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The role of privacy fatigue in online privacy behavior*

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Highlights

- Privacy fatigue is a multi-dimensional concept including exhaustion and cynicism.

- There is a significant effect of privacy fatigue on privacy coping behaviors.

- Privacy fatigue has a stronger impact disengagement behavior than privacy concern.

The role of privacy fatigue in online privacy behavior

Abstract

The increasing difficulty in managing one's online personal data leads to individuals feeling a loss of control. Additionally, repeated consumer data breaches have given people a sense of futility, ultimately making them weary of having to think about online privacy. This phenomenon is called "privacy fatigue." Although privacy fatigue is prevalent and has been discussed by scholars, there is little empirical research on the phenomenon. This study aimed not only to conceptualize privacy fatigue but also to examine its role in online privacy behavior. Based on literature on burnout, we developed measurement items for privacy fatigue, which has two key dimensions —emotional exhaustion and cynicism. Data analyzed from a survey of 324 Internet users showed that privacy fatigue has a stronger impact on privacy behavior than privacy concerns do, although the latter is widely regarded as the dominant factor in explaining online privacy behavior.

Keywords: Online privacy, Privacy fatigue, Emotional exhaustion, Cynicism, Disengagement

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1. Introduction

Although Internet users can enjoy improved online services with the daily use of information communication technology (ICT), they may face threats associated with personal information misuse (Bansal & Gefen, 2010). For example, while mobile coupons based on users' location information can provide highly personalized services, they may induce strong feelings of privacy intrusiveness (Sutanto, Palme, Tan, & Phang, 2013). Because digitized personal information can be easily stored, duplicated, conveyed, and integrated in online environments, risks to information privacy have become more significant in the digital age (Junglas, Johnson, & Spitzmüller, 2008). In spite of ongoing efforts to protect users' privacy rights, data breach incidents have continued (Sen & Borle, 2015). 4,149 data breaches were reported in 2016, affecting over 4.2 billon records.[1] 500 million Yahoo user accounts were compromised in 2014, after a breach involving more than 1 billon user accounts in 2013.[2] The frequent data breaches remind people that they are not in control of their online information. Privacy fatigue reflects a sense of weariness toward privacy issues, in which individuals believe that there is no effective means of managing their personal information on the Internet (Acquisti, Friedman, & Telang, 2006; Hargittai & Marwick, 2016). Prior research has shown that over-disclosure of personal information is commonplace among Internet users (Preibusch, Krol, & Beresford, 2013). Because there is good evidence that fatigued individuals are likely to reduce their decision-

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[1] Risk Based Security. (2017, January). Data Breach QuickView 2016. Retrieved from https://pages.riskbasedsecurity.com/2016-ye-breach-quickview

[2] Yahoo Says 1 Billion User Accounts Were Hacked (New York Times, Dec. 14, 2016)

making efforts (Levav, Heitmann, Herrmann, & Iyengar, 2010), such behavior can be considered as a manifestation of privacy fatigue among the users who are not willing to devote major efforts to managing the information to they share.

Recognizing the gravity of information privacy threats, researchers have intensively investigated users' privacy behaviors. Considerable emphasis has been placed on an individual's subjective assessment of information privacy risk, referred to as *online privacy concern* (hereafter, "privacy concern"). Prior studies have demonstrated that privacy concern is an important antecedent of the adoption of ICT services (Dinev & Hart, 2006). Privacy concern, however, does not account for the range of users' responses to privacy risk. For example, although repeated data breaches may increase privacy concern, the public is inclined to underestimate or ignore the risk (Ponemon, 2014). Frequent data breaches may make people feel as though they have no control over personal information, and ultimately drive them into a state of resignation about online privacy (Kwon & Johnson, 2015). Additionally, the increasing complexity of the measures needed to protect one's personal data online aggravates the feelings of resignation and lack of control, leading to a sense of fatigue (Keith, Maynes, Lowry, & Babb, 2014). This fatigue, brought on by casual data breaches and the complexity of online privacy control, can reduce users' attention to privacy issues (Acquisti, Friedman, & Telang, 2006). Such a psychological state is known as *privacy fatigue.* As the phenomenon has become prevalent, researchers have opened discussion on it; however, there is still scant empirical work on privacy fatigue, and very little is known about its actual role. Accordingly, this study aims to (a) elucidate the concept of privacy fatigue and (b) empirically examine its role in privacy behavior.

2. Theoretical Background

Fatigue is defined as a "subjective, unpleasant feeling of tiredness that has multiple

