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When users go quiet: Mindfulness awareness moderates the path from social media fatigue and online social anxiety to lurking behavior

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Abstract

As social media increasingly dominates everyday life, users are exposed to various psychological pressures and demands for online interaction, which may contribute to the prevalence of lurking behavior. This study proposes a theoretical model linking Social media fatigue (SMF), Online social anxiety (OSA) and Lurking behavior (LB), while examining the moderating role of Mindfulness (MN). The exploratory factor analysis reveals that the Southampton Mindfulness Questionnaire (SMQ) is divided into two components, namely Awareness (AP) and Acceptance (AC), suggesting that the underlying structure of mindfulness as measured by the SMQ may be influenced by cultural context. Moreover, the results indicate that both SMF and OSA significantly increase LB. Notably, only the Acceptance component of mindfulness demonstrates a moderating effect, attenuating the impact of psychological strain on Lurking behavior, whereas Awareness does not exhibit a statistically moderating effect. This study contributes to the literature by clarifying the moderating conditions underlying the relationship between psychological strain and lurking behavior, while highlighting the importance of validating the factor structure of mindfulness measures across different cultural contexts.

Key words: Social media fatigue (SMF); Online social anxiety (OSA); Lurking behavior (LB); Mindfulness (MN); Awareness (AC); Acceptance (AP).

1. Introduction

Social media has become an increasingly large-scale digital space for consumption and interaction. As of April 2026, there were approximately 5.79 billion social media user identities worldwide, representing around 69.9% of the global population; of which increased by approximately 294 million user identities over the preceding 12 months (DataReportal, 2026). In Vietnam, the Digital 2026 report recorded around 79 million social media user identities as of October 2025, equivalent to 77.6% of the population. Although user identities do not necessarily represent unique individuals, these figures nevertheless demonstrate the enormous scale of social media as a digital consumption environment, where user participation has essential implications for platforms, brands, and online communities.

Social media platforms are increasingly concerned not merely with the number of registered users, but with whether users are actively and visibly engaged. Posting, commenting, sharing, responding, and interacting with others are forms of user activity that generate user-generated content, engagement signals, behavioral data, and value co-creation within online communities (Sorensen et al., 2017). However, a key paradox of the social media environment is that while platforms and brands are becoming increasingly dependent on user participation, many users choose to remain present in silence (Chen et al., 2019). They read, view, observe, and consume content without leaving visible traces of interaction, which is commonly referred to as lurking behavior (Edelmann, 2013).

From a marketing and consumer behavior perspective, lurking should not be simply understood as a lack of activity. Lurkers may remain cognitively and emotionally engaged: they observe content, learn community norms, evaluate brands, monitor others' reactions and form attitudes without expressing themselves through publicly visible interactions. Therefore, lurking represents a form of silent participation rather than complete absence from the platform. Nonetheless, such silence poses significant managerial challenges. When users reduce their visible engagement, platforms and brands lose important signals for evaluating engagement, sustaining community vitality, facilitating content diffusion and activating value co-creation. Research on lurking in online communities suggests that it is a prevalent phenomenon that should be understood as a distinctive form of participation, in which users continue to consume content while limiting their public contributions (Amichai-Hamburger et al.,2016, Omar & Dequan, 2020).

Recent studies have begun to conceptualize lurking as a response to psychological strain arising from social media use (Hong et al, 2023; Ali et al, 2024; Liu et al, 2026). Social media fatigue (SMF) reflects feelings of exhaustion, overload and diminished motivation to interact resulting from continuous exposure to information, pressure to respond, social comparison and the demands of maintaining an online presence. Meanwhile, online social anxiety (OSA) refers to users' feelings of anxiety or apprehension when engaging in self-presentation, participating in public interactions or facing the possibility of social evaluation in social media environments. Liu et al. (2024)

found that SMF and OSA were associated with lurking behavior (LB), while Hong et al. (2023) identified SMF as an important factor driving users to lurk on social media.

From the perspective of Conservation of Resources theory, fatigue and anxiety can be understood as signals of depleted or threatened psychological resources (Hobfoll, 2000; Holmgreen et al., 2017). When users perceive their attentional, emotional, and cognitive resources to be depleted, they may be more likely to adopt responses that minimize further psychological costs. In the context of social media, lurking may serve as a resource-conservation response: users retain access to information and remain connected to the community while limiting publicly visible interactions that require emotional energy, self-representation, and exposure to social risks. This perspective helps explain why users do not necessarily disengage from a platform entirely when experiencing social media overload, but may instead shift to a state of silent participation.

However, conceptualizing lurking solely as a direct consequence of SMF and OSA provides an incomplete explanation. Not all users experiencing fatigue or anxiety transition to lurking behavior to the same extent. Some may substantially withdraw from visible interactions, whereas others may maintain selective participation or regulate their emotional responses more effectively. This suggests that the process through which psychological strain translates into LB depends not only on the intensity of the strain itself but also on individuals' internal self-regulatory resources, which may enable them to cope with negative experiences without resorting to withdrawal-oriented behavior. This constitutes the first research gap addressed by the present study. Even though prior research has identified SMF and OSA as pivotal antecedents of LB, it has not yet fully explained which individual-level conditions strengthen or weaken the process through which psychological strain translates into lurking behavior.

In this study, mindfulness (MN) is defined as a form of attention characterized by a range of attributes or aspects, which are distinct but overlapping (e.g., acceptance and nonjudgment) (Bergomi, 2013). Mindfulness-stress buffering theory provides an appropriate theoretical foundation for addressing this gap. According to this theory, MN can mitigate the adverse effects of stress by altering how individuals identify, appraise and respond to negative experiences. Creswell and Lindsay (2014) argue that the effects

of MN are often most evident under conditions of elevated stress, where MN functions as a mechanism that alleviates stress responses. In the social media context, this suggests that MN may serve as a self-regulatory resource that prevents users from automatically responding to fatigue or anxiety by withdrawing into LB.

