whelan et al. (2020) found that FoMO was strongly associated with communication overload. Based on the above discussion and the propositions of LC4MP, we posit as follows:

H2. FoMO is positively associated with a high degree of communication overload.

3.4. FoMO and OSWB

The prior literature has examined the associations between FoMO and various measures of offline SWB, including life satisfaction (Przybylski et al., 2013), sleep-related issues (Evers et al., 2020; Tandon et al., 2020), stress (Beyens et al., 2016; Milyavskaya et al., 2018), fatigue (Milyavskaya et al., 2018), reduced mindfulness (Baker et al., 2016), and addictive personalities and tendencies (Blackwell et al., 2017; Chotpitayasunondh and Douglas, 2016). While these studies have established a link between FoMO and specific individual measures of SWB, to the best of our knowledge, no prior study has examined the association between FoMO and OSWB as an overarching measure of individual well-being.

Furthermore, most existing studies have been conducted in the context of Facebook, while only a few have argued that newer image-based SMPs, such as Instagram, increase life satisfaction and happiness (e.g., Pittman and Reich, 2016). However, we believe that the extant literature supports the influence of SMP use on OSWB due to the positive benefits—such as interpersonal connectivity (Mäntymäki and Islam, 2016) and opportunities for self-disclosure (Kaur et al., 2021c)—users seem to derive from the use of these platforms. Because research has indicated a positive link between SMP use and FoMO, we argue for a positive association between FoMO and OSWB. While our argument contradicts the majority of existing studies, which have highlighted the
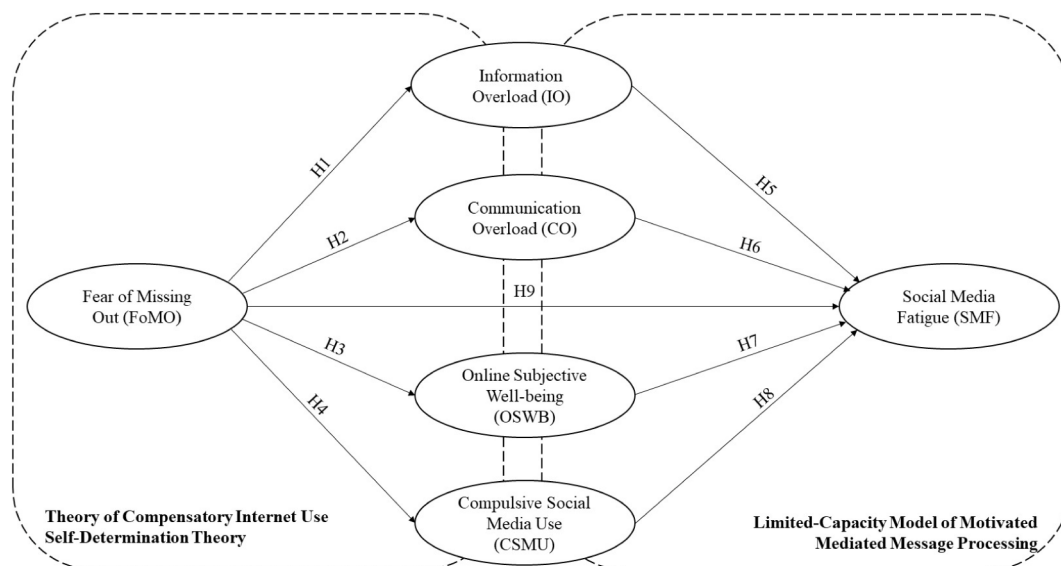

Fig. 1. Research model and proposed hypotheses.

negative outcomes of FoMO (e.g., Evers et al., 2020; Tandon et al., 2020), we base our supposition on recent studies suggesting that OSWB can also share a positive association with SMP use and its associated phenomena. For instance, Kaur et al. (2021c) found that SMP users' expectations of the OSWB derived from these platforms can enhance their tendency to self-disclose information and reduce their fatigue. To the best of our knowledge, however, no empirical evidence exists for a direct association between FoMO and OSWB, especially for the platforms examined in this study. However, as the literature supports our supposition of a positive association, we propose to test the following hypothesis:

H3. FoMO is positively associated with a high degree of OSWB.

3.5. FoMO and compulsive social media use

The prior literature has linked compulsive social media use with FoMO, and multiple studies support our supposition that the two are positively related (Tandon et al., 2021b). Research suggests that FoMO fuels the excessive use of smartphones (i.e., phubbing; Tandon et al., 2022) and social media (Oberst et al., 2017; Wegmann et al., 2017), which could stimulate compulsive SMP use. For example, Tandon et al. (2020, 2021a, 2021b, 2021c) found FoMO to be strongly and positively associated with employees and young adult students' compulsive SMP use. Wang et al. (2018) invoked TCIU (Kardefelt-Winther, 2014) to reveal that a higher level of FoMO could result in the excessive compensatory use of SMPs to satisfy users' needs for relatedness. FoMO may also lead individuals to use smartphones compulsively (i.e., engage in phubbing; Tandon et al., 2022) to access mobile apps, such as Instagram and Snapchat (Statista, 2020). Based on existing research, we thus expect a positive association between FoMO and SMF and propose the following hypothesis:

H4. FoMO is positively associated with a high degree of compulsive social media use.

3.6. Technology overload and social media fatigue

Literature has demonstrated the positive association of information overload (Lee et al., 2016a; Zhang et al., 2016) and communication overload with SMF (Lee et al., 2016a). For instance, Lee et al. (2016a) found that communication overload was a significant stressor for social media users, resulting in SMF. In another study, Maier et al. (2015) showed that social overload contributes significantly to social networking exhaustion. Similarly, Islam et al. (2018) conceptualized information and communication overloads as social media overload and found both to be linked positively with SMF. They further reported that communication overload exerted a more critical impact on SMF than did information overload. These findings also lend credence to our understanding that in light of LC4MP, information and communication overload can be understood to increase SMF (Lang, 2006). Facing a continuous flow of information from various social media platforms, users are likely to be overwhelmed by their efforts to process information, and this overwhelming feeling can produce stress and fatigue. With the prior literature linking both information and communication overload to SMF for social media in general, we anticipate the same relationships among Instagram and Snapchat users and propose the following hypotheses:

H5. Information overload is positively associated with a high degree of SMF.