dimensions varying in duration, unpleasantness and intensity" (Piper, Lindsey, & Dodd, 1987, p. 19). Fatigue arises from situations in which people are faced with high demands and an inability to meet their goals (Hardy, Shapiro, & Borrill, 1997). In the early stages of stressful situations, people have a general feeling of tiredness that generates psychological strain, and may subsequently reach a state of perpetual exhaustion (Lewis & Wessely, 1992). They may ultimately experience an extreme manifestation of a psychological strain (Burke, Greenglass, & Schwarzer, 1996), called burnout, mainly characterized as cynicism, exhaustion, and reduced efficacy (Schaufeli, Leiter, Maslach, & Jackson, 1996). Cynicism is defined as an attitude toward an object accompanied by frustration, hopelessness, and disillusionment. Because fatigue results from a failure to produce the expected outcomes (Freudenberger & Richelson, 1980; Hardy et al., 1997), cynicism, which mainly develops from unmet expectations (Andersson, 1996; Johnson & O'Leary-Kelly, 2003), constitutes a core component of fatigue. Emotional exhaustion signifies a "chronic state of emotional and physical depletion" (Cropanzano, Rupp, & Byrne, 2003, p. 160). The exhaustion, referring to the draining of emotional resources, captures the stress generated by excessive emotional demands (Maslach, Schaufeli, & Leiter, 2001). People experiencing burnout most often display symptoms of exhaustion (Maslach et al., 2001). A stressful situation that leads to cynicism and emotional exhaustion decreases one's sense of effectiveness, thus reducing efficacy in doing a task (Schaufeli et al., 1996). It reflects feelings of reduced efficacy in burnout dimensions. However, reduced efficacy may also be explained as a potential consequence of fatigue (Shirom, 1989). Ample evidence exists that suggests PE works in conjunction with the other two dimensions (Bakker, Demerouti, De Boer, & Schaufeli, 2003; Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998). These findings support the argument that emotional exhaustion and cynicism constitute core components of what is meant by fatigue, but

feelings of reduced efficacy play a different role (Schaufeli & Taris, 2005). For these reasons, reduced efficacy is excluded from our study.

Fatigue is primarily generated from high demands and an inability to meet goals (Hardy et al., 1997). In this respect, people with fatigue are likely to disengage from the task at hand (Hockey, 1997; Hopstaken, Linden, Bakker, & Kompier, 2015). It is a coping strategy of behavioral disengagement, which is defined as "reducing one's effort to deal with stressors, even giving up the attempt to attain goals with which the stressor is interfering" (Carver, Scheier, & Weintraub, 1989, p.269). Confronted with difficulties in goal achievement, fatigued people tend to exhibit disengagement during task performance, rather than seeking to solve problems (Ax, Gregg, & Jones, 2001). Several studies have highlighted disengagement as a key outcome of fatigue (Bakker, Demerouti, & Verbeke, 2004; Demerouti, Mostert, & Bakker, 2010; Ray, Jefferies, & Weir, 1997). Prior research has demonstrated that fatigue decreases behavioral motivations, which results in disengagement behaviors and even abandonment of potential benefits (Boksem, Meijman, & Lorist, 2006; Hopstaken et al., 2015). To be consistent with a disengagement response, the consequences of fatigue have been associated with impaired behavioral performance, such as inability to concentrate on tasks or make proper decisions (Potempa, Lopez, Reid, & Lawson, 1986; Ream & Richardson, 1996).

On the Internet, privacy assurance protocols have become complicated enough that users feel that they are difficult to understand, which requires users to invest significant effort in managing their online personal information. Eventually, users may give up trying to understand privacy protocols so that they can use them to their full advantage (Schermer, Custers, & van der Hof, 2014). Frequently having to disclose personal information to online companies also gives people a feeling of lack of control over the collection and sharing of their personal information. Users

may ultimately believe that they cannot ensure their own online privacy, causing psychological stress and fatigue. When faced with privacy threats, individuals may react in a protective way to enhance their privacy, but with a sense of fatigue, they may not actively engage in privacy protection behaviors in line with the relationship between fatigue and disengagement. In this context of information privacy, the decision not to cope with privacy problems represents a deliberate disengagement from privacy issues.

Some studies have already investigated the phenomenon of fatigue in the online context. Keith et al. (2014) investigated how the complexity of privacy control in online social networks affects experienced utility by employing fatigue theory. A few studies have examined fatigue in the context of social networking sites (SNS). *SNS fatigue* is defined as negative affective responses to SNS activities (Lee, Son, & Kim, 2016; Zhang, Zhao, Lu, & Yang, 2016), in accordance with prior studies of fatigue that treat it in terms of feelings of tiredness, burnout, and reduced interest (Burke et al., 1996). In SNS, it has been demonstrated that perceived overload, arising both from interaction as well as the features of the technological interface, leads to fatigue (Zhang et al., 2016). However, initial works on fatigue in the online context have mainly focused on SNS settings, in which privacy fatigue in particular is only partially examined.

Varied types of concepts related to privacy fatigue have been introduced. Furnell and Thompson (2009) discuss *security fatigue,* in which people become tired of online security issues, leading to loose daily security practices. Other forms include *consent fatigue*, reflecting the tendency of people to simply accept a privacy policy without reading it (Schermer et al., 2014), and *breach fatigue*, in which people grow weary of data breach incidents (Kwon & Johnson, 2015). All of these concepts represent psychological fatigue with regard to online security and privacy. In this study, we comprehensively define privacy fatigue as a psychological

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state of tiredness with the issue of online privacy so that it encompasses other relevant concepts, and further, empirically demonstrate its role in online privacy practices.

3. Research Model and Hypothesis Development

3.1. Privacy Concern

Online privacy refers to how personal information is collected and used in the online context (Pavlou, 2011). Online companies usually require consumers to provide their personal information for online service usage. Although companies also use their customers' personal information to enhance customer relationship management, such information practices induce customers' privacy concerns. Privacy concern is grounded in the possibility of negative outcomes associated with the misuse of personal information. Since people want to avoid the possibility of online companies' misuse of their information, which may inflict a loss to them (van Slyke, Shim, Johnson, & Jiang, 2006), they may simply avoid the risk of information misuse by choosing not to disclose personal information whenever they have the option to do so. Therefore, individuals with high levels of privacy concern would show more reluctance to disclose personal information to online vendors. It has been demonstrated that privacy concern has a significant effect on the tendency to disclose personal information in various online contexts (Dinev & Hart, 2006; Taddicken, 2014).