However, the second research gap concerns how MN is typically conceptualized and operationalized in studies of digital behavior. Many studies approach MN as a general protective resource, whereas fundamental theoretical perspectives suggest that MN is a multidimensional construct. Bishop et al. (2004) conceptualize MN as comprising two core components: self-regulation of attention toward present-moment experiences and an attitude of openness and acceptance toward those experiences. Nonetheless, prior research has yet to examine whether the structure of MN measured by the Southampton Mindfulness Questionnaire (SMQ) remains stable across different cultural contexts. This issue is particularly relevant in non-Western settings, where understandings and practices of MN may differ from the contexts in which existing measurement instruments were originally developed. Specifically, in many Asian cultures, the self is conceptualized as interdependent, whereby individuals are viewed as fundamentally connected to members of their social groups, including family, friends and the broader community; in contrast, many Western European cultures tend to conceptualize the self as independent, emphasizing individual autonomy and distinctiveness from others (Markus & Kitayama, 1991). Such differences in self-construal may influence how individuals perceive, interpret and respond to their internal experiences. The SMQ was developed to assess how individuals respond mindfully to distressing thoughts and images, suggesting that MN involves not only awareness of internal states but also the manner in which individuals relate to and accept those states.

This distinction is particularly vital in understanding lurking behavior. Awareness (AC) may enable users to recognize that they are experiencing fatigue, anxiety or discomfort while using social media. However, AC of a negative state does not necessarily reduce the tendency to withdraw from interaction. In an environment characterized by high levels of social evaluation, heightened awareness may even make users more conscious of their discomfort when it is not accompanied by adequate regulatory capacity. Acceptance (AP), by contrast, reflects the capacity to approach negative experiences

with openness and non-judgement, thereby reducing defensive or reactive responses. From a digital consumer behavior perspective, this distinction has important implications: users who remain silent do not necessarily lack interest in a brand or online community; rather, they may be attempting to manage the emotional costs associated with visible participation. Therefore, what platforms and brands need to understand is not simply whether users are aware of their fatigue or anxiety, but whether they possess the psychological resources to accept and regulate these states without resorting to LB.

The third research gap therefore lies in the limited empirical examination of the distinct roles of MN components in digital consumer behavior, particularly in non-Western contexts. While mindfulness-stress buffering theory suggests that MN can alleviate the effects of stress, existing research has not yet clarified whether this protective function stems from AC, AP or MN as a broader construct. This raises a necessary theoretical question: which component of MN actually weakens the process through which SMF and OSA translate into LB? Addressing this question shifts the focus from asking whether MN moderates the relationship to identifying which mindfulness mechanism provides protection in the social media environment.

This study has three objectives. Firstly, it examines the relationships among SMF, OSA and LB to clarify how psychological strain is associated with the shift from visible participation to silent participation. Secondly, it investigates whether MN functions as a self-regulatory resource that mitigates the process through which psychological strain translates into lurking behavior. Thirdly, it examines the distinct role of AC and AP to determine which MN component is capable of providing a protective effect when social media users experience fatigue and anxiety.

This study contributes to the existing literature in three ways. Firstly, it extends the application of the Conservation of Resources theory to lurking research by moving beyond the treatment of SMF and OSA as direct antecedents and examining the individual-level conditions that alter the strength of the strain-to-lurking process. As a result, the study introduces a boundary-condition perspective to previous models that have primarily focused on the direct effects of fatigue and anxiety on LB. Secondly, the study refines mindfulness-stress buffering theory in the context of digital consumer

behavior by examining the differential moderating roles of AC and AP, rather than assuming that mindfulness constitutes a homogeneous protective resource. Thirdly, the study contributes to the literature on customer engagement and online brand/community participation by suggesting that silent participation should be understood as a self-regulatory response to the emotional costs of visible interaction, rather than merely as an indicator of low interest or declining engagement.

2. Literature review and hypotheses development

2.1. Theoretical frameworks of social media usage behavior

2.1.1 Conservation of Resources theory

Conservation of Resources (COR) theory states that individuals are motivated to acquire, retain, protect and conserve resources that they value; when these resources are threatened or depleted, individuals seek to minimize further loss and preserve their remaining resources (Hobfoll, 1989). In the social media environment, continuously processing large volumes of information, maintaining an online presence and facing pressure to respond may consume attentional, emotional and cognitive resources (Dhir et al, 2018). Such depletion may be reflected in states such as SMF and OSA. According to COR, when psychological resources are depleted, individuals are likely to adopt behaviors that minimize further psychological costs rather than continue investing resources in activities that require self-presentation and public interaction (Gabriel et al., 2018; Bian et al., 2026). In this context, LB can be understood as a resource-conservation strategy: users maintain access to information and remain able to observe the community while limiting visible forms of interaction to avoid further depletion of emotional and cognitive resources. Thus, COR provides a theoretical foundation for explaining why psychological strain may lead to a shift from visible participation to silent participation on social media.

However, COR primarily explains why individuals tend to adopt resource-conserving behaviors when confronted with stress, but it does not fully explain why individuals do not respond in the same way to comparable levels of psychological strain. This suggests that, beyond resource depletion, the process through which strain translates into LB may also depend on individuals' internal self-regulatory resources. Accordingly, this study

draws on Mindfulness-stress buffering theory as a complementary theoretical framework to explain these individual differences.

2.1.2 Mindfulness-stress buffering theory

Mindfulness-stress buffering theory offers a foundational approach to understanding how mindfulness reduces stress reactivity, thereby mitigating the negative consequences of stress on individuals' mental and physical health (Cohen & Wills, 1985; Creswell & Lindsay, 2014; Valikhani et al., 2020). MN has been consistently associated with improved emotional well-being, as well as better psychological and physical health outcomes (Mandal et al., 2011; Bodenlos et al., 2015). Some studies have indicated that individuals with higher levels of MN are less likely to experience symptoms of depression, fatigue, and anxiety (Zhang et al., 2017; Valikhani et al., 2020).