H6. Communication overload is positively associated with a high degree of SMF.

3.7. OSWB and social media fatigue

The prior literature suggests that individuals use SMPs because they expect SMPs to increase their satisfaction with life and their feelings of well-being (Bodhi et al., 2022; Pittman and Reich, 2016). However, excessive or problematic SMP use often engenders negative emotions (Elhai et al., 2016; Oberst et al., 2017; Wolniewicz et al., 2017) and technology overload, which can reduce SMP users' psychological well-being (Choi and Lim, 2016). Many prior studies have also reported the connection of social media usage with stress, fatigue, and exhaustion (Dhir et al., 2018). Fatigue also decrease life satisfaction (Lee et al., 2016b), thereby negatively impacting users' OSWB. While research has yet to determine whether reduced OSWB due to SMP use increases SMF, the negative association of OSWB with SMF can be intuitively proposed since any user with high levels of perceived fatigue could experience reduced well-being, and vice versa. Thus, although no a priori evidence exists, we expect Instagram and Snapchat users with low OSWB to experience high SMF, and propose the following hypothesis:

H7. OSWB is negatively associated with a high degree of SMF.

3.8. Compulsive social media use and social media fatigue

Prior empirical studies have linked compulsive social media use with negative behavioral outcomes, such as emotional fatigue (Lin et al., 2012). For instance, Oberst et al. (2017) reported a high likelihood of psychological distress (e.g., anxiety or depression) among individuals engaged in heavy social media usage, contingent on their gender. Tarafdar et al. (2019) further explained that SMP addiction (characterized by compulsive social media use) is influenced by the use of SMPs as a distraction to mitigate contextual (e.g., SMP related) stressors. The underlying assumption of TCIU (Kardefelt-Winther, 2014) is that technology overuse to compensate for negative feelings in life can produce other negative outcomes. Given the emotional and physical exertion associated with compulsive tendencies (Pontes, 2017), it is plausible to anticipate that compulsive social media use will increase SMF by leveraging TCIU. Past studies reporting a positive relationship between compulsive social media use and SMF support our supposition (Dhir et al., 2018). Drawing upon the past literature, we expect the same association between compulsive social media and SMF for Instagram and Snapchat users. Hence, we propose the following hypothesis:

H8. Compulsive social media use is positively associated with a high degree of SMF.

3.9. FoMO and social media fatigue

Although the association has been less studied, prior research has empirically established a significant link between FoMO and SMF (e.g., Milyavskaya et al., 2018). In the context of advertising, for example, Bright and Logan (2018) found that individuals subscribe to various brand-related advertisements to avoid FoMO and that excessive subscriptions lead these individuals to experience fatigue. Similarly, in a recent study, Tandon et al. (2021c) determined FoMO to have a significant positive association with SMF contingent on the mediating influence of the SMP activities, such as social media stalking, in which users engaged. Furthermore, according to TCIU (Kardefelt-Winther, 2014), SMP users significantly depend on SMPs to compensate for their negative feelings, leading to the problematic usage of these platforms and their experience of increased fatigue. We believe that users with high levels of FoMO will be tempted to spend progressively greater amounts of time engaging in information and communication exchanges on SMPs, which would ultimately result in SMF. Although prior research on this association has primarily focused on Facebook, we anticipate a similar association of FoMO with SMF among Instagram and Snapchat users and posit as follows:

H9. FoMO is positively associated with a high degree of SMF.

3.10. The mediating roles of overload, online subjective well-being, and compulsive social media use

Prior research has identified multiple antecedents of SMF, including information and communication overload (Lee et al., 2016a; Reinecke et al., 2017; Shin and Shin, 2016; Zhang et al., 2016), compulsive social media use (Dhir et al., 2018), and OSWB (Elhai et al., 2016; Oberst et al., 2017; Wolniewicz et al., 2017). However, scholars have also established that FoMO influences most of the antecedents mentioned above. For example, while Tandon et al. (2020) and Tandon et al. (2021b) determined FoMO to predict compulsive social media use, Whelan et al. (2020) found FoMO to be positively associated with both information and communication overloads. Moreover, scholars have linked continual FoMO-driven SMP usage to users' OSWB (Pittman and Reich, 2016) and posited that OSWB may be positively associated with SMF. While discrete investigations of FoMO's consequences and SMF's antecedents appear aimed at similar variables (i.e., compulsive use, OSWB and overloads), no prior study, to our knowledge, has investigated them jointly. Because research has found SMF to result from SMP use and the communications therein (i.e., network heterogeneity), we expect information and communication overloads and compulsive social media use to mediate the impact of FoMO on users' experienced fatigue. The existing literature on the dark side of social media, which suggests that its inherent phenomena (e.g., fatigue and FoMO) may ensnare users in a vicious cycle (Verduyn et al., 2017), supports our proposition. We contend that the dark side of social media phenomena may cause individuals to engage in excessive SMP usage. In turn, excessive usage would individuals' experience of the dark side of social media phenomena (Boursier et al., 2020; Liu and He, 2021; Talwar et al., 2019). Our argument for the mediating influence of the selected overloads, compulsive social media use, and OSWB on the association between FoMO and SMF also answers the call for further research into the multidimensionality of the dark side of social media (Baccarella et al., 2018). In addition, it furthers our understanding of the complex associations between the studied variables in the context of Instagram and Snapchat. Thus, based on the above discussion, we propose the following hypotheses:

H10a. Information overload mediates the relationship between FoMO and SMF.

H10b. Communication overload mediates the relationship between FoMO and SMF.

H10c. OSWB mediates the relationship between FoMO and SMF.

H10d. Compulsive social media use mediates the relationship between FoMO and SMF.