In order to examine the role of privacy concerns, many studies employ the intention to disclose personal information as its outcome. Individuals, however, can engage in diverse protective responses to privacy invasion beyond the disclosure of personal information (Son & Kim, 2008). For instance, people with high levels of privacy concerns are more likely to boycott companies that threaten their privacy by removing their personal information from the company's care or complaining to the company (Son & Kim, 2008). Although users can exhibit

a variety of coping behaviors, some of them do not respond to privacy threats. Such behavior or disengagement is a prevalent type of behavior. Disengagement is defined as "reducing one's effort to deal with the stressor, even giving up the attempt to attain goals with which the stressor is interfering" (Carver et al., 1989, p. 269), and ultimately leads to withdrawal from activities (Kahn, 1990). In the context of online privacy, we define disengagement as the extent to which users reduce their efforts to carry out coping behaviors in response privacy threats. More specifically, disengagement indicates that users are unwilling to utilize coping behaviors, including removal of personal information from the company, intentional offering of fake personal information, negative word-of-mouth, complaining to the company, and complaining to 3rd party organizations. While the intention to disclose is limited to users' practice of sharing personal information with the company, disengagement represents their withdrawal of diverse coping behaviors due to privacy threats.

Internet users who worry about their privacy will not readily give up control of their information in the face of the threat of online companies' misusing it. If they find out that their personal information is mishandled, they may take further actions to mitigate the identified threats (e.g., removal of the information, complaining to the company). Such argument can be explained by the rationale of expectancy theory (Van Eerde & Thierry, 1996, Vroom, 1964), in which individuals seek to maximize positive consequences and minimize negative ones. Individuals weigh the costs and benefits of decisions to estimate the expected outcomes (Vroom, 1964). In regards to online privacy, the decision whether or not to disclose personal information is the result of these subjective evaluations of cost effectiveness, which is known as privacy calculus (Culnan & Armstrong, 1999; Dinev & Hart, 2006). In particular, privacy risks primarily cover the cost side of the calculus (Anderson & Agarwal, 2011). Son and Kim (2008) have

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shown that privacy concerns lead to various coping behaviors in response to privacy threats. It is suggested that individuals with low privacy concern would be likely to disengage from deliberate coping behaviors. Consequently, this study hypothesizes as follows:

H 1a. A higher level of privacy concern will result in less intention to disclose personal information.

H 1b. A higher level of privacy concern will result in less disengagement.

3.2. Privacy Fatigue

Privacy management is an ongoing challenge that people experience while using the Internet. Over time it has become burdensome for users to maintain their privacy; to the extent that it has become easy in the digital age for personal data to be collected and shared, it is also difficult to control how one's personal information is used and thus maintain privacy.

The main deficiency exhibited by people with fatigue is an inability to make decisions (Potempa et al., 1986; Ream & Richardson, 1996). This fact stands out when the individuals are required to deal with more things than they can handle in decision-making process (Voh et al., 2008). For example, platform for privacy preferences (P3P) provides users with options to select their own preferences for privacy settings, but they are often overwhelmed by the choices available (Weitzner et al., 2008), and even have difficulty understanding the privacy management system itself (Schermer et al., 2014). Privacy fatigue can therefore result in an inability to make decisions regarding online privacy. The relevant point to note is that those with fatigue want to minimize effort in decision making (Levav et al., 2010), so they tend to choose the easiest way, or simply accept the default option. Individuals with high levels of privacy fatigue are, therefore, not likely to make the effort to decide how and whether to disclose personal information, and would agree to the release of their information without deliberation.

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Hence, it is suggested that there is a positive relationship between privacy fatigue and intention to disclose personal information to online vendors.

Previous studies on fatigue have also indicated that it results in an inability to cope and the manifestation of withdrawal symptoms (Potempa et al., 1986; Ream & Richardson, 1996). Fatigued people sometimes tend to exhibit disengagement coping during task performance, rather than to seek to solve problems (Ax et al., 2001). Several studies have highlighted disengagement as a key outcome of fatigue (Bakker et al., 2004; Demerouti et al., 2010; Ray, Jefferies, & Weir, 1997). As the user's goal is to protect their privacy from being misused, a no-coping response to privacy threats may be seen as irrational. However, this phenomenon makes sense for people in fatigue in an online environment. Users provides personal information to online companies to use Internet services. In such a relationship, most companies provide privacy policy statements and privacy assurance services in the ways of building users' trust, since the users are not completely able to monitor the vendors' information use (Culnan & Armstrong, 1999; Xu, Dinev, Smith, & Hart, 2011). However, privacy fatigue can arise from the complexity of privacy assurance systems (Schermer et al., 2014). Frequent data breaches can also make people feel a loss of control over personal information, and protesting that their rights are being violated (Sen & Borle, 2015). In a controllable situation, people generally believe that further steps can be taken to achieve desirable outcomes (Weinstein, 1980). However, when they feel an irreversible loss of control, they exhibit reluctance to put forth further efforts (Hopstaken et al., 2015; Wrosch, Schulz, & Heckhausen, 2002). The obstacles users face to effective management of their privacy may result in withdrawal from active coping in response to privacy threats, which is an instance of disengagement, because engagement mainly depends on the expected results of taking on a task (Cohen, McClure, & Angela, 2007). People experiencing

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fatigue due to unmet expectations thus exhibit disengagement behaviors in which they are not motivated by future goals (Boksem et al., 2006; Hopstaken et al., 2015; van Der Linden, Frese, & Sonnentag, 2003). It has been suggested that disengagement occurs when "people expect poor coping outcomes" (Carver et al., 1989, p.269). Therefore, individuals with high levels of privacy fatigue would be expected to disengage from the goal of having their privacy protected. In line with the preceding reasoning, this study hypothesizes as follows:

H 2a. A higher level of privacy fatigue will result in higher intention to provide personal information.