According to this theory, MN does not directly eliminate sources of stress; rather, it changes how individuals perceive, appraise and respond to negative experiences. Instead of automatically responding through avoidance or defensiveness, individuals with higher levels of MN tend to observe their thoughts and emotions with negative emotional states. As a result, psychological strain may be less likely to translate into withdrawal-oriented behavioral responses. In the social media context, this mechanism suggests that highly mindful users may still recognize feelings of fatigue or anxiety when using social media platforms, but they may be less likely to engage in lurking as an automatic self-protective response. Although previous studies have documented relationships between SMF, OSA and LB, the strength of these relationships has not been consistent across research contexts. To illustrate, Liu et al. (2024) found that SMF and OSA had relatively weak effects on LB, while Fernandes and Oliveira (2024) and Hong et al. (2023) reported stronger effects. Such differences suggest that the process through which psychological strain translates into lurking may be influenced by individual-level conditions that shape how users respond to stress. Among the self-regulatory resources that have received increasing attention, MN is particularly relevant because it enables individuals to regulate emotional responses and reduces their vulnerability to stress.

MN is often treated as a unified self-regulatory resource, yet foundational theoretical perspectives conceptualize it as a multidimensional construct. Bishop et al. (2004) propose that MN consists of two core components: the capacity to sustain attention to present-moment experiences (Awareness) and an open, accepting attitude toward those experiences (Acceptance). These two components may operate through distinct regulatory mechanisms when people cope with psychological strain. AC enables individuals to recognize the emergence of negative psychological states, whereas AP shapes how they respond to these states without excessive avoidance or defensiveness. Consequently, if MN genuinely functions as a boundary condition in the strain-to-lurking process, the distinct roles of its individual components should be examined rather than assuming that all dimensions of mindfulness provide an equivalent protective effect.

Building on these arguments, the present study conceptualizes MN as a self-regulatory resource capable of weakening the process through which SMF and OSA translates into LB. Besides, the study recognizes that MN may comprise multiple components with potentially distinct functions. Accordingly, in addition to testing the moderating role of MN within the proposed theoretical model, the study further explores the underlying structure of this construct among Vietnamese social media users.

2.2. Hypotheses development

2.2.1. Social Media Fatigue

Social Media Fatigue (SMF) refers to a subjective, multidimensional psychological state that includes feelings of exhaustion, disengagement, and reduced motivation resulting from excessive use and interaction on social networking platforms, with its intensity differing across individuals depending on personal traits, the moment of their online activity, and the stressors related to continuous platform engagement (Ravindran et al., 2014; Lee et al., 2016; Zhang et al., 2016; Zheng & Ling, 2021). Studies have shown that prolonged exposure to SMF impairs cognitive capacity, which in turn raises users' anxiety levels (Dhir et al., 2018). Individuals with higher levels of anxiety and neuroticism are particularly vulnerable to more intense fatigue and its psychological consequences (Swiatek et al., 2021). In addition, recent evidence suggests a strong positive association between SMF and OSA, identifying fatigue as a key predictor of

anxiety symptoms in digital interactions (Liu et al., 2024; Qin et al., 2024). From the perspective of Conservation of Resources theory, SMF reflects a state in which users' psychological resources are depleted as a result of continuously processing information, maintaining an online presence and responding to interactional demands on social media platforms. As attentional and emotional resources become depleted, individuals may become more sensitive to situations involving potential social evaluation or negative feedback, thereby increasing feelings of apprehension during online interactions. Thus, resource depletion may not only generate feelings of fatigue but also increase the likelihood of experiencing OSA. Based on these arguments, the study proposes the following hypothesis:

H1: Social Media Fatigue (SMF) is positively associated with Online Social Anxiety (OSA).

According to COR theory, when attentional, emotional and cognitive resources are depleted, people tend to limit behaviors that require further resource investment in order to avoid additional resource loss. In the social media environment, posting, commenting and publicly responding require attention, self-presentation and a willingness to face social feedback. Therefore, when experiencing SMF, users may shift from forms of visible participation toward LB as a resource-conservation strategy. Rather than completely withdrawing from the platform, they may continue to observe and consume content while limiting publicly visible interactions to reduce psychological costs. This argument is also consistent with recent empirical evidence showing that SMF increases users' tendency to engage in LB (Hong et al., 2023; Fernandes & Oliveira, 2024; Liu et al., 2024). Based on these findings, the study proposes the following hypothesis:

H2: Social Media Fatigue (SMF) is positively associated with Lurking Behavior (LB).

2.2.2 Online Social Anxiety

Social Anxiety refers to the persistent fear or unease individuals feel in social contexts where they believe they may be scrutinized or negatively evaluated by others (Schlenker & Leary, 1982). This form of anxiety can interfere with cognitive processes and social behavior, often resulting in discomfort and avoidance due to fears of criticism, rejection, or embarrassment (Panayiotou et al., 2020). As a growing share of social interaction shifts into digital spaces, Online Social Anxiety (OSA) increasingly shapes how

individuals navigate and engage in these virtual spaces. People with high levels of online social anxiety often exhibit reduced participation in virtual interactions, lower quality of online relationships, and a tendency to withhold personal self-disclosure (Weidman & Levinson, 2015). Users experiencing anxiety during social interactions on social networking sites tend to refrain from active participation, opting instead for LB to reduce the emotional discomfort associated with online self-presentation (Liu et al., 2020). From a cognitive-behavioral perspective, this behavior can be understood as a coping mechanism to manage anxiety triggered by public interaction on platforms (Hu et al., 2024). While participants acknowledged the convenience of online interaction, many reported discomfort being observed during discussions and feared negative evaluations of their contributions (Símek & Basaran, 2023). Persistent emotional stress, closely linked with social anxiety, reinforces users' preference for LB as it provides temporary psychological relief from overwhelming digital environments (Liu et al., 2020). From the perspective of Conservation of Resources theory, limiting publicly visible interactions allows users to avoid further depletion of emotional resources that have already been threatened by anxiety. Therefore, LB can be viewed as a resource-conservation strategy in situations where individuals face social evaluation pressures in the online environments. Based on these findings, the study proposes the following hypothesis:

H3: Online Social Anxiety (OSA) is positively associated with Lurking Behavior (LB)

2.2.3. Mindfulness as moderator in the relationship between Social Media Fatigue, Online Social Anxiety and Lurking Behavior

Mindfulness (MN) has been defined from various perspectives (Martins et al., 2021). According to Kornfield (1977), MN refers to the non-judgmental and direct observation of the mind and body in the present moment, emphasizing its unique effectiveness in cultivating awareness. Building upon this foundation, Bishop et al. (2004) provided a more comprehensive definition, describing MN as a non-elaborative, non-judgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted without modification. In this study, MN is measured using the Southampton Mindfulness Questionnaire (SMQ), an instrument that focuses on how individuals respond to distressing thoughts and

emotions, making it relevant to the context of psychological strain in social media environments (Chadwick et al., 2008).