4. Methods and data

4.1. Method

The data analysis involved two steps. First, we examined reliability and validity using confirmatory factor analysis. The second step involved testing the applicability of the proposed hypotheses using structural equation modeling. We utilized IBM AMOS 25 for the structural model testing and executed descriptive and correlational analyses, common method bias analyses, and mediation analyses using IBM SPSS 25. The mediation effects in the theoretical model were examined by testing a multi-mediation model using bootstrapping (MacKinnon et al., 2004).

4.2. Sampling

The current study employed two cross-sectional data sets collected separately from Instagram and Snapchat users. Self-report questionnaires are popular for measuring online behavior because they enable researchers to cover a large population in a short period (Kuhlemeier and Hemker, 2007; van Deursen et al., 2012). Although the current study utilized convenience sampling, the process followed specific and carefully established criteria suggested by Akrout and Nagy (2018). We selected respondents based on two conditions. First, study participants had to be actively using Instagram or Snapchat over the previous three months; second, study participants had to be late adolescents or young adults aged 18 to 24 years. Data collection was conducted using a pencil-and-paper survey.

Study (Sample) A included 349 Instagram users. The participants' ages ranged from 18 to 23 years (73.6 % [$N = 257$] females), with an average age of 20.24 years (SD = 1.53). Study (Sample) B included 543 Snapchat users. Their ages ranged from 18 to 24 years (65.2 % [$N = 354$] females), with a mean age of 20.85 years (SD = 1.67 years). Survey participation was anonymous and voluntary, and all respondents provided their informed consent.

4.3. Measurement

We drew the study measures and measurement items from the extant literature and adapted them to the context of the present study. Scholars have extensively employed these measures to survey diverse cultural and demographic groups, suggesting the presence of sufficient content validity and reliability. We pilot tested the survey protocol with 15 target participants, i.e., young adult Instagram and Snapchat users, to determine whether any measurement items were unclear. Additionally, the prior literature (as well as this study) confirmed the psychometric properties of the measures, providing sufficient scientific grounds for generalizability. Table 1 presents the study variables, measurement items, and factor loadings.

5. Results

5.1. Common method bias

Because the study employed a self-reported cross-sectional design, we needed to confirm the absence of common method bias. We followed a multi-pronged approach for this purpose. First, we adopted a rigorous questionnaire development procedure by conducting a pilot survey and adopting survey measures with sufficient content validity and reliability. We also carefully selected respondents. Second, we conducted Harman's single-factor test using SPSS (Podsakoff et al., 2003). The variance explained was 23.86 % for Instagram users and 37.29 % for Snapchat users. The variance explained for both data sets was <50 %, suggesting the absence of bias. Third, we applied a marker-variable technique (Zeugner-Roth and Žabkar, 2015), confirming that bias was not an issue.

5.2. Measurement model

The measurement model returned a good model fit indicating a good match between the theoretical model and empirical data for both Instagram ($X^2/df = 1.86$, *CFI* = 0.96, *TLI* = 0.94, *RMSEA* = 0.05) and Snapchat ($X^2/df = 2.53$, *CFI* = 0.96, *TLI* = 0.95, *RMSEA* = 0.05) users. The output also confirmed the presence of sufficient convergent validity because the loadings for all measurement items exceeded 0.50, with the exception of one item for FoMO where the loading for Instagram users was 0.47 (Table 1). The average variance extracted (AVE) and composite reliability (CR) for the study measures exceeded 0.50 and 0.70, respectively (Hair et al., 2013; Tables 2 and 3). The study measures across both data sets confirmed the presence of sufficient discriminant validity because none of the correlations between study measures exceeded 0.70, and the square root of the AVE of each measure exceeded the correlation of that measure with other measures (Fornell and Larcker, 1981; Tables 2 and 3). Construct reliability was also confirmed because the CR for all study measures exceeded the threshold limit of

Table 1
Study measures, measurement items, and factor loadings.

Study measures (Reference)	Measurement items	Instagram		Snapchat	
		CFA	SEM	CFA	SEM
Information overload (IO) (Karr-Wisniewski and Lu, 2010)	IO1: I am often distracted by the excessive amount of information on SM*.	0.75	0.74	0.80	0.80
	IO2: I am overwhelmed by the amount of information that I process daily on SM*.	0.76	0.76	0.79	0.79
	IO3: It feels difficult to synthesize too much information on SM*.	0.70	0.71	0.78	0.79
Communication overload (CO) (Cho et al., 2011)	CO1: I receive too many messages from friends/family through SM*.	0.80	0.81	0.78	0.77
	CO2: I have to send many more messages to friends on SM* than I would send.	0.74	0.75	0.81	0.81
	CO3: I get too many notifications of SM* postings and messages.	0.80	0.80	0.83	0.83
	CO4: I receive more messages, news from SM* friends than I can digest.	0.76	0.76	0.72	0.72
Online subjective well-being (OSWB) (Diener et al., 1985)	OSWB1: The conditions of my online social life on SM* are excellent.	0.77	0.78	0.81	0.80
	OSWB2: I am satisfied with my online social life on SM*.	0.74	0.74	0.80	0.83
	OSWB3: I have obtained important things I want from my social life on SM*.	0.65	0.63	0.71	0.69
Compulsive social media usage (CSMU) (Andreassen et al., 2012)	CIUS1: I spent a lot of time thinking about SM* or planned use of SM*.	0.75	0.76	0.78	0.78
	CIUS2: I have felt an urge to use SM* more and more.	0.83	0.83	0.87	0.87
	CIUS3: I have used SM* in order to forget about personal problems.	0.55	0.53	0.76	0.76
Fear of missing out (FoMO) (Przybylski et al., 2013)	FoMO1: I fear others have more rewarding experiences than me.	0.90	0.90	0.82	0.82
	FoMO2: I fear my friends have more rewarding experiences than me.	0.82	0.81	0.86	0.86
	FoMO3: I get anxious when I don't know what my friends are up to.	0.47	0.48	0.59	0.59
SM* fatigue (SMF) (Bright et al., 2015)	F1: I am likely to receive too much information when I am searching on SM*.	0.79	0.78	0.84	0.82
	F2: I am frequently overwhelmed by the amount of information available on SM*.	0.85	0.83	0.87	0.85

Note: *SM = Instagram/Snapchat, CFA = factor loadings for measurement model, SEM = factor loadings structural model.