H 2b. A higher level of privacy fatigue will result in higher disengagement.
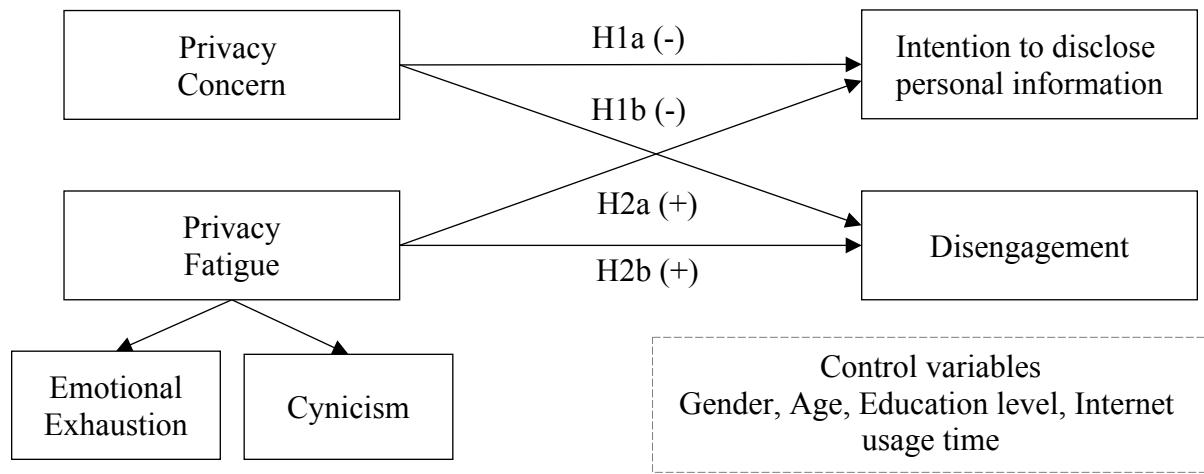
Fig. 1. The research model

4. Methodology

4.1. Measurement Development

On the basis of previous studies, we developed a measurement instrument for research constructs. The instruments were proven to be reliable and valid in the context of general information systems and organizational behaviors. The measurement items from extant literatures were modified to fit the privacy context. We used a back-translation method to

convert the items written in English into Korean. All the items were measured by a 7-point Likert scale, ranging from "strongly disagree" to "strongly agree."

Items for Privacy Concerns (PC) were adapted from Dinev and Hart (2006), in which the construct is conceptualized from the perspective of general Internet users' concerns. Regarding the conceptualization of privacy fatigue as a second-order construct, the two first-order factors, emotional exhaustion and cynicism, were adapted from the Maslach Burnout Inventory – General Survey (MBI-GS; Schaufeli et al., 1996) which incorporates three subdimensions: Emotional Exhaustion (EE); Cynicism (CC); Professional Efficacy (PE). The subdimension PE was excluded from the model because there is considerable evidence that it plays a different role in burnout syndrome from the other two dimensions, developing in conjunction with them (Bakker et al., 2003; Schaufeli & Enzmann, 1998). The measurement items for Intention to Disclose personal information to online vendors (ID) were adapted from Malhotra et al. (2004). Disengagement (DE) was operationalized as the extent to which individuals give up the control over the misuse of their personal information. The items were adapted from Carver et al. (1989) and measured behavioral disengagement in coping with online privacy threats. The final scales are presented in Table 1.

Before conducting the main study, we modified the questionnaire to establish content validity through the focus group discussion with five researchers. Moreover, the pilot sample of 183 undergraduate students were recruited to evaluate the measurement properties since a group of 100 to 200 subjects is desirable for scale development (Kline, 1994). These students were not included in the final sample. An exploratory factor analysis (EFA) was used to determine the underlying structure of the instrument. First, a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, which should be greater than .6 to be satisfactory (Fraenkel & Wallen, 2000), gave a

value of .807, exceeding an acceptable level. Bartlett's test of sphericity was significant (p-value=.000) for conducting a factor analysis (Davidshofer & Murphy, 2005). Factor loadings and reliabilities were evaluated using VARIMAX rotation in SPSS 20.0, and one item with a factor loading of less than .4 was dropped. Two cross-loaded items were also removed from the final scale. This study reduced the list of possible items to a manageable set (16 items), deleting 3 items (Table 1).

