



## Article

# Negative Impact of Social Network Services Based on Stressor-Stress-Outcome: The Role of Experience of Privacy Violations

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**Abstract:** Social network service (SNS) information has benefited many individuals. However, as such information has increased exponentially, the number of SNS users has increased dramatically and negative effects of SNSs on users have emerged. Many SNS users experience negative psychological conditions such as fatigue, burnout, and stress. Thus, in this study, we investigated the SNS and user characteristics that affect SNS fatigue, living disorder, and reduced SNS use intention. We developed a research model to examine the impact of two SNS characteristics (irrelevant information overload and open reachability) and two user characteristics (engagement and maintaining self-reputation) on SNS fatigue. We also examined the role of the experience of privacy violations in the relationship between living disorder and reduced SNS use intention. We collected data from 579 SNS users and created a partial least squares structural equation model to test the hypotheses. The results of the analysis showed that three factors, other than open reachability, positively affected SNS fatigue. Furthermore, we found that SNS fatigue significantly affected living disorder and reduced SNS use intention, and that experience of privacy violations significantly affected the relationship between living disorder and reduced SNS use intention. These results expand our understanding of SNS fatigue and users' negative behaviors.

**Keywords:** social network service; SNS fatigue; living disorder; reduced intention to use SNSs; experience of privacy violations

## 1. Introduction

By enabling people to access to the Internet anytime and anywhere, the development of information and communication technology (ICT) has produced many changes in society [1]. Among ICTs, social network services (SNSs) have become part of everyday life by expanding people's social networks on smart devices, allowing information to be shared easily and quickly, and facilitating communication with multiple people in real time [2]. An SNS is defined as a web-based service that allows people to form relationships, network, and share information and interests [3]. In addition, SNS users are free to create, distribute, and consume content through SNSs. Recently, SNSs have begun developing as convergent platforms for various fields and technologies, such as online communication, advertising, shopping, and business. However, SNS use is not always beneficial for individuals or society. As SNS use has increased, its negative consequences have caused confusion about appropriate SNS use as well as the phenomenon of SNS avoidance. For instance, as the size of one's network grows, the number of user interactions increases. Excessive interaction can cause SNS users to feel psychologically burdened or physically fatigued [4]. Furthermore, users may reduce their SNS use or consider disabling their

accounts. This is related to the bilateral nature of information technology (IT), where the development of ICT provides the benefits of convenience and abundance as well as negative consequences such as anxiety, frustration, addiction, and stress. In other words, SNSs may instill in users both positive expectations about their potential benefits and anxiety about their dysfunctional features.

Activity on SNSs consists of uploading profile information, making daily updates, sharing interests, establishing social relationships with others, and sharing and communicating information and opinions with other users [5]. As social connections expand and communication becomes more frequent through these processes, users must devote more time and effort to SNS activities, which can lead to a sense of psychological burden and fatigue. People can also experience unintentional information leaks or privacy violations, as well as stress stemming from exposure to a wealth of irrelevant information. Notwithstanding the individual stresses induced by SNSs, previous studies [5,6] predicting SNS user behaviors have mainly adopted positive perspectives. Furthermore, research on the post-acceptance behavior of SNS users has predicted a persistent intention to use from a positive point of view [7,8]. However, the adverse effects of SNS have become increasingly apparent throughout society, highlighting the need for investigations of SNS technology-related stress and its behavioral impacts. Among existing studies investigating the negative aspects of SNSs, several considering the duality of IT have examined negative aspects of IT use, focusing on concepts such as fatigue and technostress [9,10]; others e.g., [11,12] have mainly focused on privacy violations and user addiction.

As the number of SNS users has increased, users have begun experiencing SNS fatigue and increasing levels of SNS-related stress. Researchers have yet to address the negative effects of SNSs by conducting in-depth examinations of user fatigue on existing SNSs. From the stressor-stress-outcome (SSO) perspective, few studies have investigated the social science phenomenon of living disorder, referring to the extent to which users believe that SNS fatigue causes discomfort in everyday life, such as at work and in learning and decreases in SNS use because of SNS fatigue that focus on both SNS and user characteristics, which are regarded as crucial components for explaining individual behaviors in the context of many technologies and services [13]. Therefore, understanding the true nature of SNSs from an SSO-informed social point of view first requires careful examination of the negative aspects of SNSs. In particular, in-depth research on SNS fatigue will help individuals and society gain a deeper understanding of SNS usage. Thus, in this study, we attempted to empirically answer the following four research questions related to the negative aspects of SNSs.

- (1) What SNS factors and user characteristics cause SNS fatigue?
- (2) Do these factors positively influence SNS fatigue?
- (3) What factors decrease SNS users' SNS use intentions?
- (4) Do privacy violation experiences facilitate decreases in users' SNS use intentions?

To answer these questions, we developed a research model based on the SSO framework e.g., [14] as well as various SNS studies. As stressor factors, the proposed research model included two SNS characteristics (irrelevant information overload and open reachability) and two SNS user characteristics (engagement and maintaining self-reputation) to explain users' causal relationships with stress (SNS fatigue and living disorder), which together cause the outcome (reduced intention to use SNSs). In addition, recognizing that we could not overlook infringement of SNS users' privacy, we also examined the effect of SNS users' experience of privacy violations. We conducted structural equation modelling (SEM) analysis on data collected from SNS users, and verified the hypotheses presented in the research model, which we expected would improve our understanding of the negative behavior of individual SNS users.

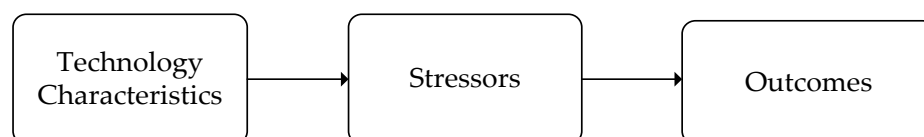
We structured this paper to reflect the approach we took in the study. In Section 2, we conduct a literature review to establish the study's theoretical foundation. Section 3 explains our research model and the hypotheses we developed based on the literature; Section 4 describes our research methodology, including our data collection procedures and the development of measures; and Section 5 discusses the analysis and hypothesis tests, and reports the results. Finally, in Section 6, we summarize

our findings and conclude by discussing their implications, the study's limitations, and directions for future research.

## 2. Literature Review

### 2.1. Technostress

Prior studies e.g., [9,10,14] on technological stresses have focused on the anxiety or burden felt by participants in the process of accepting and using new information technologies, and examined how stress affects employees' productivity and work efficiency. As shown in Figure 1, Ayyagari et al. [14] found that technology characteristics cause individuals' stress, which can affect outcomes such as burden or performance. In addition, researchers have investigated the relationship between stressors and outcomes by identifying other variables such as individual ability and environmental needs, in addition to IT (service) characteristics, as stressors. Through these results, the organization emphasized the importance of identifying the influence of technology-related stress and developing strategies to mitigate it.