Recent studies suggest that social media users frequently encounter negative experiences, including feelings of loneliness, information overload and interactional pressures, which may contribute to SMF, OSA và engagement in LB (Thapa & Subedi, 2018; Dhir et al., 2018). In this context, MN can be viewed as a psychological resource that enables individuals to regulate their cognitive and emotional responses, reduce their vulnerability to stressful states and limit maladaptive behaviors in digital environments (Carlson, 2013).

According to Mindfulness-stress buffering theory, MN does not directly eliminate sources of stress; rather, it alters how individuals perceive and respond to negative experiences. When experiencing SMF or OSA, people with higher levels of MN tend to observe their emotional states with greater openness, less judgement and fewer defensive reactions. As a result, psychological strain may be less likely to translate into withdrawal-oriented behaviors such as LB.

From the combined perspective of COR theory and Mindfulness-stress buffering theory, MN can be viewed as a self-regulatory resource that enables individuals to utilize their remaining psychological resources more effectively when facing psychological strain. Therefore, comparable levels of SMF or OSA may lead to different levels of LB depending on users' levels of MN. In other words, MN is expected to weaken the effects of psychological strain on LB. Based on these findings, the study proposes the following hypotheses:

H4a: Mindfulness (MN) negatively moderates the relationship between Social Media Fatigue (SMF) and Lurking Behavior (LB).

H4b: Mindfulness (MN) negatively moderates the relationship between Online Social Anxiety (OSA) and Lurking Behavior (LB).

2.3. Research model

In conclusion, based on Mindfulness-stress buffering theory, Conservation of resources theory and the discussion above, this study proposes a theoretical model aimed at understanding social media users' LB, which is illustrated in Figure 1.

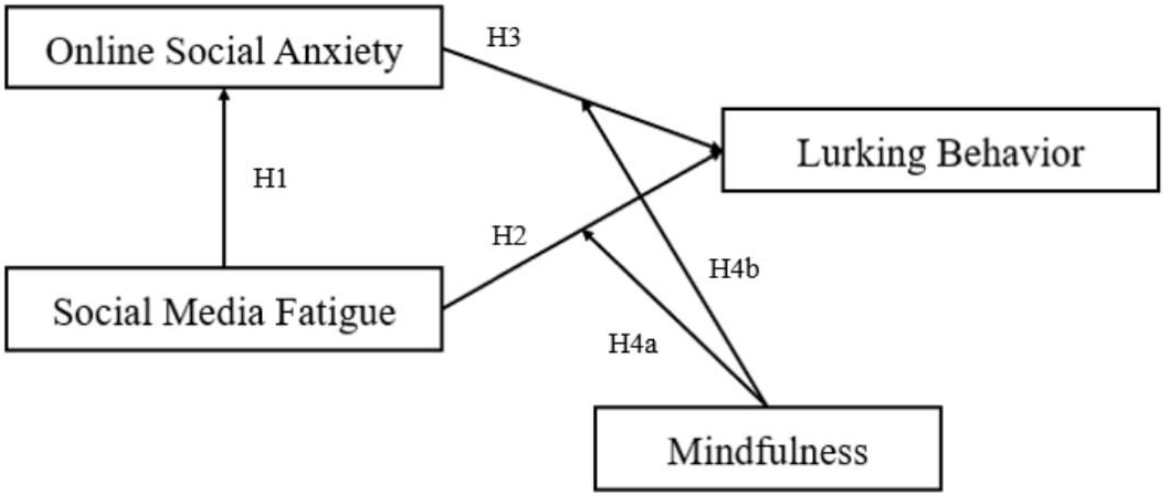


Figure 1. Research Model

3. Method

3.1. Research approach

3.1.1. From practice to theory

This study adopts a quantitative research design to empirically test the proposed theoretical model. The research model was developed based on Conservation of Resources theory và Mindfulness-stress buffering theory, and was subsequently tested using survey data collected from social media users in Vietnam. The collected data were analyzed to assess both the measurement model and the structural model, thereby testing the proposed research hypotheses.

3.1.2. A stakeholder-centered perspective

The study adopts the perspective of social media users, as LB is a behavioral response that arises from users' experiences and psychological reactions when engaging in online environments. Accordingly, data were collected directly from social media users to capture how they experience SMF, OSA and LB.

3.2. Measurements

3.2.1. Social media fatigue, Online social anxiety and Lurking behavior

The items linked to SMF, OSA and LB were adapted from Liu et al. (2024). This part has six items, four items and five items respectively, each with a 5-point likert scale ranging from 1 = Strongly disagree to 5 = Strongly agree. The characteristics of SMF items are the moment of feeling when they do stressful things. OSA items were adapted

to reflect user anxiety during social media interactions, while still preserving the conceptual meaning of the original scale.

3.2.2. Mindfulness

The mindfulness scale was inherited from Southampton Mindfulness Scale (SMQ) used in Chadwick et al. (2008) with 16 items on a 5-point Likert scale (1 = Strongly disagree and 5 - Strongly agree). A 16-item measure of mindful awareness of distressing thoughts and images.

The decision to employ the SMQ in this study, instead of more commonly used tools such as the Mindful Attention Awareness Scale (MAAS) or the Five Facet Mindfulness Questionnaire (FFMQ), was based on its conceptual suitability for capturing both awareness and acceptance in mindfulness. KUnlike MAAS, which primarily emphasizes the awareness component, SMQ was developed to reflect individuals' ability to adopt a non-judgmental and accepting stance toward distressing thoughts and feelings, an aspect particularly relevant when studying negative psychological states like social media fatigue and online social anxiety. Furthermore, the SMQ has been validated in clinical contexts, including among individuals experiencing severe mental health issues such as psychosis (Martins et al., 2021), making it a robust choice for evaluating emotion-related cognitive mechanisms. Therefore, the SMQ was selected because it is a scale that emphasizes how individuals react to stressful thoughts and emotions, aligning with the research objective of examining the regulatory mechanism of mindfulness in the relationship between psychological strain and lurking behavior.