Table 1
Measurement of the variables

Variables	Items	Sources
Privacy Concern	1. I am concerned that the information I submit to online vendors could be misused 2. I am concerned that a person can find private information about me on the Internet 3. I am concerned about providing personal information to online vendors, because of what others might do with it 4. I am concerned about providing personal information to online vendors, because it could be used in a way I did not foresee	Dinev & Hart, 2006
Privacy fatigue (Burnout -general survey)	*Emotional exhaustion* 1. I feel emotionally drained from dealing with privacy issues in an online environment 2. I am tired of online privacy issues 3. It is tiresome for me to care about online privacy 4. (Deleted item) I am tired of managing privacy in an online environment (*Cross-loaded*) *Cynicism* 1. (Deleted item) I have become more cynical about whether my efforts in protecting online privacy contribute anything (*Low factor loading*) 2. I have become less interested in online privacy issues 3. I have become less enthusiastic in protecting personal information provided to online vendors 4. I doubt the significance of online privacy issues more often 5. (Deleted item) I just want to use Internet services and not to be bothered by online privacy issues (*Cross-loaded*)	Schaufeli et al., 1996

Intention to disclose personal information to online vendors	1. I am willing to disclose personal information asked by online companies within the next three years 2. I will probably disclose personal information asked by online companies within the next three years 3. I will likely disclose personal information asked by online companies within the next three years	Malhotra et al., 2004
Disengagement	1. I would give up the attempt to cope, if my personal information provided to online vendors is misused 2. I would quit trying to deal with the problem, if my personal information provided to online vendors is misused 3. I would give up trying to solve the problem, if my personal information provided to online vendors is misused	Carver et al., 1989

4.2. Sample

The data was collected from panel members of an online research firm in South Korea. Web-based online surveys were conducted during 1-week period in December 2016. After eliminating invalid responses, the final sample of 324 Internet users were included in the analysis (163 males; 161 females). The participants had a mean age of 40.6. They reported that they had used the Internet for an average of 16.2 years and spent an average of 3.2 hours (189 minutes) per day on Internet. Around 73.8% of the sample had associate or bachelor degrees, and employed persons (70.7%) constituted the majority in the sample. The overall demographic characteristics of the sample are shown in Table 2.

Table 2
Demographic characteristics (N=324)

Measure	Item	Count	%
Gender	Male	163	50.3%
	Female	161	49.7%
Age (mean: 40.6)	20 – 29	67	20.7%
	30 – 39	80	24.7%
	40 – 49	83	25.6%
	50 - 59	94	29.0%
Education	High school or below	57	17.6%
	Associate and Bachelor degree	239	73.8%
	Master's degree or higher	28	8.6%
Occupation	Student	25	7.7%

	Working	229	70.7%
	Unemployed	64	19.8%
	Others	6	1.9%
Internet usage time (mean: 3.2 hours)	Less than 1 hour	30	9.3%
	1 and less than 2 hours	70	21.6%
	2 and less than 3 hours	61	18.8%
	3 and less than 4 hours	62	19.1%
	4 and less than 5 hours	24	7.4%
	More than 5 hours	77	23.8%
Length of Internet use (mean: 16.2 years)	1 and less than 5 years	1	0.3%
	5 and less than 10 years	10	3.1%
	10 and less than 15 years	76	23.5%
	15 and less than 20 years	134	41.4%
	More than 20 years	103	31.8%

5. Results

5.1. Exploratory Factor Analysis (EFA)

In order to assess the validity and reliability of the measurement scale, an EFA using principal component factor analysis was first conducted from the sample of 324 Internet users, using a manageable set of 16 indicators. In the EFA, this study used VARIMAX rotation. The KMO value was found to be at an acceptable level (.818), and the Bartlett test of sphericity was significant to conduct a factor analysis (p-value=.000). As the eigenvalue of 1.000 was adopted, the results extracted 16 items with a five-factor solution, including PC, DE, ID, EE, and CC (Table 3). The total variance explained by the five factors was 74.4%. Determining whether the items are obtained in the final scale, all item loadings on the factors were above .6 and fully met the recommended guidelines (Hair, Anderson, Tatham, & Black, 1998) without cross-loading of .3 or above. Cronbach's alpha coefficients to test reliability were above the acceptable level of .7, ranging from .791 to .881.

Common method bias is of considerable concern for survey research because the data are typically gathered by a self-report instrument during the same time period (Podsakoff,

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MacKenzie, Lee, & Podsakoff, 2003). This study also used two methods to check for common method bias. First, Harman's one-factor test was employed to address the common method variance issue (Harman, 1976). We found that no single factor accounted for the majority of the variance. The results showed that the most influential factor accounted for 32.78% of the total variance. Second, common method bias is usually evidenced by extremely high correlations among variables (r>0.90) (Bagozzi, Yi, & Phillips, 1991). The correlation matrix (Table 5) indicates that the highest correlation is .560 between DE and CC.

Table 3
Exploratory factor analysis (EFA)

Items/Factors	1	2	3	4	5
Privacy Concern					
PC1	.826				
PC3	.820				
PC2	.803				
PC4	.797				
Disengagement					
DE 3		.838			
DE 2		.823			
DE 1		.807			
Intention to disclose personal information					
ID3			.894		
ID1			.886		
ID2			.705		
Emotional Exhaustion					
EE3				.848	
EE2				.840	
EE1				.794	
Cynicism					
CC3					.866
CC2					.774
CC4					.677
Eigenvalues	5.245	2.850	1.573	1.198	1.036
Variance %	32.781	17.815	9.830	7.488	6.474
Cronbach alpha	.856	.881	.844	.796	.791

5.2. Confirmatory Factor Analysis (CFA)

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Second, the proposed model was tested using Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach. PLS is suitable for prediction-oriented research, whereas it is suggested that Covariance Based SEM (CB-SEM) is a confirmatory approach to theory testing or comparisons (Hair, Ringle, & Sarstedt, 2011). Moreover, it is suggested that PLS is especially useful for developing models that include higher-order factors (Lowry & Gaskin, 2014; Marcoulides, Chin, & Saunders, 2009). Therefore, since the theoretical framework for privacy fatigue is exploratory in nature, and the primary objective of this research is to assess the higher-order construct of privacy fatigue, PLS was chosen as the analytic technique. We conducted CFA using PLS for a comprehensive set of constructs elicited from EFA. SmartPLS 2.0 was used to test a robust validity test of the factor structure. In the CFA stage, a five-factor solution was conducted to check whether the solution represented the structure of the data, covering factor loadings, reliability, and discriminant validity.