**Figure 1.** Stressor-stress-outcome (SSO) framework.

Recently, other studies have focused on technostress resulting from excessive use of smartphones and SNSs. For example, Şahin and Çoklar [15] examined individual levels of SNS technostress based on various studies. They found that SNS users experienced moderate levels of technostress, primarily as a result of environmental causes such as data security and cost, rather than social causes such as institutional or social pressures. In addition, they found that demographic characteristics such as SNS users' monthly incomes and ages impacted the degrees of technostress due to SNS that they experienced. Meanwhile, Lee et al. [16] found that technostress is among the negative consequences of excessive use of and high levels of dependency on smartphones. Thus, various technological and service factors act as stressors for individuals that result in negative outcomes.

### 2.2. SNS Studies

The development of information technologies and new services offer many advantages including convenience, speed, and wealth for individuals and society. In response to this trend, researchers have extensively examined SNSs as a social phenomenon and the advantages of using SNSs. That is, most studies in this field have focused on the effects of SNSs on individuals and society, examining issues such as motivation for using SNSs, reasons for acceptance, persistence, and satisfaction. For example, Brandtzæg [17] argued that social networking is a useful tool for building and strengthening positive ties to promote social engagement and sustained mutual exchange. In addition, Al-Saggaf and Nielsen [18] found that the personal characteristics of users, such as loneliness, are leading variables affecting behavior on SNSs.

However, these new technologies and services can also produce negative effects, including frustration, anxiety, and addiction [9]. In studies exploring cognitive impairment among people experiencing these negative psychological states, researchers have proposed the concept of "technostress" as a source of user "fatigue" [9,19]. Tarafdar et al. [9] explained technostress as the inability to cope with the demands of computer use. The concept of technostress includes negative perceptions of ICT. Studies focusing on SNSs have developed concepts such as SNS fatigue, SNS overload, and SNS burnout to explain the consequences of technostress [13,20]. Users' excessive use of various SNSs without specific goals causes them to experience stress, fatigue, and anxiety.

These negative experiences can lead to negative behaviors related to SNS use. In this respect, Maier et al. (2015) found that SNS users felt they were giving excessive social support to other SNS users, and that such support caused social overload, which eventually contributed to various forms of stress. Furthermore, Kwak et al. [21] claimed that information overload and relational burden on SNSs often cause SNS fatigue among users, which has a negative impact on their daily lives. They also found that these factors could lead to behaviors such as reluctance to use SNSs. Other studies have argued that people are heavily involved in SNSs, which can result in SNS fatigue or SNS burnout [22]. Once users experience fatigue and an imbalance in their lives because of heavy SNS use, they think about stopping SNS usage and even closing their SNS accounts. Table 1 summarizes recent SNS and social media studies examining SNS stress and its consequences.

**Table 1.** Recent key studies regarding technostress.

Study	Summary of Findings
Cao et al. [23]	<ul style="list-style-type: none"> <li>Excessive social network service (SNS) use cause cognitive-emotional preoccupation that is weakened by cognitive-behavioral control.</li> <li>Techno-exhaustion, and life and privacy violations affect academic performance.</li> </ul>
Cao and Sun [24]	<ul style="list-style-type: none"> <li>Communication overload is not positively related to exhaustion.</li> <li>Information and social overload are significant predictors of exhaustion.</li> <li>Information overload does not have a positive impact on regret while communication and social overload do.</li> <li>Exhaustion and regret are crucial factors in the development of discontinuance intention.</li> </ul>
Dhir et al. [25]	<ul style="list-style-type: none"> <li>This study applied the SSO framework to examine media fatigue.</li> <li>Compulsive social media use positively influences the tendency to experience fatigue.</li> <li>Social media fatigue is associated with high anxiety and depression among adolescents.</li> <li>Compulsive media use mediates the relationship between fear of missing out and social media fatigue.</li> </ul>
Dhir and Tsai [26]	<ul style="list-style-type: none"> <li>Content uses and gratifications do not predict intensity of Facebook use among adolescents.</li> <li>Information seeking predicts intensity of Facebook use among young adults while exposure uses and gratifications do not.</li> <li>Entertainment is the strongest predictor of intensity of Facebook use among adolescents and young adults.</li> <li>This study examined cultural differences in desired Facebook uses and gratifications and the intensity of Facebook use.</li> </ul>
Luqman et al. [27]	<ul style="list-style-type: none"> <li>Social, hedonic, and cognitive uses of social media cause technostress and SNS Exhaustion.</li> <li>Technostress and SNS Exhaustion affect discontinuous use intentions.</li> </ul>
Whelan et al. [28]	<ul style="list-style-type: none"> <li>Fear of missing out, Internet cognitive failure, and deficient self-regulation explain communication overload.</li> <li>Only Internet cognitive failure and deficient self-regulation explain information overload.</li> </ul>

Studies [29,30] examining the negative aspects of SNSs have identified certain SNS and user characteristics as important factors contributing to excessive SNS use-based fatigue. These studies have reported that various factors, including information overload and unlimited open communication, extent of SNS usage, and self-reputation have a significant positive impact on an individual's negative SNS use-related behavior [21,22,31]. However, few empirical studies have investigated the causes and consequences of living disorder and reduced or discontinued SNS use from a stress perspective. Furthermore, researchers have not yet considered the role experience of privacy infringement plays in the negative influence of using SNSs. In this study, we set out to fill the gaps in previous research by empirically examining these factors and relationships.

### 3. Research Model and Hypothesis Development

Based on existing research [9,14,29,30], we developed a research model including two important characteristics (SNS and users), and proposed four variables (irrelevant information overload, open reachability, engagement, and maintaining self-reputation) for investigating their impact on SNS fatigue, living disorder, and reduced SNS use intention. SNS literature has emphasized the importance of privacy, as many SNSs store a significant amount of personal information. For example, Park et al. [32] claimed that when SNS users have anxiety about privacy violations, they have strong negative attitudes toward SNSs. Similarly, Çoklar and Şahin [30] claimed that the increasing likelihood of personal information being leaked on SNSs resulted in a negative perception of SNSs, in terms of information sharing and forming relationships with other SNS users. Thus, we examined the role privacy violation experiences play in the relationship between living disorder and reduced SNS use intention, and sought to determine whether or not the experience of privacy violations enhanced the relationship between living disorder and reduced SNS use intention. Figure 2 displays the proposed research model with the hypotheses.