3.3. Data Collection

A quantitative research design was employed to investigate the proposed relationships. Data collection was conducted through both online and offline survey methods. The online survey was administered using Google Forms and distributed via widely used platforms including Facebook, Messenger, and Zalo. The offline survey involved the direct distribution of paper-based questionnaires, primarily to respondents located in Hanoi. In total, 1,127 questionnaires were disseminated, resulting in 1,053 responses (response rate = 93.43%). After screening for completeness and consistency, 1,034 valid responses were retained for analysis, representing 98.2% of the total collected. Descriptive statistics indicated that 39.8% of respondents were male (n = 412) and

59.06% were female (n = 613), and 0.9% identified as others (n = 9). The largest age group comprised respondents aged 18-25 years, accounting for 59.06% of the sample, followed by those aged 26-35 years (22.2%). In terms of educational background, the majority of respondents were university students or graduates, accounting for 69.1% of the sample.

In this study, two software programs were utilized: SPSS 27 and SmartPLS 3. SPSS was employed to assess the reliability of measurement scales and conduct exploratory factor analysis (EFA). Following that, SmartPLS 3 was used to analyze the structural relationships among variables through structural equation modeling (SEM). SmartPLS 3 was chosen due to its robust statistical efficiency and its greater tolerance for smaller sample sizes compared to covariance-based SEM techniques.

4. Data analysis and results

4.1. Descriptive statistics

The averages of the five variables range between 2.98 and 3.27 on a five-point Likert scale. This suggests that the participants' replies were mostly above moderate. The standard deviation (0.65–0.97) indicates that the scores were regulated around the mean. The responses in each component leaned somewhat higher, with the MN learning the most (-0.625). The SMF (-0.347) has a somewhat flatter distribution than the other variables, which are typically normal or slightly more peaked as shown in Table 1.

Table 1: Descriptive Statistics

	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Social media fatigue	2.98	0.97	-0.056	0.076	-0.347	0.152
Online social anxiety	3.27	0.82	-0.260	0.076	0.377	0.152
Mindfulness	3.23	0.65	-0.625	0,076	1.404	0.152
Lurking Behavior	3.23	0.87	-0.221	0.076	0.291	0.152

4.2. The measurement model

Composite reliability was employed as a measure of internal consistency, with a recommended minimum threshold of 0.70 (Ronkko & Cho, 2022); all constructs in the model exceeded this threshold, indicating acceptable levels of reliability.

Exploratory Factor Analysis (EFA) was conducted in this study to assess the convergent and discriminant validity of the constructs SMF, OSA and LB. The Principal Axis Factoring extraction method with Promax rotation was applied. The results indicated that the KMO value was 0.889 (> 0.5) and Bartlett's test of sphericity was significant (Sig = 0.000 < 0.05), supporting the adequacy of the sample for factor analysis. All factor loadings exceeded the threshold of 0.3, satisfying criteria for both convergent and discriminant validity (Hair et al., 1998).

For the moderating variable (MN), EFA was performed separately using Principal Component Analysis with Varimax rotation. The results showed a KMO value of 0.774 (> 0.5), and Bartlett's test remained significant (Sig = 0.000 < 0.05), with remaining factor loadings above 0.3. However, during EFA, items MN4, MN5, and MN13 were excluded due to low factor loadings (< 0.3) or cross-loadings that indicated poor convergence within their intended construct.

In this study, MN was measured using the Southampton Mindfulness Questionnaire (SMQ). Although the SMQ was originally developed as a unidimensional scale (Chadwick et al., 2008), the results of the EFA conducted on the present sample indicate that the observed items loaded onto two distinct factors. The first factor reflects individuals' ability to recognize their internal experiences (Awareness), whereas the second reflects an accepting attitude toward these experiences (Acceptance). Although this structure does not fully correspond to the original factor structure of the SMQ, it is consistent with the theoretical proposition of Bishop et al. (2004), who conceptualize MN as comprising two core components: AC and AP. Given that the study examines the moderating effects of individual MN components, the two factors were retained and treated as two independent moderating variables in subsequent analyses.

Convergent validity refers to the extent to which a construct correlates positively with other measures of the same concept. According to Hair et al. (2021), HTMT values should be below the threshold of 0.90 to confirm that constructs are empirically distinct.

Table 2 shows that all HTMT values fall below this threshold, providing further evidence that the measurement model demonstrates satisfactory discriminant validity.

Table 2. HTMT

	AC	ACxOSA	ACxSMF	AP	APxOSA	APxSMF	LB	OSA	SMF
AC									
ACxOSA	0,191								
ACxSMF	0,221	0,774							
AP	0,492	0,278	0,327						
APxOSA	0,280	0,206	0,143	0,030					
APxSMF	0,322	0,121	0,249	0,010	0,816				
LB	0,293	0,044	0,078	0,093	0,544	0,584			
OSA	0,393	0,052	0,113	0,070	0,288	0,398	0,427		
SMF	0,442	0,124	0,124	0,103	0,452	0,465	0,555	0,668	

Regarding multicollinearity, linearity is not a serious issue in this model as long as all VIF values are within the acceptable limit of <3.

4.3. Structural paths

The relationships among variables in the research model were examined using SmartPLS 3 based on the PLS-SEM approach. Table 3 presents the detailed results, illustrating the direct effects among the constructs in the model.

Table 3: Direct Hypotheses

	Hypotheses	Coefficient	Standard Deviation	T values	P values	Result
H1	Social media fatigue -> Online Social Anxiety	0,583	0,025	23,204	0,000	Accepted
H2	Social media fatigue -> Lurking Behavior	0,237	0,047	5,079	0,000	Accepted
H3	Online social anxiety -> Lurking Behavior	0,095	0,038	2,468	0,014	Accepted

The first hypothesis (H1) was supported, showing that increased SMF had a significant positive effect on OSA ($\beta = 0.583$, $p < 0.001$). Similarly, SMF was found to significantly predict LB ($\beta = 0.237$, $p < 0.001$), thereby supporting H2. The third hypothesis (H3) also received support, indicating that OSA positively influenced LB ($\beta = 0.095$, $p = 0.014$). Among the direct paths, the strongest effect was observed from SMF to OSA, followed by its effect on LB, and finally the effect of OSA to LB.