0.70 (Tables 2 and 3).

5.3. Results of direct effects

The structural equation model built to evaluate the hypotheses

returned an acceptable model fit for Instagram (X^2/df = 2.50, CFI = 0.92, TLI = 0.90, RMSEA = 0.07) and Snapchat (X^2/df = 3.99, CFI = 0.93, TLI = 0.91, RMSEA = 0.07) users. The structural model explained approximately 29 % and 52 % of the variance in SMF among Instagram and Snapchat users, respectively. Additionally, FoMO explained 8.2 % and 7.5 % of the variance in information overload, 1 % and 1.7 % of the variance in communication overload, 0.3 % and 1.3 % of the variance in OSWB, and 6 % and 10.8 % of the variance in compulsive social media use among Instagram and Snapchat users, respectively (Figs. 2 and 3).

Table 4 presents the results of the hypotheses testing. The path analysis showed that FoMO had a significant relationship with information overload and compulsive social media usage among both Snapchat (β = 0.27, p < .001; β = 0.33, p < .001) and Instagram (β = 0.29, p < .001; β = 0.24, p < .001) users. These results fully supported H1 and H4. However, FoMO had a significant relationship with communication overload (β = 0.13, p < .01) and OSWB (β = 0.12, p < .05) among Snapchat users only. For Instagram users, however, communication overload (β = 0.10, p > .05) and OSWB (β = 0.05, p > .05) had no relationship with FoMO. Thus, H2 and H3 were partially supported.

Information overload, OSWB, and compulsive social media usage exhibited significant associations with SMF among both Snapchat (β = 0.18, p < .05; β = 0.44, p < .001; β = 0.28, p < .001) and Instagram (β = 0.19, p < .05; β = 0.44, p < .001; β = 0.21, p < .001) users. In contrast, communication overload significantly influenced SMF only in the case of Snapchat users (β = 0.17, p < .05); meanwhile, it exerted no influence on fatigue among Instagram users (β = 0.07, p > .05). Thus, the study results provided full support for H5, H7, and H8 but only partial support for H6. Finally, FoMO had no significant direct influence on SMF among either Instagram (β = −0.11, p > .05) or Snapchat (β = −0.02, p > .05) users. Thus, H9 was not supported.

5.4. Results of indirect effects

We performed a mediation analysis to investigate the possible mediating influence of information overload, communication overload, OSWB, and compulsive social media usage on the association between FoMO and SMF (Tables 5 and 6). We employed Model 4 PROCESS macro in SPSS to examine the direct and indirect effects (Hayes, 2012). As prior scholars have suggested (Efron and Tibshirani, 1993), the absence of zero in the confidence intervals proves the presence of indirect or direct effects.

As mentioned above, FoMO had an insignificant direct effect on SMF among both Snapchat and Instagram users. Even when the model included information overload, communication overload, OWSB, and compulsive social media usage, the direct relationship between FoMO and fatigue continued to be insignificant for both Snapchat and Instagram users (see Table 5). Among Snapchat users, all of the tested mediators, i.e., information overload, communication overload, OSWB, and compulsive social media usage, fully mediated the association between FoMO and SMF. Among Instagram users, however, only compulsive social media use fully mediated the association between FoMO and SMF. The results indicate the absence of any mediating influence of information overload, communication overload, and OSWB for Instagram users (see Tables 5 and 6). Thus, only H10d found full support, whereas H10a, H10b, and H10c found partial support (Table 7).

6. Discussion

We tested the proposed associations to deepen the existing knowledge of FoMO's consequences. To this end, we investigated FoMO's empirical (direct and mediating) links with information and communication overload, OSWB, and compulsive social media use, which we expected to culminate in SMP users' experienced fatigue. We tested 13 hypotheses positing direct and mediating effects. Of these, six received full support, six received partial support, and one received no support

Table 2

Validity and reliability analysis (Instagram).

	CR	AVE	MSV	ASV	OSWB	FoMO	SMF	IO	CO	CSMU
OSWB	0.76	0.52	0.26	0.10	0.72					
FoMO	0.79	0.57	0.08	0.03	0.04	0.76				
SMF	0.80	0.67	0.26	0.12	0.51	0.01	0.82			
IO	0.78	0.54	0.31	0.15	0.19	0.27	0.33	0.74		
CO	0.86	0.61	0.31	0.14	0.38	0.09	0.34	0.56	0.78	
CSMU	0.76	0.52	0.23	0.12	0.21	0.23	0.34	0.49	0.36	0.72

Note: Fear of missing out (FoMO), Information overload (IO), Communication overload (CO), Online subjective well-being (OSWB), Social media fatigue (SMF), Compulsive social media usage (CSMU), Composite reliability (CR), Average variance extracted (AVE), Maximum shared variance (MSV), Average shared variance (ASV), Mean (M), Standard deviation (SD).

Table 3

Validity and reliability analysis (Snapchat).