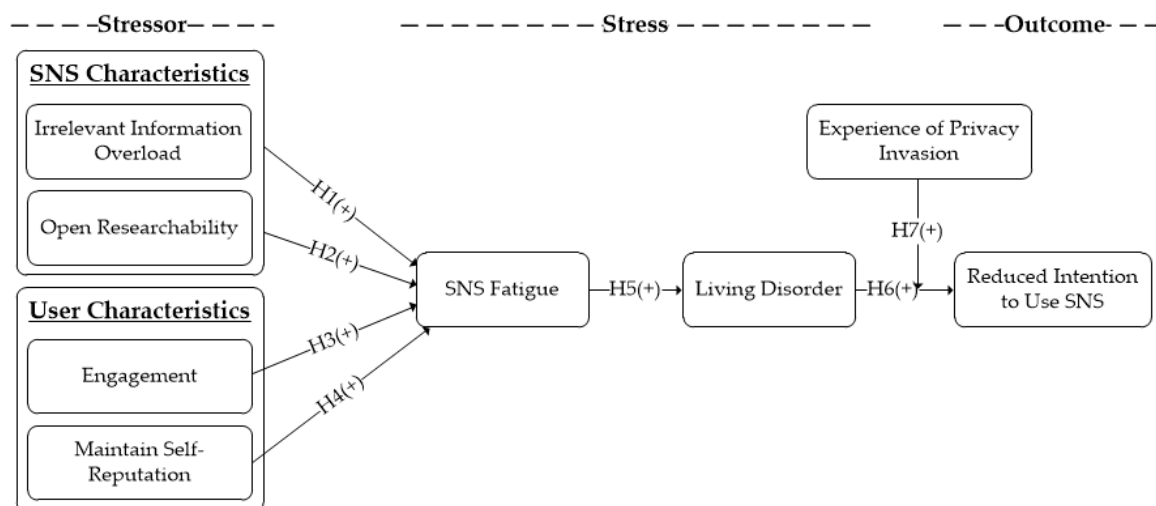


Figure 2. Research model with hypotheses.

#### 3.1. Irrelevant Information Overload

Irrelevant information overload refers to the degree to which SNS users feel that irrelevant information is excessively shared with them while they are using SNSs [9,33]. In fact, information sharing is an important characteristic of SNSs that brings many advantages to users [34]. However, the quality of the information SNS users are exposed to is often very low. The increase in unnecessary information on SNSs makes it necessary for users to spend considerable time searching for the information they want. Increasing the amount of available information beyond levels that individuals can control can cause fatigue. Tarafdar et al. [9] argued that such information overload is a negative aspect of IT and a factor that contributes to technostress. The amount of information shared on SNSs

that is not genuinely important to other SNS users continues to increase. In this respect, Kwak et al. [21] claimed that information, particularly an overload of low-quality and irrelevant information, has a significant negative effect on users' intention to use SNSs. In other words, continuous exposure to non-personally relevant information can cause fatigue among SNS users. This led us to propose the following hypothesis.

**Hypothesis 1.** *Irrelevant information overload is positively associated with SNS fatigue.*

### 3.2. Open Reachability

Open reachability—defined as the extent to which other users related to an SNS user can connect to said user “anytime and anywhere” to share information and communicate—is not SNS-user-centered, but is related to other users surrounding the SNS user. Certain SNS users have too many relationships on SNSs, meaning that others can always share information with or inform them of news [35]. Social relationships are one of the important elements embedded in SNSs. Unlike existing communication services such as email and telephones, SNSs feature endless and open connectivity to others whom users know and do not know. In other words, SNS users can easily reach other users on SNSs. Open reachability on SNSs thus enables users to expand their social relations [36].

Most previous research has shown that SNS users connect with existing friends and family members on SNS platforms. In addition, studies have shown that new relationships can be established while using SNSs [31,37]. However, SNSs do sometimes connect users with unwanted people. Many SNS users have difficulty managing their SNS accounts because of incoming communication from those they do not know or other unwanted users. Wohn and LaRose [38] claimed that SNS users spend considerable time managing their accounts because of incoming connections, messages, and notifications. Such characteristics of SNSs can cause fatigue among users. Park et al. [32] also argued that engaging and communicating with unwanted people can cause SNS users to feel fatigue. They suggested that burdens resulting from undesired connections and negative feelings about simple relationships can lead to psychological disharmony. Finally, Kwak et al. [21] suggested that the burden of social relationships on SNSs may lead to declines in SNS use. Based on these claims, we proposed the following hypothesis.

**Hypothesis 2.** *Open reachability is positively associated with SNS fatigue.*

### 3.3. Engagement

In general, engagement refers to the state of being deeply focused and immersed in a particular pursuit and experiencing a time flow or a state of forgetting oneself [39]. In other words, it refers to the emotional state that individuals feel when voluntarily enjoying something of interest. In the SNS context, it refers to the degree to which people feel excessively involved with SNSs while using them. Hoffman and Novak [39] explained that immersion in the internet increases the frequency of internet use. However, if the degree of immersion is excessive, negative consequences may arise. In the case of SNSs, excessive enjoyment and immersion can cause problems. In addition, usage habits can cause negative psychological states such as stress, fatigue, and addiction. In this regard, Salehan and Negahban [34] argued that the degree of SNS use intensity affects IT addiction and causes negative behavior. Ravindran et al. [20] also claimed that spending excessive time on SNSs causes negative emotions or a reduction in the need to use SNSs. Therefore, we proposed the following hypothesis.

**Hypothesis 3.** *Engagement is positively associated with SNS fatigue.*



### 3.4. Maintaining Self-Reputation

Maintaining self-reputation is defined as the degree to which SNS users want to maintain their reputations on SNSs. In general, reputations are formed based on the subjective evaluations of others. It is natural to be conscious of others' evaluations on SNSs, which are relationship-based. People are conscious of others when trying to make positive impressions and sustain good reputations, and some people feel pressure to make exaggerated posts in the presence of others. Furthermore, people constantly worry about how others will evaluate them. Park et al. [32] argued that concern over reputation creates psychological dissonance, explaining that psychological dissonance thus constitutes a conflicting condition resulting from the use of SNSs.

Users who have good reputations on SNSs try to post quality information to SNSs to maintain their reputations and also spend considerable time maintaining relationships with others. On the other hand, users who do not have good reputations will perform various activities on SNSs to improve their reputations. In short, SNS users must increase their SNS usage time to establish and maintain their reputations [12]. Furthermore, the various activities SNS users must perform to acquire and share good-quality information with other SNS users cause users who want to maintain good reputations considerable fatigue. Maier et al. [31] explained that subjective social support norms affect the social overload of SNS users. Therefore, we proposed the following hypothesis.

**Hypothesis 4.** *Maintaining self-reputation is positively associated with SNS fatigue.*

### 3.5. SNS Fatigue, Living Disorder, and Reduced SNS Use Intention

This study examined three variables (SNS fatigue, living disorder, and reduced SNS use intention) that occur as negative consequences of SNS use. First, SNS fatigue is defined as the extent to which people experience psychological discomfort or stress while using SNSs. Living disorder refers to the extent to which users believe that SNS fatigue causes discomfort in their everyday lives, such as at work and in learning. Finally, reduced SNS use intention is defined as users' degree of willingness to reduce and limit SNS use as much as possible. Maier et al. [31] argued that social overload is an important antecedent of behavioral responses. In other words, negative perceptions of SNSs, such as social overload, reduce or eliminate the use of SNSs. Kwak et al. [21] also claimed that SNS-related stressor factors decrease SNS utilization. The psychological inconsistency of SNS users may have a negative impact on their work and lives.