In addition to direct effects, the study also tested moderating relationships. Moderation analysis revealed that AP significantly moderated the relationship between SMF and LB, as well as between OSA and LB. Specifically, the positive effects of both predictors (SMF and OSA) on LB became stronger at higher levels of AP. Detailed coefficients and significance levels are presented in Table 4 and Figure 2.

Table 4: Moderate Hypotheses

Moderate Hypothesis					
AC x OSA -> LB	0,074	0,048	1,546	0,122	Rejected
AC x SMF -> LB	0,004	0,044	0,085	0,933	Rejected
AP x OSA -> LB	-0,131	0,055	2,383	0,017	Accepted
AP x SMF -> LB	-0,163	0,067	2,445	0,015	Accepted

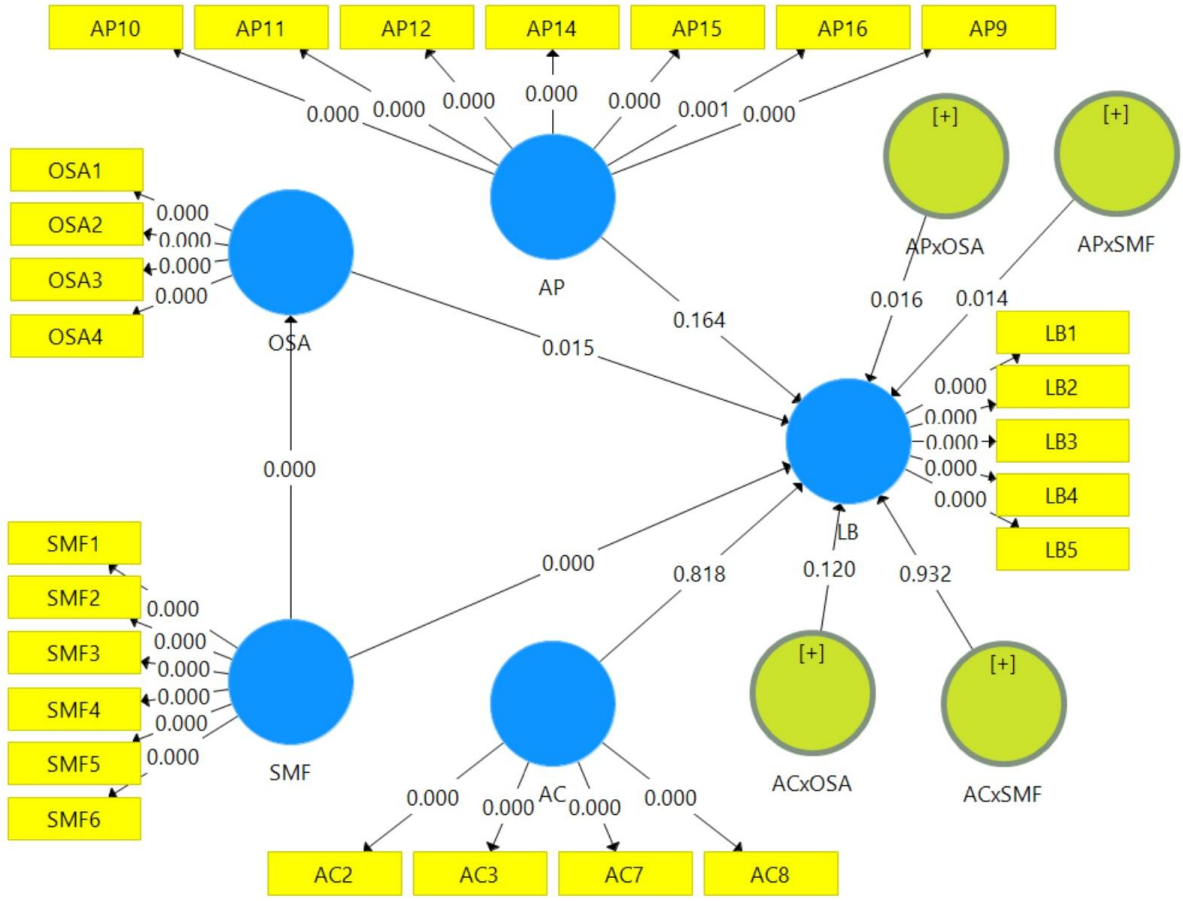


Figure 2. PLS-SEM Bootstrapping results

The results indicate that only AP exerted a statistically significant moderating effect, whereas AC did not demonstrate a significant moderating effect. These findings suggest that the two components of MN play distinct roles in the process through which psychological strain influences lurking behavior. Figure 3 illustaes bootstrap distributions of the interaction effects of mindfulness acceptance on lurking behavior. The implications of these findings are discussed in greater detail in the following section.