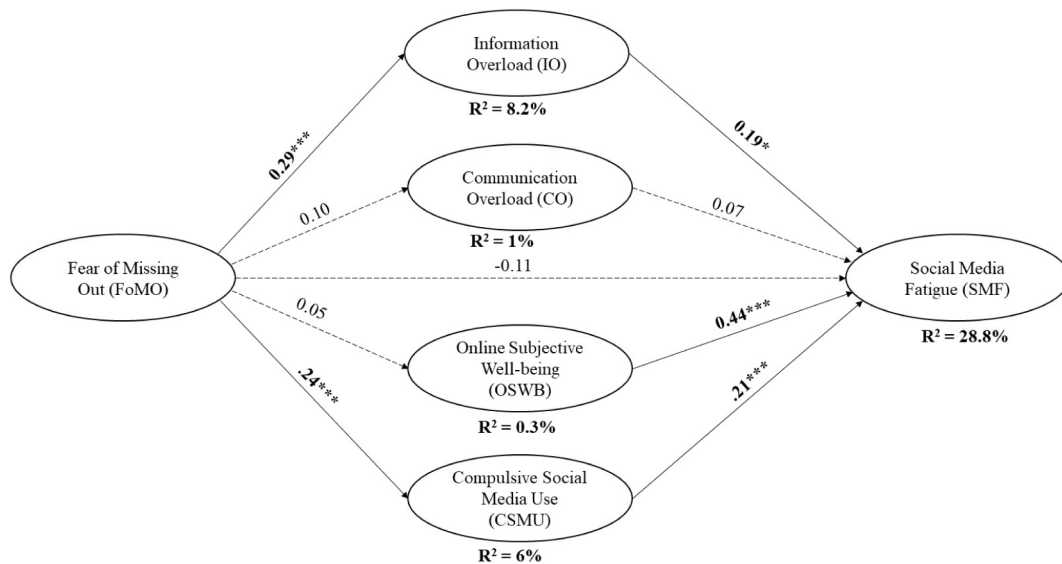|	CR	AVE	MSV	ASV	OSWB	FoMO	SMF	IO	CO	CSMU
OSWB	0.81	0.60	0.47	0.27	0.77					
FoMO	0.80	0.58	0.10	0.05	0.10	0.76				
SMF	0.85	0.73	0.47	0.33	0.69	0.17	0.86			
IO	0.83	0.63	0.58	0.32	0.49	0.27	0.59	0.79		
CO	0.87	0.62	0.58	0.37	0.63	0.12	0.65	0.76	0.79	
CSMU	0.85	0.65	0.44	0.31	0.50	0.32	0.62	0.60	0.66	0.80

Fig. 2. Results of the structural model for Instagram.

(see Tables 4 and 7).

The results demonstrated a positive association between FoMO and information overload (H1) among users of Instagram and Snapchat. Our findings support prior studies discussing the tendency of FoMO-induced continual SMP use to increase information flow, which ultimately results in information overload (e.g., Islam et al., 2018; Lee et al., 2016a). The results also find support in the LC4MP theory (Lang, 2006), which argues that excess information challenges humans' limited information-processing capacity. Through the LC4MP, we posit that SMP users who experience FoMO-induced anxiety continuously check frequently updated feeds on Snapchat and Instagram. Consequently, such users encounter an excessive amount of information and experience information overload.

H2 investigated whether FoMO was positively associated with communication overload. Because FoMO predicted communication overload only among Snapchat users, the findings partially support the hypothesis. While the prior literature establishing FoMO's link with communication overload (e.g., Islam et al., 2018) partially supports the

findings, our novel results show that this link is insignificant for Instagram users. This difference between users of the two platforms can be attributed to the varying cognitive demands placed on SMP users by each platform's features and artefacts. Compared to Instagram, Snapchat relies to a greater extent on text-based communication. Text-based communication, in turn, likely demands greater cognitive processing capacity from SMP users, especially those driven by FoMO; thus, consistent with the LC4MP theory, it may result in users' experience of communication overload. In contrast, Instagram's primarily image-based communication medium may impose less of a cognitive processing load on users, which can explain the insignificant association between communication overload and FoMO among Instagram users. Because little empirical evidence exists for this association in the context of Instagram and other image-based SMPs, our results require further examination before they can be generalized.

H3 regarding FoMO's potential association with OSWB also found partial support and was significant only for Snapchat users. This finding aligns with a study by Pittman and Reich (2016), which likewise
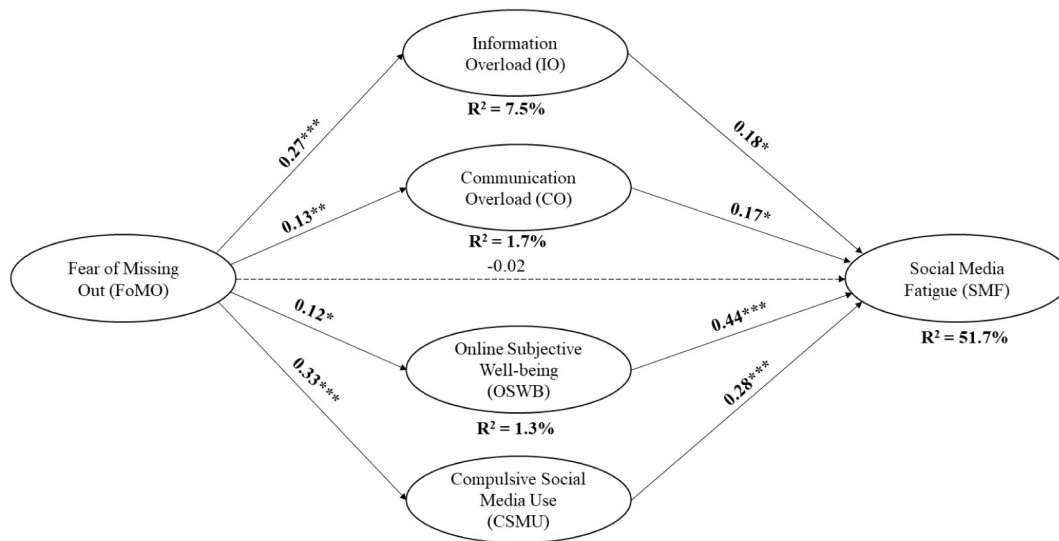
Fig. 3. Results of the structural model for Snapchat.

Table 4
Results of SEM: main effects.

Hypothesis	Path	Instagram		Snapchat		Support
		β	p	β	p	
H1	FoMO → IO	0.29	<0.001	0.27	<0.001	Full support
H2	FoMO → CO	0.10	n.s.	0.13	<0.01	Partial support
H3	FoMO → OSWB	0.05	n.s.	0.12	<0.05	Partial support
H4	FoMO → CSMU	0.24	<0.001	0.33	<0.001	Full support
H5	IO → SMF	0.19	<0.05	0.18	<0.05	Full support
H6	CO → SMF	0.07	n.s.	0.17	<0.05	Partial support
H7	OSWB → SMF	0.44	<0.001	0.44	<0.001	Full support
H8	CSMU → SMF	0.21	<0.001	0.28	<0.001	Full support
H9	FoMO → SMF	−0.11	n.s.	−0.02	n.s.	No support

Table 5
Mediation analysis results.