Other studies e.g., [20] have shown that SNS fatigue is a negative emotion experienced by individuals in the course of using SNSs. These studies suggested that this fatigue reduces the need for SNSs and causes problems in individuals' daily lives. Furthermore, Yamakami [22] contended that once SNS users feel fatigue because of excessive use, they are often unable to focus on their tasks, resulting in low job performance. In addition, that study explained that problems such as stress and psychological inconsistency affect the discontinuation of SNS use. Users who experience SNS fatigue often experience a loss of balance in their daily lives because they invest more time and effort in other activities to alleviate the factors that cause irritation or fatigue to nearby people [40]. Furthermore, Karauskos et al. [41] claimed that excessive SNS usage increases users' fatigue, which often leads to both living and job disorders. Consequently, the negative perception of and experience with SNSs can lead to reductions in SNS use. Taking into account these previous findings, we proposed the following two hypotheses regarding decreased SNS use intention-related variables.

**Hypothesis 5.** *SNS fatigue is positively associated with living disorder.*

**Hypothesis 6.** *Living disorder is positively associated with reduced SNS use intention.*

### 3.6. The Moderating Effect of Experience of Privacy Violations

In this study, we defined the experience of privacy violations as the degree to which SNS users worry about SNS-based leaks of personal information or violations of privacy [12]. The issue of personal privacy has become important in social science research, regardless of age. Indeed, in the Web 2.0 environment where SNSs proliferate, the problem of personal information security has become a particularly important social issue. SNS-related privacy concerns continually arise in relation to personal profiles, uploaded content, and messages [42]. In addition, SNSs are environments where one is forced to disclose personal information to some extent, which may lead to inadvertent leaks. Leaked information can, moreover, spread quickly and harm individuals. Park et al. [32] argued that the more anxiety one has about privacy violations, the stronger one's negative attitude toward SNSs. Furthermore, Çoklar and Şahin [30] claimed that the likelihood of personal information leaking has increased on SNSs, fueling fatigue and reduced SNS use intentions. Users with living disorders are less likely to use SNSs, and this relationship will be further strengthened if an additional negative effect is added to this relationship through the experience of privacy violations. In this regard, Ku et al. [43] claimed that individuals' attitudes toward using SNSs become negative once users experience privacy violations and their anxiety levels or burdens increase. Based on these claims, we proposed the following hypothesis.

**Hypothesis 7.** *The experience of privacy violations moderates the causal relationship between living disorder and reduced SNS use intention.*

## 4. Materials and Methods

### 4.1. Data Collection

We collected data from actual SNS users in South Korea where most people heavily use various SNSs. We distributed a total of 3000 questionnaires to SNS users in public places such as libraries, train stations, college campuses, and downtown areas. Of those, we collected 592 (response rate: 19.73%) over the subsequent three months, discarding 13 responses because of missing values. Thus, we used 579 responses in our analysis. As recommended in the literature related to determining appropriate sample sizes e.g., [44,45], we used the ratios of measures and latent variables to determine if we had collected enough data. In so doing, we found that the minimum required sample in this study was 138 responses, meaning the collected data was sufficient to test the proposed research model.

Among the 579 respondents, 272 (46.98%) were male and 307 (53.02%) were female. Thus, female respondents' participation rate was slightly higher. Regarding the length of SNS usage, 33.68% reported having used an SNS for seven years or more, 23.66% reported five years or more, and 19.69% reported nine years or more. The most popular SNS was Facebook (74.09% of the respondents), followed by YouTube (66.49%), Instagram (65.11%), and Qzone (53.20%). Furthermore, many users used more than one SNS. Regarding daily SNS usage time, 34.20% of the respondents reported using SNSs for one to three hours a day, followed by three to five hours (31.95%), and less than one hour (16.41%). Interestingly, 17.44% of the respondents reported using SNSs more than five hours a day, which could indicate addiction considering people's average daily schedules. Finally, individuals reported using SNSs for a variety of purposes. The primary reason users reported for using SNS was to express themselves (73.06%), followed by sharing common interests with others (62.52%), and maintaining relationships (55.61%). These reasons may explain the large amounts of data generated in the Web 2.0 environment. Table 2 provides profiles of the respondents.



**Table 2.** Profiles of participants (n = 579).

Demographic Categories		Frequency	Percentage
Gender	Male	272	46.98%
	Female	307	53.02%
Length of SNS usage	Less than 3 years	47	8.12%
	3 to 5 years	86	14.85%
	5 to 7 years	137	23.66%
	7 to 9 years	195	33.68%
	More than 9 years	114	19.69%
Main SNS used (multiple responses allowed)	Facebook	429	74.09%
	Twitter	281	48.53%
	Instagram	377	65.11%
	YouTube	385	66.49%
	Qzone	308	53.20%
	Others	21	3.63%
Daily SNS usage time	Less than 1 h	95	16.41%
	1 to 3 h	198	34.20%
	3 to 5 h	185	31.95%
	More than 5 h	101	17.44%
Purpose of using SNSs (multiple responses allowed)	Sharing common interests with others	362	62.52%
	Expressing myself	423	73.06%
	Sharing content (photos, video, etc.)	205	35.41%
	Maintaining relationships	322	55.61%
	Using applications offered by SNSs	261	45.08%

#### 4.2. Development of Measures

We developed the measures for the latent constructs proposed in the research model based on the literature. To enhance the sophistication of the measurement item development process, we developed the final items through the following three steps. First, we modified and supplemented the items adopted from prior studies to fit the context of SNS fatigue. All items in the questionnaire were developed with 7-point Likert scales, ranging from (1) “strongly disagree” to (7) “strongly agree.” Consequently, we tested the content validity with five professors in social science fields to purify and increase the accuracy of each item. Finally, we statistically verified the reliability and validity of the measurement items by conducting a pilot test on 30 SNS users. The results of the pilot test showed that the measures had good reliability and validity. Appendix A shows the final measures we developed to assess each construct and lists the related studies.

### 5. Results and Discussion

#### 5.1. Assessment of the Measurement Model

We use the partial least squares (PLS) approach to analyze the data for both the measurement and structural models. The main PLS analysis tool we used SmartPLS 2.0. We selected the PLS approach because it uses a two-step process to test proposed models: (1) An assessment of the measurement model and; (2) an evaluation of the structural model. In other words, the PLS approach can simultaneously evaluate the reliability and validity of the study measures and the structural model (hypothesis test). Prior to hypothesis testing, we tested the measurement model to confirm the reliability and validity (convergent and discriminant) of the measures. For this purpose, we used three test results: (1) Cronbach’s alpha (construct reliability); (2) factor loadings for individual item validity, composite reliability (CR), and average variance extracted (AVE) (convergent validity test) and; (3) the square root of AVE and correlation value (discriminant validity test). First, to confirm reliability, the Cronbach’s alpha should be greater than 0.7 [46]. Second, the factor loading values

for each item and CR, and for the AVE should be greater than 0.7 and 0.5, respectively [47]. Finally, the discriminant validity, which measures the lack of relationship among items, can be confirmed by comparing the square root of AVE and correlation values. To confirm discriminant validity, the square root of AVE should be greater than the correlation values [47].

First, we analyzed the descriptive statistics for each construct using SPSS 25. Table 3 shows the results. Then, we conducted the uni-dimensionality validation tests referred to as two types of validity (convergent and discriminant validity) and item reliability using SmartPLS 2.0. Table 4 shows the result of the reliability test for the measurement model. The test showed that three items (eng3, fat4, and id3) reduced reliability; we, therefore, removed these items. Thereafter, the Cronbach's alpha value for all latent constructs fulfilled the recommended value (0.7), ranging from 0.789 to 0.870. The tests thus verified the reliability of the measurement model.