The standardized factor loadings (Table 4) were greater than the acceptable level of .7, ranging from .730 to .918 (Fornell & Larcker, 1981). Composite reliability (CR) of factors ranged from .874 to .927, exceeding the cut-off value of .7 for all factors, and average variance extracted (AVE) which should be larger than .5 was from .699 to .808, indicating good convergent validity (Fornell & Larcker, 1981). In the discriminant validity, which signifies that each factor is different from each other, the square root AVE should be greater than the correlation coefficient between factors (Fornell & Larcker, 1981). In Table 5, diagonal values present the square root AVE, ranging from .836 to .899. The largest value in the correlation coefficient between factors was .560. Therefore, the correlation matrix in this study met the criterion for discriminant validity. In addition, the variance inflation factor (VIF) scores were examined to diagnose multicollinearity among constructs. The VIF scores ranged from 1.612 to

3.765, below the threshold value of 10 (Hair et al., 1998).

Table 4
Confirmatory factor analysis (CFA)

Factors	Std. factor loading	*t*-value	Composite reliability (CR)	Average variance extracted (AVE)
Privacy Concern				
PC1	.891	49.941		
PC3	.866	47.490	.902	.699
PC4	.826	25.489		
PC2	.730	16.277		
Disengagement				
DE3	.918	81.983		
DE1	.908	74.193	.927	.808
DE2	.871	34.323		
Intention to disclose personal information				
ID3	.908	55.013		
ID1	.900	53.016	.905	.762
ID2	.807	25.132		
Emotional Exhaustion				
EE1	.879	9.864		
EE3	.849	9.306	.874	.699
EE2	.777	5.956		
Cynicism				
CC2	.848	41.075		
CC4	.836	43.421	.878	.705
CC3	.835	30.296		

Table 5
Correlation matrix

	Mean	Std. Dev.	1	2	3	4	5
1. PC	5.308	1.050	.836				
2. DE	3.571	1.135	-.367	.899			
3. ID	4.004	.907	-.278	.451	.873		
4. EE	4.531	1.050	.194	.199	.043	.837	
5. CC	3.981	.963	-.275	.560	.454	.194	.840

*Diagonal values are the square root AVE

5.3. Second-Order Factor Model

This research validated the conceptualization of privacy fatigue as a second-order factor. We

specified the second-order factor with two first-order factors, emotional exhaustion and cynicism. The second-order construct was measured using the repeated indicators approach, known as the "hierarchical component model" (Lohmöller, 2013). The composite reliability of privacy fatigue was .739 with an average variance extracted at .591 (Table 6), exceeding the cut-off level of .7 and .5 (Fornell & Larcker, 1981). Furthermore, all outer loadings were significant at p < .001, indicating that privacy fatigue had a high association with the first-order components of emotional exhaustion and cynicism. The amount of explained variance of privacy fatigue was reflected in its first-order components: Emotional exhaustion (41.2%) and cynicism (76.1%).

Table 6
Assessment of the higher-order factor model

		Outer loading	CR	AVE	R^2
Privacy Fatigue	Emotional exhaustion	.648*** ($t = 5.688$)	.739	.591	.419
	Cynicism	.873*** ($t = 25.406$)			.761

Notes: * p < .05; ** p < .01; *** p < .001

5.4. Hypothesis Testing

For the structural model, this study assessed Stone-Geisser's Q^2 to test the predictive relevance of the model (Chin, 1998). The Stone-Geisser Q^2 values of constructs were above zero (Table 7), suggesting a reasonable predictive relevance of the research model (Chin, 1998). Second, to check the fitness of the model, the Goodness of Fit (GoF) index, which refers to the geometric mean of the average communality and average R^2 (endogenous constructs), was estimated (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005; Wetzels, Odekerken-Schröder, & Van Oppen, 2009). This study obtained a GoF value of .455, exceeding the threshold value of .36 for large effect size of R^2 (Wetzels et al., 2009).

Table 7
Results of Q^2 and GoF index

	Q^2	Effect size of R^2 (GoF: $\sqrt{communality * \overline{R^2}}$)
Intention to disclose personal information	.107	.455 (GoF$_{small}$ = .1; GoF$_{medium}$ = .25; GoF$_{large}$ = .36)
Disengagement	.286	

We performed significance tests using the bootstrap resampling procedure with 500 sub-samples (Chin, 1998). All path coefficients in the research model were significant for a p-value of < .001 (Table 8). Privacy concern had a significant influence on disclosure intention (-.24, t = 4.682). Furthermore, the concern showed a strong significant negative effect on disengagement (-.32, t = 6.427). These results support H1a and H1b, indicating that privacy concern has a significant impact on the intention of privacy protection. Privacy fatigue also had significant effects on both intention to disclose personal information and disengagement (support H2a and H2b). Specifically, privacy fatigue was a powerful predictor of disengagement coping among Internet users (.49, t = 8.967). Overall, the control variables, including gender, age, education level, and Internet usage time were not significant predictors of outcome variables. The results of the path analysis are presented in Figure 2.