FOMO → IO/CO/OSWB/CSMU → SMF						
	β	se	t	p	LLCI	ULCI
Instagram (N = 349)						
FOMO → IO	0.25	0.05	4.98	0.00	0.1540	0.3550
FOMO → CO	0.08	0.05	1.52	0.13	−0.0240	0.1860
FOMO → OSWB	0.04	0.06	0.67	0.51	−0.0744	0.1509
FOMO → CSMU	0.19	0.05	4.06	0.00	0.0974	0.2809
FOMO → SMF	−0.03	0.06	−0.51	0.61	−0.1370	0.0807
IO → SMF	0.13	0.06	1.96	0.05	−0.0006	0.2539
CO → SMF	0.09	0.06	1.40	0.16	−0.0357	0.2119
OSWB → SMF	0.35	0.05	6.63	0.00	0.2452	0.4522
CSMU → SMF	0.19	0.07	2.92	0.003	0.0629	0.3240
Total effect of FOMO → SMF	0.06	0.06	1.02	0.31	−0.0565	0.1787
Snapchat (N = 543)						
FOMO → IO	0.26	0.04	5.91	0.00	0.1734	0.3459
FOMO → CO	0.13	0.05	2.79	0.01	0.0375	0.2157
FOMO → OSWB	0.11	0.05	2.11	0.04	0.0072	0.2066
FOMO → CSMU	0.28	0.04	7.01	0.00	0.2029	0.3609
FOMO → SMF	0.01	0.04	0.31	0.76	−0.0606	0.0832
IO → SMF	0.13	0.05	2.84	0.00	0.0394	0.2162
CO → SMF	0.18	0.05	3.62	0.00	0.0809	0.2724
OSWB → SMF	0.32	0.03	9.11	0.00	0.2459	0.3867
CSMU → SMF	0.24	0.05	5.19	0.00	0.1488	0.3299
Total effect of FOMO → SMF	0.17	0.05	3.62	0.00	0.0769	0.2597

Table 6
Indirect effects.

	Effect	se	LLCI	ULCI
Instagram (N = 349)				
FOMO → IO → SMF	0.03	0.02	−0.0042	0.0773
FOMO → CO → SMF	0.01	0.01	−0.0069	0.0260
FOMO → OSWB → SMF	0.01	0.02	−0.0303	0.0586
FOMO → CSMU → SMF	0.04	0.02	0.0061	0.0745
Snapchat (N = 543)				
FOMO → IO → SMF	0.03	0.01	0.0060	0.0652
FOMO → CO → SMF	0.02	0.01	0.0041	0.0476
FOMO → OSWB → SMF	0.03	0.02	0.0003	0.0720
FOMO → CSMU → SMF	0.07	0.02	0.0338	0.1055

suggested that newer SMPs decrease loneliness and increase happiness and life satisfaction. However, our results contradict the majority of the prior well-being research that links FoMO with diminished well-being (e.g., Beyens et al., 2016; Błachnio and Przepiórka, 2018; Fox and Moreland, 2015). We attribute this contrasting result to our novel conceptualization of OSWB as a specific SMP-related construct. Our findings also present novel insights because H3 was insignificant for Instagram users. This insignificance, too, may be attributed to Instagram's focus on image-sharing as a communication medium that limits individual conversations and information exchange about real-life issues within the social circle. In contrast, Snapchat exhibits significant similarities with more well-investigated platforms, such as Facebook, in terms of text-based communication. Thus, Snapchat may increase the likelihood of conversational exchange and news sharing, which, in turn, may lead its users to experience greater contentment and satisfaction with their online lives. Our results again underscore the importance of SMP-specific features and attributes in explaining users' differing experiences of FoMO and other negative usage consequences discussed in the prior literature (Tandon et al., 2021a). Given that no prior evidence exists for an association between FoMO and OSWB, more robust examinations are required before any conclusive generalizations can be

Table 7
Results of mediation effects.

Hypothesis	Path	Instagram	Snapchat	Support
H10a	FoMO → IO → SMF	No	Yes	Partial support
H10b	FoMO → CO → SMF	No	Yes	Partial support
H10c	FoMO → SWB → SMF	No	Yes	Partial support
H10d	FoMO → CSMU → SMF	Yes	Yes	Full support

made for FoMO, in particular, and the dark side of social media in general.

We found full support for H4, which tested FoMO's association with compulsive social media use. Our results align with the previous literature linking FoMO with compulsive social media use (e.g., Richter, 2018; Wegmann et al., 2017) in the context of Facebook. We suggest that FoMO may induce compulsive social media use regardless of a specific platform's features or attributes. We believe that our findings emphasize the generalizability of the TCIU (Kardefelt-Winther, 2014), which explains an individual's propensity to engage in compulsive SMP usage to avoid FoMO. Our result confirms the TCIU as a robust theoretical framework on which to ground future work on FoMO regardless of the SMP chosen for the investigation.

Next, H5 received full support in our results, which revealed information overload's positive association with SMF among Instagram and Snapchat users. These results align with the existing literature (Lee et al., 2016a; Zhang et al., 2016) and the tenets of LC4MP (Lang, 2006). Thus, regardless of the platform, SMP users experiencing information overload may be unable to allocate sufficient cognitive capacity to process the information they acquire from SMPs; consequently, they are likely to experience fatigue. We believe that this SMF may be intrinsically linked to the amount of exposure and nature of the platform interface, which limits users' control over incoming information and causes them to experience fatigue while filtering or processing massive information inflows. Users' with multiple SMP accounts (e.g., both Instagram and Snapchat accounts) may also have a lower threshold for SMF, but further research is required to develop a clearer understanding regarding the impact of multiple accounts on users' FoMO and SMF.