**Table 3.** Descriptive statistics results.

Latent Construct	Descriptive Statistics				
	N	Mean	Minimum	Maximum	St.Dev
Irrelevant Information Overload	579	5.071	2	7	0.063
Open Reachability	579	0.357	1	7	0.076
Engagement	579	0.416	2	7	0.100
Maintaining Self-Reputation	579	0.533	2	7	0.137
SNS Fatigue	579	0.448	1	7	0.099
Living Disorder	579	0.556	2	7	0.053
Experience of Privacy Violations	579	0.454	1	7	0.778
Reduced Intention to Use SNSs	579	0.396	1	7	0.105

**Table 4.** Reliability testing results.

Latent Construct	# of Item	Removed Item	Cronbach's Alpha
Irrelevant Information Overload	3	0	0.793
Open Reachability	3	0	0.822
Engagement	4	1	0.870
Maintaining Self-Reputation	3	0	0.800
SNS Fatigue	4	1	0.826
Living Disorder	4	1	0.789
Experience of Privacy Violations	3	0	0.817
Reduced Intention to Use SNSs	4	0	0.862

As shown in Table 5, all items fulfilled the factor loading threshold (0.7). Furthermore, the CR for all latent constructs ranged from 0.811 to 0.901, and the AVE ranged from 0.589 to 0.752, indicating convergent validity. These results show that each item accurately measured the latent constructs measured in the research model. To further confirm this result, we conducted exploratory factor analysis (EFA) to test the validity of the measures and identify any potential cross-loading issues. Table 6 shows the EFA results. All items loaded well to the latent constructs that they were designed to measure without any cross-loading issues; we thus confirmed the validity of measurement model.

Finally, we verified discriminant validity to confirm that the items were not related to other items or latent constructs other than the latent constructs they were designed to measure. As shown in Table 7, the values in the diagonal representing the square root of AVE for each latent construct were greater than the longitudinal and transverse correlation values. We thus confirmed discriminant validity. The measurement model test results enabled us to fully verify the reliability and validity of each measure, which allowed us to formulate the structural model to test the proposed hypotheses.

Table 5. Convergent validity results.

Latent Construct	Item	Mean	SD	Factor Loading	CR	AVE
Irrelevant Information Overload	io1	5.362	0.095	0.752	0.814	0.594
	io2	4.846	0.147	0.800		
	io3	5.004	0.226	0.759		
Open Reachability	or1	5.003	0.244	0.763	0.811	0.589
	or2	4.628	0.501	0.810		
	or3	5.147	0.326	0.727		
Engagement	eng1	4.863	0.621	0.863	0.865	0.681
	eng2	4.772	0.195	0.779		
	eng4	5.371	0.432	0.831		
Maintaining Self-Reputation	msr1	4.963	0.437	0.865	0.867	0.686
	msr2	5.126	0.632	0.806		
	msr3	4.800	0.530	0.812		
SNS Fatigue	fat1	5.322	0.685	0.832	0.885	0.719
	fat2	5.121	0.280	0.868		
	fat3	4.654	0.378	0.844		
Living Disorder	ld1	5.100	0.501	0.900	0.901	0.752
	ld2	4.697	0.368	0.843		
	ld4	5.624	0.798	0.857		
Experience of Privacy Violations	epi1	4.368	0.425	0.799	0.860	0.672
	epi2	5.237	0.625	0.824		
	epi3	5.206	0.311	0.836		
Reduced Intention to Use SNSs	riu1	5.583	0.253	0.811	0.893	0.677
	riu2	6.007	0.541	0.827		
	riu3	5.624	0.339	0.806		
	riu4	5.320	0.452	0.846		

Note: SD (standard deviation); CR (composite reliability); AVE (average variance extracted); three items (flo3, fat4, and id3) were excluded in this analysis because of negative effects on reliability.

Table 6. Exploratory factor analysis results.

Item	IIO	OR	FIO	MRS	FAT	LD	EPI	RIU
io1	<b>0.874</b>	0.244	0.382	0.282	0.368	0.129	0.333	0.392
io2	<b>0.864</b>	0.320	0.162	0.231	0.360	0.169	0.128	0.418
io3	<b>0.833</b>	0.301	0.254	0.218	0.334	0.290	0.407	0.531
or1	0.293	<b>0.808</b>	0.184	0.211	0.334	0.128	0.341	0.480
or2	0.303	<b>0.807</b>	0.141	0.178	0.317	0.411	0.215	0.573
or3	0.209	<b>0.753</b>	0.131	0.298	0.198	0.534	0.527	0.566
eng1	0.222	0.526	<b>0.796</b>	0.192	0.278	0.372	0.367	0.341
eng2	0.263	0.240	<b>0.784</b>	0.243	0.216	0.352	0.005	0.432
eng4	0.144	0.221	<b>0.739</b>	0.291	0.236	0.348	0.414	0.128
msr1	0.308	0.235	0.227	<b>0.850</b>	0.148	0.362	0.605	0.392
msr2	0.289	0.514	0.107	<b>0.886</b>	0.388	0.533	0.098	0.164
msr3	0.306	0.283	0.043	<b>0.909</b>	0.081	0.561	-0.131	0.301
fat1	0.351	0.365	0.081	0.280	<b>0.902</b>	0.239	0.182	0.294
fat2	0.230	0.241	0.119	0.287	<b>0.888</b>	0.506	0.293	0.178
fat3	0.278	0.253	0.092	0.449	<b>0.843</b>	0.395	0.388	0.296
ld1	0.433	0.422	0.182	0.246	0.551	<b>0.907</b>	0.518	0.453
ld2	0.280	0.263	0.239	0.228	0.477	<b>0.859</b>	0.431	0.532
ld4	0.509	0.448	0.208	0.242	0.091	<b>0.933</b>	0.347	0.448
epi1	0.162	0.281	0.098	0.413	0.398	0.189	<b>0.925</b>	0.315
epi2	0.199	0.303	0.181	0.338	0.553	0.290	<b>0.850</b>	0.208
epi3	0.064	0.250	0.300	0.319	0.348	0.244	<b>0.930</b>	0.295
riu1	0.322	0.246	0.131	0.407	0.269	0.137	0.513	<b>0.960</b>
riu2	0.314	0.230	0.228	0.520	0.393	0.308	0.351	<b>0.849</b>
riu3	0.296	0.058	0.357	0.298	0.302	0.414	0.269	<b>0.914</b>
riu4	0.235	0.122	0.320	0.197	0.225	0.270	0.470	<b>0.964</b>

Table 7. Discriminant validity test.

Latent Construct	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Irrelevant Information Overload	<b>0.771</b>							
(2) Open Reachability	0.283	<b>0.767</b>						
(3) Engagement	0.304	0.267	<b>0.825</b>					
(4) Maintaining Self-Reputation	0.197	0.223	0.300	<b>0.828</b>				
(5) SNS Fatigue	0.273	0.281	0.315	0.410	<b>0.848</b>			
(6) Living Disorder	0.362	0.406	0.299	0.324	0.283	<b>0.867</b>		
(7) Experience of Privacy Violations	0.291	0.472	0.313	0.357	0.260	0.400	<b>0.820</b>	
(8) Reduced Intention to Use SNSs	0.416	0.403	0.355	0.327	0.394	0.286	0.367	<b>0.823</b>

Note: The values in bold are the AVE (average variance extracted) square root values.