Table 8
Results of the path analysis

Hypothesis	Path coefficient	Standard error	Result
H1a: Privacy Concern → Intention to disclose personal information	-.242*** (t = 4.682)	.048	Supported
H1b: Privacy Concern → Disengagement	-.316*** (t = 6.427)	.049	Supported
H2a: Privacy Fatigue → Intention to disclose personal information	.341*** (t = 5.504)	.062	Supported
H2b: Privacy Fatigue → Disengagement	.489*** (t = 8.967)	.057	Supported

Notes: * p < .05; ** p < .01; *** p < .001
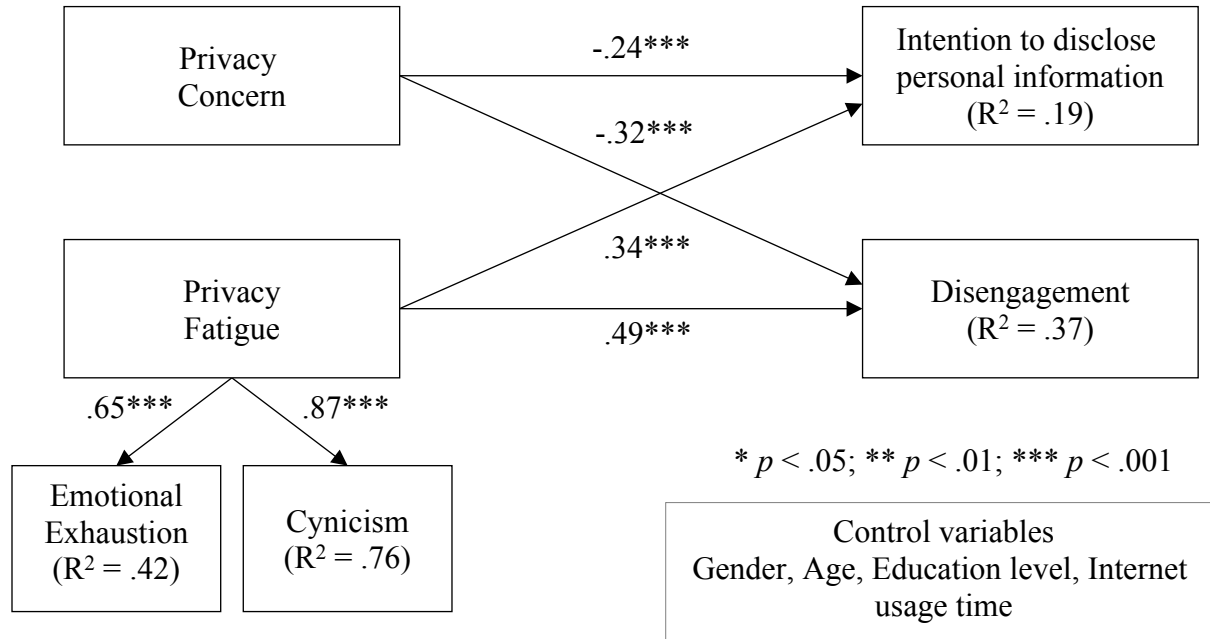
Fig. 2. Results of data analysis

5.5. Post-hoc analysis: Interaction terms between privacy concern and privacy fatigue

Lastly, we conducted a post-hoc analysis by adding an interaction term between privacy concern and privacy fatigue to the model. The mean-centering method was applied as a control for the multicollinearity problem (Aiken, West, & Reno, 1991). Following this standardization procedure, the interaction term was computed by cross-multiplying the two predictors. The results of the model with interaction effects are presented in Table 9. The path coefficients for the interaction terms with disclosure intention and disengagement were significant at p-value < .05. More specifically, an interaction term between privacy concern and privacy fatigue was positively correlated with intention to disclose personal information and disengagement coping. The result suggested that the negative relationship between privacy concern and two variables related to online privacy behavior is weaker when privacy fatigue is higher (Figure 3). In addition, the change in R^2 to determine the effect size (f^2) for the interaction effect was calculated (Cohen, 1988). The

effect size (f^2) of .030 and .026 was found to be small for the interaction term, where the threshold values are .02, .15 and .35 for small, medium and large effects respectively (Cohen, 1988).