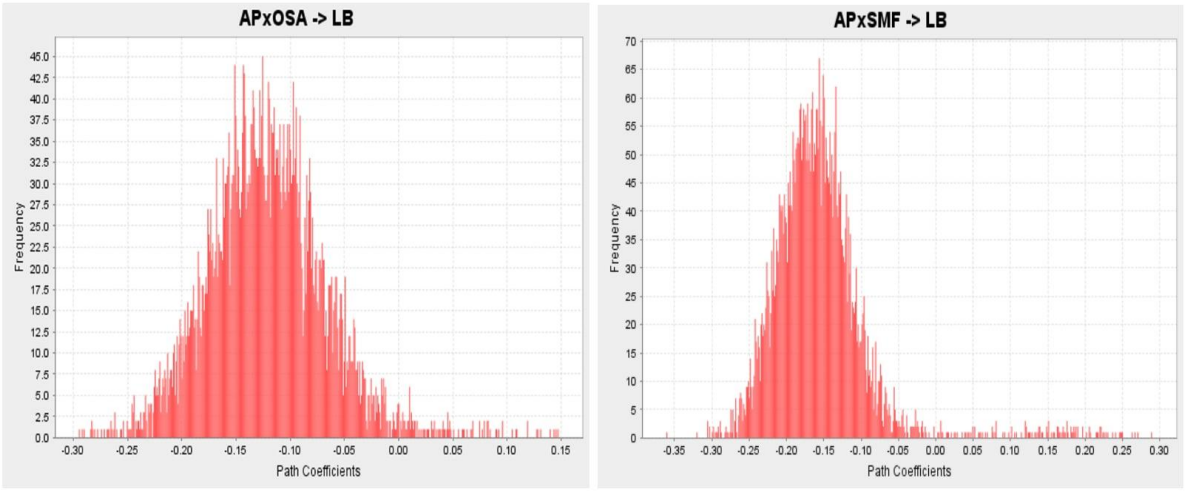


Figure 3. Bootstrap distribution

5. Discussion

5.1. Discussions on hypotheses

Justification of the impact of Social media fatigue on Online Social Anxiety

The first hypothesis (H1) was confirmed, showing that higher levels of SMF statistically significantly predicted higher levels of OSA. This finding aligns with earlier studies (Dhir et al., 2018; Świątek et al., 2021; Qin et al., 2024) which emphasized that fatigue associated with excessive or overwhelming social media use can result in a state of psychological distress, including anxiety. When users experience cognitive overload, their ability to process social information becomes impaired, leading to emotional dysregulation (Choshen-Hillel & Gileles-Hillel, 2021). This condition heightens their sensitivity to potential threats in online interactions, such as fear of judgment or negative feedback, contributing to a growing sense of social anxiety in digital settings.

Justification of the impact of Social Media Fatigue and Online Social Anxiety on Lurking Behavior

Beyond its impact on anxiety, SMF was also found to have a direct positive effect on LB, as predicted in H2. This supports the idea that mental exhaustion diminishes users' motivation to actively engage in online communication (Qin et al., 2024; Hsu et al., 2024). When individuals feel drained by the constant demands of social media platforms, they are more likely to disengage from direct participation and instead adopt a passive observational stance. This is particularly evident among young users, who may lack emotional coping strategies to manage the stress associated with online

presence and performance (Gould & Edelstein, 2010). In this context, LB becomes a self-protective behavior, allowing individuals to stay informed without risking social exposure or additional emotional effort (Fernandes & Oliveira, 2024).

Similarly, the positive relationship between OSA and LB (H3) reinforces prior research suggesting that anxiety in online contexts often leads to avoidance behavior. Individuals with heightened social anxiety are more prone to fear negative evaluation or embarrassment when posting or commenting on social media (Calancie et al., 2017). This concern is exacerbated in youth populations, who tend to be particularly sensitive to peer perception and prone to overthinking their self-presentation online (Lenhart & Madden, 2007). As a result, they may engage in prolonged observation, consuming content while avoiding interaction, thus manifesting lurking tendencies.

Justification of moderate impact of Awareness and Acceptance between Social Media Fatigue, Online Social Anxiety and Lurking Behavior

The findings from this study indicate that among the two core components of MN, which are AC and AP, only AP significantly moderated the relationship between SMF and LB, as well as between OSA and LB. In contrast, AC did not exhibit a statistically significant moderating effect in either relationship.

This divergence highlights important cultural and psychological nuances in how MN is conceptualized and practiced in the Vietnamese context. Although MN originates from Eastern Buddhist philosophy, its operationalization in Western psychology often follows standardized frameworks that may not fully align with Eastern cultural characteristics. In the Vietnamese context, where a strong interplay exists between traditional collectivist thinking and modern individualistic values, MN may be interpreted and practiced differently. Specifically, Vietnamese individuals may tend to internalize the notion of “emotional acceptance” as a means of maintaining interpersonal harmony. Such acceptance may help alleviate emotional exhaustion and anxiety associated with social media use, thereby reducing the tendency toward lurking behavior of others’ online activities. However, the capacity to maintain “present-moment awareness” or engage in mindful action may be less strongly cultivated. Many people, particularly in Southeast Asian societies, may be more inclined to engage in negative reflection about past experiences or become absorbed in ongoing internal

thoughts, making it more difficult to sustain attention on the present moment. Consequently, the capacity for mindful action may not be sufficiently developed to regulate the psychological mechanisms underlying SMF and LB. From this cultural perspective, these patterns may help explain why AP demonstrates a considerable moderating role, whereas AC does not.

These findings reinforce the central proposition of COR theory that when attentional and emotional resources are depleted, individuals tend to limit behaviors that require further resource investment. Rather than disengaging from the platform entirely, users may turn to LB as a resource-conservation strategy that allows them to maintain access to information while minimizing the psychological costs associated with public interaction. More importantly, this finding helps explain why prior studies have reported varying effects of SMF and OSA on LB. The results suggest that the transition from psychological strain to lurking behavior does not occur uniformly across individuals but depends on the level of AP. To be specific, those who are better able to accept negative emotional experiences may be less likely to shift from states of fatigue or anxiety toward withdrawal from online interaction. This finding indicates that AP functions as a boundary condition in the relationship between psychological strain and lurking behavior. In addition, the findings demonstrate that not all components of MN produce equivalent moderating effects. While AP exhibited a statistically significant moderating effect, AC did not exert a significant one. This suggests that treating MN as a unidimensional construct may obscure meaningful differences among its underlying components. Accordingly, future research should examine individual MN components separately rather than relying solely on an aggregate measure when investigating moderating mechanisms involving psychological strain. Finally, the findings suggest that the structure of MN may vary across cultural contexts, highlighting the need for further validation of the factor structure and construct validity of the SMQ across different nations and user populations.

5.2. Theoretical contributions

This study contributes to the theoretical understanding of LB by integrating SMF, OSA and MN into a unified model to explain the occurrence of LB in social media environments.