Since we used various measures in relation to the same participants and since each construct showed a relatively high degree of correlation, common method bias (CMB) was a real possibility in this study. To test for CMB issues, we used Harman's [48] single factor method. The method performs exploratory factor analysis on all the variables and assumes that bias exists when variance for a single factor is large based on factors that had eigenvalues greater than 1 [49]. Unrotated factor analysis using principal component analysis yielded eight factors. The first factor explained about 32.9% of the variance, which certainly does not constitute the majority of the total variance, given that Malhotra et al. [50] reported that 40% was not a majority of the variance. Thus, the result of Harman's single-factor test indicated that the CMB in this study was not likely a source of major issues.

## 5.2. The Structural Model Test

After confirming the measurement model, we tested the independent relationships (H1 to H6) among the study's proposed constructs using variance-based structural equation modeling (SEM) with the collected data. We formulated the structural model with SmartPLS 2.0, generating two important values: The path coefficients (standardized betas:  $\beta$ ) and the squared multiple correlations ( $R^2$ ) value for each endogenous variable. Path coefficients indicate the strength of the relationships between two constructs. Acceptance or rejection of hypotheses is based on the value of the path coefficient along with the corresponding  $t$ -value. The squared multiple correlations ( $R^2$ ) value for each endogenous construct indicates the predictive power of the research model [47]. The  $R^2$  values can be used to determine the amount of variance explained by exogenous constructs within the structural model [51].

As shown in Figure 3, we found that three external constructs had significant positive impacts on SNS fatigue, which was also significantly associated with living disorder, though the strengths of the paths varied. First, irrelevant information overload had a standardized path coefficient of 0.297 with a  $t$ -value of 4.120, which was significant at  $p < 0.01$ . Thus, H1 was supported. This result implies that there is a large amount of information on SNSs, but much of it is not relevant to users' purposes. This predominance of irrelevant information makes it necessary for SNS users to spend considerable time searching for the information they want. This phenomenon can cause immense mental and physical fatigue among SNS users. In this regard, Boyd and Ellison [3] argued that SNSs are the main gateway to substantial information production, but that excessive unnecessary information is generated, which may increase fatigue by increasing SNS users' Internet usage time.

Second, we found that engagement ( $\beta = 0.323$ ,  $t$ -value = 5.129) and maintaining self-reputation ( $\beta = 0.406$ ,  $t$ -value = 5.235) were positively associated with SNS fatigue. Thus, H3 and H4 were supported at  $p < 0.01$ . These results concern SNS users' personal use habits, suggesting that users become immersed in SNSs to express themselves on the web, and this phenomenon results in transient SNS use, resulting in fatigue. Prior studies e.g., [10,52] have shown that transient commitment to specific services produced negative results. In addition, many SNS users share information about their interests on the web with others, and constantly strive to maintain their reputations by garnering praise from others who use this information. This process leads to excessive SNS use, resulting in

mental and physical fatigue [20]. Among the three constructs, maintaining self-reputation had the greatest effect on SNS fatigue.

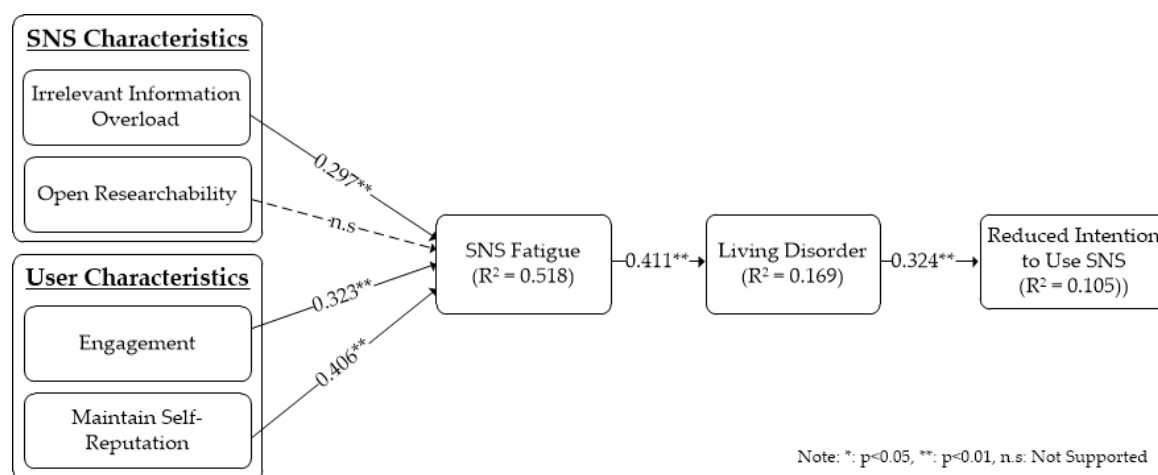


Figure 3. The structural model for the direct effects (H1 to H6).

Meanwhile, we did not find a significant association between open reachability and SNS fatigue; therefore, H2 was rejected. These results can be interpreted as evidence that users use SNS in self-centered manners. In other words, the concept of open reachability refers to the existence of open communication methods between SNS users and others who surround them. Certain SNS users are always openly communicating—for example, sending texts or providing updates to other users with whom they have relationships. In this sense, if an SNS user ignores all communications from other users, the user will not personally feel particularly high levels of SNS fatigue. Park and Kim [13] claimed that open communication among both information producers and consumers of SNSs is a great advantage of SNSs. However, users often use SNSs for the purpose of self-expression and ignore information about other people.

Regarding the relationship between the constructs involved in the process of reduced intention to use SNSs, first, SNS fatigue had a significant effect (at  $p < 0.01$ ) on living disorder ( $\beta = 0.411$ ,  $t$ -value = 7.236). Thus, H5 was supported. This result implies that when users suffer SNS use-related fatigue, they experience various living disorders in their daily lives. Between 2017 and 2018, as various information technologies become increasingly popular, the number of SNS users worldwide expanded from 2.46 billion to 2.62 billion [53]. Kuss et al. [40] claimed that proactive use of SNSs may have an adverse effect on privacy and business. Furthermore, Turel et al. [54] argued that if the technology used during work results in stress or exhaustion, it causes conflict between technology and life, which negatively affects the latter. Second, our analysis showed a significant relationship between living disorder and reduced SNS use intention, with a path coefficient of 0.324 and a  $t$ -value of 4.322. Thus, H6 was supported at  $p < 0.01$ . This result is consistent with prior studies e.g., [20,31] showing that the addictive use of SNSs leads to both living and job disorders that negatively influence users' intentions to use the services. Figure 3 shows the structural model analysis of the direct effects (H1 to H6) and Table 8 summarizes the results of the hypotheses tests (H1 to H6).