In contrast, we found only partial support for H6, with a significant association between communication overload and SMF appearing only among Snapchat users. Because Snapchat provides multiple features, frequent users are likely to feel overwhelmed because they are on the receiving end of constant story updates, emoticons, and texts, which causes communication overload and, ultimately, increases SMF. While LC4MP (Lang, 2006) partially explains the results and highlights SMP users' limited cognitive capacity for processing SMP-based communication; the insignificance of this association among Instagram users may suggest that such cognitive limitations are lower for image-based communication, and thus such use does not result in fatigue. Our findings are similar to previous inconsistencies found for the predictive effect of communication overload on SMF, which is significant in some cases (Lee et al., 2016a) and insignificant in others (e.g., Cao and Sun, 2018). Because our findings alone provide no conclusive evidence for SMF thresholds, we urge scholars to conduct more platform-specific (e. g., only for Instagram users) studies to advance the existing knowledge.

Further, H7 received full support, with OSWB correlating positively with SMF among both Instagram and Snapchat users. The findings correspond with the prior literature, which suggests that initially, users engage in social media use for enjoyment and leisure, but over time, this usage takes a problematic turn, causing users to experience negative emotions (Elhai et al., 2016; Oberst et al., 2017; Wolniewicz et al., 2017). These negative emotions may be sufficiently severe to cause SMP users stress, fatigue, and exhaustion (Brooks et al., 2017; Dhir et al., 2018; Tarafdar et al., 2007). Our results support such suppositions and suggest that even in light of positive states, such as high OSWB, SMP users may experience fatigue from their continual efforts to maintain satisfaction with their online social lives by constantly engaging in SMP

communication and heterogeneity. Our findings, however, contradict the results of Kaur et al. (2021c), who studied young adults in the USA. This contradiction suggests that the study context (i.e., aspects of culture, geography, social media penetration, and/or maturity rates) may influence the association between OSWB and SMF. Thus, further research is required before any conclusions can be drawn.

H8, which investigated whether compulsive social media use is positively associated with SMF, received full support among users of both platforms. This is compatible with the extant knowledge regarding the positive association between compulsive social media use and adverse outcomes, such as emotional fatigue, anxiety, depression, and reduced cognitive state (e.g., Elhai et al., 2016). One possible explanation for this association could be that compulsive social media use and related tendencies are likely to impose a significant degree of emotional and physical exertion (Pontes, 2017), thereby contributing to SMF. Additionally, our findings confirm an earlier study by Dhir et al. (2018), which showed that compulsive social media use contributes to SMF. Our findings also align with TCIU (Kardefelt-Winther, 2014), which argues that overusing technology (social media in this context) to compensate for negative feelings in life (FoMO in our case) can produce other negative outcomes (SMF in our study).

We found insignificant results for H9 among both user groups, with FoMO failing to exhibit a significant direct association with SMF. These results contradict prior findings, which have suggested that FoMO is positively associated with fatigue (Dhir et al., 2018; Milyavskaya et al., 2018; Reinecke et al., 2017; Tandon et al., 2021c). Our results indicate that it is not precisely the anxiety caused by FoMO that contributes to increasing SMF among Instagram and Snapchat users but perhaps the activities in which users engage to alleviate FoMO. Our study further highlights the complexity of FoMO's association with the dark side of social media-related consequences and emphasizes the importance of recognizing the effects of potential intervening (mediating) factors. These divergent findings may also be due to geographical distinctions or to our sole focus on Instagram and Snapchat platforms; a study by Tandon et al. (2021c) suggests the latter possibility, reporting a direct and positive association between FoMO and SMF among UK-based SMP users in general.

The mediation analysis results demonstrated that only compulsive social media use fully mediated the association between FoMO and fatigue among both Instagram and Snapchat users (H10d). In contrast, information and communication overload and OSWB acted as mediators only among Snapchat users (H10a, H10b, H10c). The likely explanation for the varied outcomes may lie in both platforms' distinct features and functionalities. Because Snapchat allows both text and image-based communication, its users may be more susceptible to the tested overloads. In contrast, Instagram users may not experience FoMO-driven SMF due to the platform's use of image-based communication. Consequently, Snapchat users may be more prone to increased information exposure (both text and image) and overload than are Instagram users (only image). This may explain the positive mediating influence of information overload (H10a) among Snapchat users and the insignificant results for Instagram users.

A possible explanation for the mediating role of communication overload (H10b) between FoMO and SMF for Snapchat users only may be the privacy controls associated with the platform. Snapchat account holders have complete control over who can view their stories, and this may cause a Snapchat user with higher levels of FoMO to consider alternative means (i.e., the use of other platforms) for obtaining the information they are "missing out on" due to these privacy controls. Snapchat users' controls over privacy and disclosure levels on the platform may also explain the significant mediating influence of OSWB on the relationship between FoMO and fatigue for the platform's users (H10c). We believe that Snapchat users enjoy a more private and intimate interface and thus can be more open in the information they share. Due to this affordance, users may experience higher OSWB from Snapchat use, avoid FoMO, and improve their satisfaction with their online

social lives. For the same reason, however, Snapchat users may become prone to the excessive use of this platform, and despite their increased OSWB, they may thus experience SMF while engaging in FoMO-driven use of the platform.

Finally, compulsive social media use fully mediated the relationship between FoMO and SMF (H10d) for both platforms. As mentioned previously, the nature of the investigated platforms may offer an explanation for this result. For example, Snapchat's disappearing photos could cause users to develop anxiety (FoMO) because they may worry that they will miss out on important information if they are not continuously online. They might, therefore, have an increased sense of urgency to engage constantly with the platform, thus fueling their compulsive usage and ultimately resulting in fatigue. Importantly, however, we have explored these mediating relationships for the first time. More research on the ways in which specific SMPs are related to FoMO and SMF is required before any firm conclusions can be drawn.