Firstly, the study contributes to the theoretical literature by applying COR theory (Hobfoll, 1989) to clarify the pathways through which SMF and OSA lead to LB. Consistent with the theory, the findings indicate that these psychological strain states deplete individuals' personal resources, thereby reducing their motivation to engage actively in social media activities. These findings provide preliminary empirical evidence for the direct roles of SMF and OSA in promoting LB, thereby extending the theoretical understanding of the underlying psychological mechanisms associated with this behavior.

Secondly, the study helps identify the conditions under which the relationship between psychological strain and LB. Rather than merely confirming the moderating role of MN, as suggested in previous research, the findings demonstrate that only the AP component significantly alleviates the effects of SMF and OSA on LB. In contrast, AC does not exert a statistically considerable moderating effect, suggesting that AP may play a vital role in shaping these relationships.

Thirdly, the study addresses the lack of empirical evidence concerning the structure of MN when measured using the SMQ in non-Western contexts by examining the scale among a sample of Vietnamese social media users. The EFA results show that the observed SMQ items separate into two components - AC and AP - rather than converging into a single factor as specified in the original structure of the scale. Although this finding requires further validation in future research, the preliminary evidence suggests that the factor structure of MN as measured by the SMQ may be influenced by cultural context. This highlights the importance of validating MN measures before applying them across different cultural settings, particularly in societies characterized by relatively strong collectivist cultural orientations such as Vietnam.

5.3. Practical implications

This study offers several essential practical implications for key stakeholders, including social media platforms, media policy makers, brands and users. By clarifying the mechanisms through which SMF and OSA are associated with LB, the study provides an empirical basis for developing interventions that may help protect users' psychological well-being while fostering more constructive forms of online

engagement. In particular, the finding regarding the moderating role of AP as a component of MN suggests that cultivating a non-judgmental attitude toward emotional experiences may help alleviate the psychological burden associated with withdrawal from online interactions.

From a practical perspective, social media platforms could incorporate design features supporting users' acceptance of negative emotional experiences during social media use such as break reminders, prompts encouraging users to pause and reflect before posting or tools facilitating awareness and monitoring of emotional states. Media policy makers could also develop age-appropriate guidelines for social media use, with particular attention to users aged 18-25, who tend to exhibit high levels of social media engagement while potentially being vulnerable to mental fatigue and anxiety.

For brands and digital marketers, the findings suggest that young users in collectivist cultural contexts such as Vietnam may be more likely to shift toward LB when they experience social media overload, which highlights the potential value of adapting content strategies toward emotionally safe and inclusive communication encouraging community connection rather than competitive social comparison. Additionally, these findings may inform mental health professionals in designing culturally responsive digital well-being programs, with greater emphasis on acceptance-based practices rather than relying exclusively on generalized models of MN.

More broadly, the study proposes a culturally sensitive framework for understanding user behavior and psychological well-being in the digital age. Such an approach may contribute to the development of policies and community-based initiatives that seek to balance technological advancement with users' emotional well-being.

5.4. Limitation and future direction

This research has some limitations, which provide valuable opportunities for further exploration. Firstly, there was an uneven distribution of respondents across the four age groups, with the majority falling within the 18-25 and 26-35 age groups, while the under 18 and 36-45 age groups were considerably underrepresented. This imbalance may restrict the generalizability of the findings and reduce the representativeness of behavioral insights for the younger and older age groups. Future research should aim to

expand the sampling scope and ensure a more balanced age distribution to enhance the representativeness and accuracy of generational comparisons.

Secondly, the study explored LB in a general social media context without focusing on any specific platform. Each platform (Facebook, TikTok, Instagram, Zalo, or LinkedIn) operates with distinct content, user demographics and interaction mechanisms, which may influence psychological states and behaviors in different ways. Future research should consider conducting cross-platform comparisons to investigate how SMF, OSA and MN vary in their influence across different platforms.

Thirdly, the current study examined MN within the cultural context of Vietnam. While this provides a valuable culturally grounded perspective, future research should explore cross-cultural comparisons to determine how cultural orientations influence the relationship between individual characteristics and digital behavior.

5.5. Conclusion

This research deepens the understanding of lurking behavior in digital environments by integrating SMF, OSA and the moderating effect of MN. The results demonstrate that SMF and OSA significantly contribute to LB, emphasizing the psychological toll of digital engagement. Moreover, the findings contribute to the literature by showing that the AP component of MN plays a key moderating role in mitigating psychological stress and disengaged online behaviors. This reveals a significant phenomenon within digital contexts, particularly in collectivist and culturally hybrid settings such as Vietnam. Beyond highlighting the distinct roles of AC and AP, this study also suggests that the structure of MN may be influenced by cultural context, as the SMQ was found to comprise two components in the Vietnamese sample. This opens an avenue for future research to further examine the stability of the MN structure across different cultural and contextual settings.

The study also provides a culturally grounded foundation for the development of mental health interventions and platform design strategies aimed at fostering healthier digital engagement. For brands and marketers, these insights underscore the importance of creating emotionally safe and inclusive digital environments that account for user fatigue and anxiety, especially among younger users. Finally, by demonstrating that AC and AP play distinct roles in the process linking psychological strain to LB, this study

contributes to a more deeper understanding of the moderating conditions underlying this relationship and provides a basis for further examining the structure of MN across different cultural contexts. Such efforts will be pivotal for developing context-sensitive interventions and digital health policies that address the psychological needs of diverse user groups in an increasingly digitalized world.

Data availability All data generated or analysed during this study are included in this published article and its supplementary information files.

Author contributions TMN wrote the introduction. TMN and TVAT developed the theoretical framework. TVAT conducted the literature review and data analysis. MVT developed the methodology and wrote the results. CCT wrote the Discussion. All authors reviewed and approved the final manuscript.

Competing interests The authors declare no competing interests.

Ethical approval This study was approved by National Economics University.

Ethical declaration: All research was performed in accordance with the Declaration of Helsinki's guidelines and regulations.

Informed consent Informed consent was obtained from all participants prior to their participation in the survey. Before completing the questionnaire, participants were informed about the purpose of the study, the approximate time required to complete the survey and that their responses would be used exclusively for academic research. Participants provided consent by voluntarily proceeding with the questionnaire.

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Figures

Figure 1. Research model

Figure 2. PLS-SEM Bootstrapping results

Figure 3. Bootstrap distribution

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