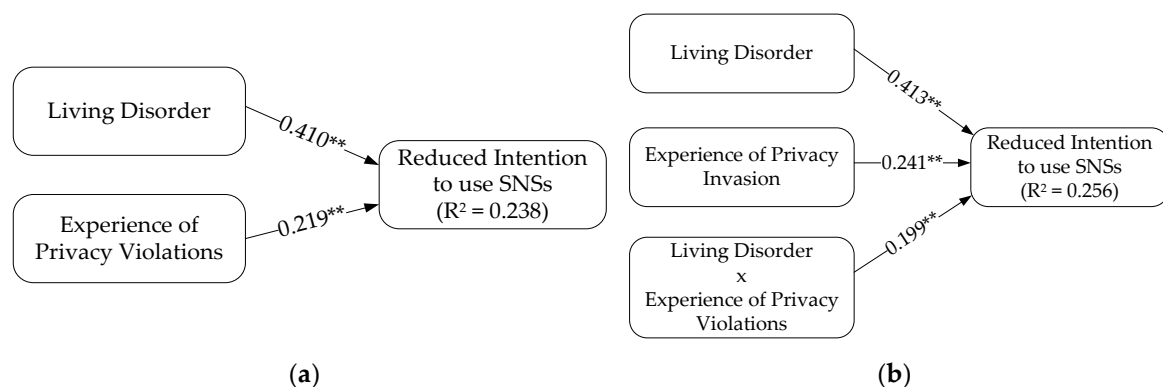
The  $R^2$  of the endogenous variables suggested that the four external constructs—irrelevant information overload, open reachability, engagement, and maintaining self-reputation—explained 51.8% of the variance in SNS fatigue, which explained 16.9% of the variance in living disorder. These results imply that the direction in which the four exogenous variables move determined 51.8% of the information related to SNS fatigue (endogenous variable). Similarly, 16.9% of the information related to living disorder moved in the same direction as SNS fatigue. Lastly, living disorder explained 10.5% of the information related to reduced SNS use intention.

**Table 8.** Summary of hypothesis tests (H1 to H6).

Hypothesis	Path	Std. $\beta$	t-Value	Result
H1	Irrelevant Information Overload	0.297	4.120	S **
H2	Open Reachability	0.095	1.015	NS
H3	Engagement	0.323	5.129	S **
H4	Maintaining Self-Reputation	0.406	5.235	S **
H5	SNS Fatigue	0.411	7.236	S **
H6	Living Disorder	0.324	4.322	S **

Note: \*:  $p < 0.05$ ; \*\*:  $p < 0.01$ ; S: Supported; NS: Not supported.

After evaluating the direct effects, we evaluated the moderating effect of the experience of privacy violations using Carte and Russell's [55] moderated multiple regression approach, which involves testing two models to identify differences in  $R^2$ . First, we analyzed the model with living disorder and experience of privacy violations as predecessor variables to find  $R^2(R_1^2)$ . Next, we analyzed the second model with three variables (living disorder, experience of privacy violations, and the interaction term of these two variables) as predecessor variables to find  $R^2(R_2^2)$ . We then found the F-value by considering  $\Delta R^2$ , samples (N), and DF (degrees of freedom). This analysis showed that the moderating effect of the experience of privacy violations was significant within the relationship between living disorder and reduced SNS use intention. This result implies that when individuals experience living disorders because of excessive SNS use, their use reduction intentions increase. In this context, experiencing more privacy intrusions will strengthen individuals' intentions to reduce SNS use. Figure 4a,b depict the two models used to test moderators and Table 9 summarizes the moderating effects results (H7).

**Figure 4.** (a) Main effect model; (b) interaction effect model.**Table 9.** Moderating effects results.

Hypothesis (Result)	Construct	Analysis of the Main Effect		Analysis of the Interaction Effect	
		Std. $\beta$	$t$ -Value	Std. $\beta$	$t$ -Value
H 7 (Supported)	Living Disorder	0.410	6.884 **	0.413	7.006 **
	Experience of Privacy Violations	0.219	3.582 **	0.241	3.668 **
	Living Disorder $\times$ Experience of Privacy Violations		-	0.199	2.421 *
	R <sup>2</sup> (Reduced Intention to use SNSs)	0.238		0.256	
	F-value	13.911 ** ( $\Delta R^2 = 0.018$ )			

Note: \*:  $p < 0.05$ , \*\*:  $p < 0.01$



## 6. Conclusions

### 6.1. Summary of Key Findings

Web 2.0 has become an everyday reality, and SNSs are recognized as useful mediums for communication and information sharing that have both positive and negative influences on society and individuals. To date, researchers have extensively examined the positive effects of SNSs, but the various negative impacts of SNSs have become increasingly visible on both individual and societal levels. Regardless of the impacts of SNSs, as the number of users increases, the amount of time individuals spend on SNSs interacting with other people increases; this raises concerns about the side effects of using SNSs. Thus, in this study, we set out to investigate several external factors that cause SNS fatigue, which increases individuals' living disorders. We collected data from 579 SNS users and examined the relationships between the proposed constructs. Our findings can be summarized as follows.

First, irrelevant information overload and engagement had a significant positive impact on SNS fatigue. In other words, dealing with excessive irrelevant information often causes users to waste considerable time trying to find the information they seek, which can increase user fatigue. In addition, users who are immersed in SNSs experience increases in both SNS use time and SNS fatigue. These results are consistent with the findings of Kim et al. [56], Park et al. [32], and Lee et al. [2].

Second, SNS users with strong commitments to maintaining their reputations experience increased SNS fatigue. SNSs have the advantage of expanding social relations through user profiles and information sharing. Many SNS users constantly upload and share useful information with others to enhance their reputations. In fact, Kim and Park [56] claimed that SNS users who currently have good reputations want to maintain the status quo by frequently updating information on their accounts, and this frequent activity eventually becomes a source of stress for them. Furthermore, Park et al. [32] argued that SNS users with good reputations make significant efforts to maintain their reputations, which eventually increases the levels of fatigue they experience. From this perspective, prior studies [11] found that maintaining good reputations on SNSs is the greatest advantage for SNS users in influencing others. However, those who want to maintain good reputations undergo considerable stress, resulting in high levels of SNS use-related fatigue.

Meanwhile, our findings showed no significant relationship between open reachability and SNS fatigue, implying that SNS users do not care much about incoming contacts from others because they can ignore them if they want to. This finding aligns with the results of prior studies e.g., [21,38] showing that many SNS users want to use SNSs for their own purposes and from their own points of view. For this reason, they can exercise control over decisions about using the information shared by others on SNSs. This suggests that open reachability does not substantially affect SNS users' fatigue because SNS users, even those bombarded with large amounts of information or contacted by strangers, can control what they pay attention and what they ignore.