7. Conclusion

While the impact of SMPs on human life is undeniable, the growing usage and penetration of these platforms across the globe make it imperative to understand the degree of SMPs' adverse influence on users' well-being. FoMO and SMF are two much-discussed and evolving SMP-related phenomena that scholars are increasingly investigating. We raised and answered two RQs to advance knowledge on these phenomena. Our study contributes to scholarly efforts in social media and user psychology research by examining FoMO as an antecedent of SMF while considering the mediating influence of overloads (information and communication), OSWB, and compulsive social media use. Grounding our work firmly in the theoretical lenses of TCIU, SDT and LC4MP, we tested the research model via two separate cross-sectional studies of Instagram and Snapchat users. Our comparative analyses of the research model in the context of the two platforms present interesting and contrasting results, which emphasize the complex associations of FoMO with its consequences as well as the multi-dimensionality of the investigated phenomena, which are integrally associated with the dark side of social media. Our results offer significant implications for both practice and research, which we discuss below.

7.1. Theoretical implications

The present study has three important theoretical implications. First, our study expands the current knowledge on the consequences of FoMO by determining its association with the relatively under-explored variables of OSWB, information overload, and communication overload. Because scholars have primarily investigated FoMO as an indirect influencer (Tandon et al., 2021a), our study significantly advances understanding of FoMO's direct adverse behavioral and psychological consequences. At the same time, we contribute to the SMF literature by investigating its antecedents, including two more recently recognized and empirically investigated antecedents—FoMO and OSWB. Thus, our results advance knowledge regarding the dark side of social media in general and FoMO and SMF in particular.

Second, our study confirms TCIU and LC4MP as robust theories for grounding future research on FoMO and SMF. Our results demonstrate that these theories can be instrumental in future investigations of SMP users' behavioral manifestations across various contexts. We believe that TCIU is particularly generalizable for future investigations of FoMO. Furthermore, scholars might expand the theory's generalizability by invoking it to investigate additional aspects of the dark side of social media. The utilization of these theories may produce more conclusive findings and enable scholars to develop a more comprehensive understanding of FoMO, SMF, and other phenomena associated with the dark side of social media.

Third, the present study focuses on SMPs other than Facebook, Twitter, and WhatsApp, which have been the main focus in the prior literature. To the best of our knowledge, we also pioneer the investigation of OSWB's association with FoMO and SMF in the context of the investigated platforms. In addition, ours is among the first studies to offer comparative results for the consequences of FoMO on Instagram and Snapchat users. Our results emphasize the multi-dimensionality of the investigated phenomena and the need for additional platform-specific studies to advance our understanding of FoMO's and SMF's consequences among users of various SMP platforms. It would be interesting, for example, to explore whether FoMO causes similar consequences for users of platforms such as eBay. Moreover, scholars could focus on SMP users' who utilize platform-specific attributes, such as auctions and bids (e.g., Facebook Marketplace).

7.2. Practical implications

The study's findings offer four significant practical implications for SMP administrators, developers, users, users' parents and guardians, and policymakers. First, parents and guardians of young SMP users and such users themselves should educate themselves and increase their awareness of the potential adverse outcomes of using platforms, such as Instagram and Snapchat. Parents and guardians absolutely must understand the potentially harmful effects of platform-specific attributes, which may incline their children (or wards) toward potentially dangerous activities. Such education and awareness could enable parents and guardians to take proactive protective measures, such as limiting their children's use of some platforms or keeping track of their SMP usage times and activities. Parents and guardians should also facilitate open dialogue with the young people in their care to encourage them to speak openly if and when they experience any adverse results of their SMP usage.

Second, our results can inform SMP administrators and developers about the implications of FoMO, information overload, compulsive social media use, and OSWB, which can cause young users to experience SMF and discontinue their use of SMPs (Fu and Li, 2020). Administrators and service developers must deploy responsive design principles to mitigate the negative consequences that may result from SMP usage—for example, by creating digital well-being reminders asking users to cease SMP usage after a specific time interval. While such actions may seem counter-intuitive from a business perspective in the short term, we believe they would be significantly beneficial in the long term as SMP users will trust the developers to protect their well-being. Such actions could potentially increase user loyalty toward the platform and its parent organization. We offer this implication considering the various mass media articles that have begun to discuss the "joy of missing out," which pertains to SMP use discontinuance or complete cessation (Work Life, 2020).

Third, psychologists, social workers, and therapists will find the study results valuable and timely. They can utilize the findings, especially regarding FoMO and SMF, to devise novel interventions, screening methods, and therapies for young people affected by newly recognized phenomena. Such interventions are imperative and potentially beneficial for young adults, adolescents, and pre-adolescents, who are particularly vulnerable to the dark side of social media consequences. Fourth and finally, we encourage policymakers to utilize our study findings and develop ideas to counteract the adverse effects of SMP use at the community level. An example of such an initiative is the "Challenge to Change" campaign launched by the Colorado Springs Police Department. This campaign empaneled a consortium of educators, lawmakers, and healthcare professionals to introduce community-level efforts to curb social media abuse among teens (The Gazette, 2022). We firmly believe that such campaigns would likewise be possible and beneficial in our study context, i.e., India and other developing countries.

7.3. Limitations and future work

The present study has two main limitations. The first relates to the

context in which the data were collected, i.e., young adult Instagram and Snapchat users from India. Due to this limited context, the transferability or generalizability of the findings to other cultural or demographic settings (i.e., other age groups) may likewise be limited. The second limitation relates to the study design. Our research utilized a cross-sectional design, and it is, therefore, unable to indicate causal effects between the study measures and provide evidence for associations at a singular point in time. Such studies cannot reveal changes in these relationships over time. To address these limitations, we recommend possibilities for future work. For example, scholars should evaluate our research model with participants recruited from other cultural and demographic settings, i.e., other age groups, countries, and SMPs. Additionally, scholars should utilize both longitudinal and experimental designs to determine possible changes in the nature of the investigated associations over time and to establish causality between the study variables. In addition, qualitative designs could identify other possible antecedents and consequences of FoMO and SMF.

Declaration of competing interest

I declare no conflict of interest.

Data availability

Data will be made available on request.

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