The relationships between SNS fatigue and living disorder, and between living disorder and reduced SNS use intention were all significant. The former two can lead to negative psychological states such as stress and fatigue when the amount of information generated during the process of using SNSs or the troublesomeness, irritation, and burden of managing the social network increases. In other words, SNS use can have negative impacts for individuals when it becomes a part of their everyday lives. These findings are consistent with the results of previous research [54] showing that excessive use of certain information technologies can negatively impact individuals' lives when they reach mental and physical exhaustion. In particular, obsession with excess information, use time, and criticism on SNSs can increase anxiety and stress, and, consequently, disturb daily life rhythms, generating negative outcomes. Finally, our analysis supported the relationship between living disorder and reduced SNS use intention, bolstering Ravindran et al.'s [20] assertion that SNS users who feel and experience their living disorders in terms of stress and negative influences on work may end up disliking SNSs and discontinue or temporarily limit their use.

Regarding the moderating effect of experience of privacy violations, the increasing likelihood of personal information leaks or privacy violations on SNSs can enhance the relationship between living disorder and reduced SNS use intention. In other words, SNS users suffer difficulties in life because of excessive use of SNSs and experience personal information leaks will have lower SNS use intentions. This result is consistent previous studies' e.g., [31] findings regarding the effect of privacy violation experiences on intentions to use specific information technologies. For example, Kim et al. [33] claimed that negative factors such as stress, fatigue, and living disorder have a negative impact on SNS use intention. The addition of privacy violations to this relationship will produce further reductions in SNS users' intentions to use SNSs.

## 6.2. Implications

The findings of this study have several important academic and practical implications. First, from an academic viewpoint, based on previous research, this study highlighted the factors that induce SNS fatigue among SNS users and confirmed the theoretical basis of the factors that affect SNS fatigue by analyzing the relationships between them. Although SNS use has become more common and interaction time through SNSs has increased, existing research has mainly focused on identifying the positive aspects of SNSs. Thus, this study's significance stems in part from the fact that it empirically analyzed the negative aspect of SNSs. This study is also significant because, while previous studies have mainly examined the characteristics of SNS-related intentions and uses, it examined the negative emotional and behavioral impacts of SNS use. We expect our findings will contribute to future studies of the relationships between SNSs, users, environmental characteristics, and dysfunction on SNSs. This study also has academic implications related to the development of theory. Previous research on fatigue has examined life, work, and use behaviors separately, but we framed these factors as a series of processes. Importantly, it remains necessary to formulate theories about the negative perceptions of individual SNS users regarding specific services.

In addition, this study has some implications for practitioners trying to establish policies related to SNS side effects and fatigue. First, our results highlight the need for efforts to minimize the adverse effects of negative emotional factors such as SNS fatigue and living disorder. For this purpose, it is important for users to develop the ability to regulate SNS use on their own. However, it is difficult for users to perceive what factors cause the fatigue that they feel from using SNSs. Therefore, it is necessary to study subjective characteristics that can cause SNS fatigue and living disorders, and to provide guidelines to help users prevent these problems and protect themselves. Second, the government and SNSs should encourage users and hold campaigns that warn that excessive use of SNSs can harm their health and cause mental fatigue. Excessive use of social networking produces negative social and economic consequences. Therefore, to foster a healthier social culture and prevent economic losses, excessive use of SNSs must be recognized as a social disease that should be dealt with seriously. In this respect, in addition to the campaign mentioned above, SNS users should receive education and guidelines regarding the correct use of SNSs. On a practical level, the findings of this study also suggest that technologies should be implemented to automatically prevent the spread of illegal information, curtail the infinite expansion of social relations on SNSs, and block users from SNSs after they exceed certain usage times.

## 6.3. Limitations and Future Research

Despite its significant findings, this study had several limitations. First, the scope of SNSs was too broad. The commonality between various SNSs is that they are used for information exchange and networking. However, while SNSs such as Twitter and Facebook share certain features in terms of communication and information sharing, they are considerably different when it comes to how articles and photos are posted and how the services are used. Therefore, the fatigue levels and life disorders of SNS users may differ depending on how specific SNSs enable them to fulfill their aims for using SNSs. In future studies, researchers should investigate users' fatigue and living disorders

by classifying SNS characteristics. Second, this study did not distinguish between the two types of SNSs: Open and closed SNSs. Therefore, our findings have limited generalizability. Future studies should investigate SNS users' emotional experiences by dividing them into groups (open and closed SNSs) to increase the validity of their findings. Finally, we only included SNS characteristics (irrelevant information overload and open reachability) and user characteristics (engagement and maintaining self-reputation) that induce SNS fatigue as factors in the study model; we did not investigate social and cultural factors. Given that SNSs function as communication methods employed socially and in specific cultures, future studies should investigate various additional factors that affect SNS fatigue.

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## Appendix A Constructs and Related Studies

Construct	Measures	Related Studies
Irrelevant Information Overload	<ul style="list-style-type: none"> <li>• There is a lot of unnecessary information on SNSs.</li> <li>• I receive unnecessary information from SNSs that hinders my daily life.</li> <li>• On SNSs, the amount of irrelevant information increases excessively, and I spend a lot of time spent searching for information.</li> </ul>	[9]
Open Reachability	<ul style="list-style-type: none"> <li>• On SNSs, unwanted contact occurs continuously.</li> <li>• My SNS site is always open to others, so I receive a lot of information from others.</li> <li>• I think that by using SNSs, I am always open to others.</li> </ul>	[36]
Engagement	<ul style="list-style-type: none"> <li>• I feel a sense of duty to perform SNS activities.</li> <li>• The use of SNSs seems to help me, so I should continue to use it.</li> <li>• I feel pleasure when using SNSs.</li> <li>• I feel emotionally attached to SNSs.</li> </ul>	[39,57]
Maintaining Self-Reputation	<ul style="list-style-type: none"> <li>• I spend a lot of time trying to maintain my reputation on social networks.</li> <li>• I share various kinds of information needed to maintain my reputation on SNSs.</li> <li>• I constantly manage information on SNSs that has a negative or positive effect on my reputation.</li> </ul>	[52,58]
SNS Fatigue	<ul style="list-style-type: none"> <li>• It becomes increasingly annoying to communicate with people through SNSs.</li> <li>• I feel burdened to constantly update and manage SNSs.</li> <li>• I frequently get tired of looking at SNSs.</li> <li>• After using SNSs for a certain amount of time, I feel weak and guilty.</li> </ul>	[22,29]
Living Disorder	<ul style="list-style-type: none"> <li>• Because of SNSs, I neglect family or friends.</li> <li>• Because of SNSs, I place less importance on hobbies, leisure activities, and sports.</li> <li>• Because of SNSs, I often fall asleep or sleep later than desired.</li> <li>• Excessive use of SNSs has a negative impact on my life.</li> </ul>	[9,20]
Experience of Privacy Violations	<ul style="list-style-type: none"> <li>• I have had somebody who I do not know share my SNS account information without authorization.</li> <li>• I have had somebody illegally use my photo on my SNS account.</li> <li>• My comments and opinions on SNSs have been stolen by someone I do not know who reposted them as if the comments and opinions were theirs.</li> </ul>	[12,59]
Reduced Intention to Use SNSs	<ul style="list-style-type: none"> <li>• I will reduce my use of SNSs.</li> <li>• In the future, I plan to stop using SNSs.</li> <li>• I will not continue to use SNSs.</li> <li>• I want to have a certain period of time during which I do not think about SNSs.</li> </ul>	[31]

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