Table 9
Results of the model with interaction terms

	Main effects model	Interaction effects model
	Path coefficient	
PC → ID	-.242*** ($t = 4.682$)	-.224*** ($t = 4.062$)
PF → ID	.341*** ($t = 5.504$)	.284*** ($t = 4.667$)
PC*PF → ID		.168* ($t = 2.055$)
R^2 (ID)	.193	.217
Effect size (f^2)	.030 (small)	
PC → DE	-.316*** ($t = 6.427$)	-.301*** ($t = 6.412$)
PF → DE	.489*** ($t = 8.967$)	.443*** ($t = 8.449$)
PC*PF → DE		.135* ($t = 2.284$)
R^2 (DE)	.371	.387
Effect size (f^2)	.026 (small)	

Notes: bootstrapping n = 500; * p < .05; ** p < .01; *** p < .001
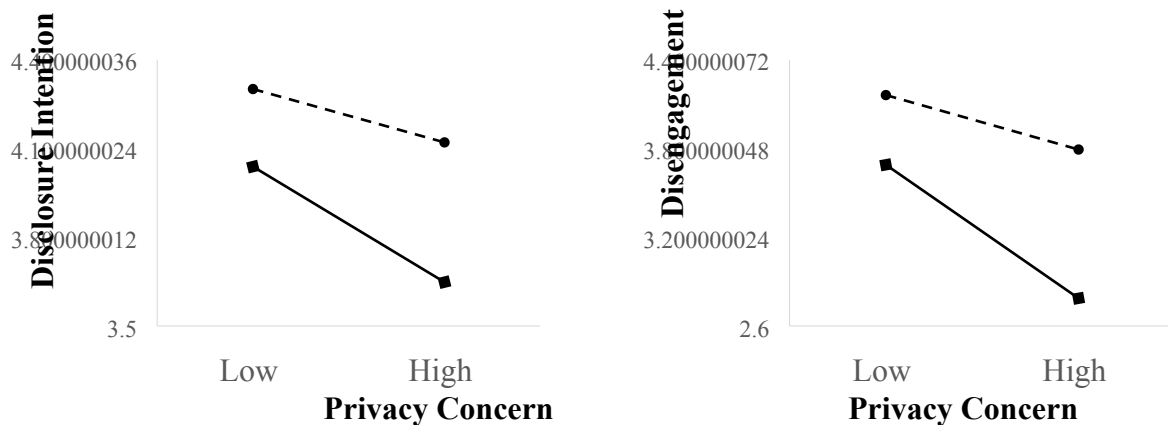
Fig. 3. Interaction between privacy concern and privacy fatigue on online privacy behavior

6. Discussion

The primary purpose of this study was to elucidate the concept of online privacy fatigue. For the objective, the study conceptualized privacy fatigue as an individual psychological phenomenon and developed a set of measures to assess it. The developed scale is an instrument that captures the multidimensional characteristics of privacy fatigue, including emotional exhaustion and cynicism. In addition, the study examined the effects of privacy fatigue on coping behaviors, and demonstrated that privacy fatigue is an important factor in understanding users' information behaviors in online environments. Specifically, the results showed that privacy fatigue had more significant and intense impacts on users' disclosure intention and users' disengagement than privacy concern. Such results extend previous discourse on psychological fatigue of users with respect to online privacy by empirically assessing the impact of privacy fatigue on their behaviors.

The findings confirmed that individuals with high levels of privacy concern were more likely to take action to protect their privacy rights. On the other hand, privacy fatigue had a positive impact on disclosure of personal information and disengagement. This result demonstrates that users with more privacy fatigue tend to put less effort into making privacy decisions (Stanton, Theofanos, Prettyman, & Furman, 2016), and that privacy fatigue has a particularly strong effect on disengagement behavior. People with high levels of privacy fatigue are more likely to "do nothing" in response to the misuse of their personal information. On the whole, this study supported the significant role of privacy fatigue in users' online privacy behaviors.

6.1. Theoretical Implications

This research offers important theoretical implications for better understanding of online privacy behaviors. First, to the best of our knowledge, there is little research on the topic of privacy fatigue, and this work is the first to conceptualize and empirically examine the concept of privacy fatigue. Prior studies regarding fatigue in the online context focused on specific issues such as privacy control complexity (e.g., Keith et al., 2014) or privacy notices (e.g., Anderson et al., 2016; Cate, 2010). The multidimensional conception of privacy fatigue employed in this study has implications in exploring privacy attitudes of users from a new theoretical angle. The scale was designed to investigate the fatigue perceived by Internet users, and it was found to be useful in reliably measuring privacy fatigue and its effects.

Second, our study found that privacy concern and privacy fatigue have different roles in how people deal with privacy issues. Most importantly, while privacy concern has a negative impact on users' disengagement from privacy threats (i.e., increased intention to protect their privacy), privacy fatigue results in an avoidant coping, exerting a positive effect on disengagement. Furthermore, in our results, privacy fatigue has a stronger influence on the behaviors of users than privacy concern. A point to note is that while privacy concern is one of the most frequently used factors in privacy research, the concern does not accurately predict privacy behavior (Debatin, Lovejoy, Horn, & Hughes, 2009; Forsythe & Shi, 2003; Hallam & Zanella, 2017). In this sense, the findings in this study imply that the concept of privacy fatigue can be used to explain the discrepancy between individuals' attitudes and behaviors known as the "privacy paradox"—the phenomenon that consumers disclose personal information despite their privacy concerns (Barnes, 2006; Norberg, Horne, & Horne, 2007). As stated above, this study presents the different roles of privacy concern and privacy fatigue in shaping information disclosure intention among consumers. An additional post-hoc analysis also reveals that the negative

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association between privacy concern and disclosure intention becomes weaker when individuals feel a greater sense of privacy fatigue. Therefore, privacy fatigue can provide a possible rationale to explain the discrepancy of why individuals intend to disclose their information, despite of having high levels of privacy concerns.

Third, this study has implications for focusing attention on disengagement behavior as a general user privacy practice. Previous literature has documented that in the face of information privacy threats there are several protective responses of users, including refusal to provide information, misrepresentation of information, private action, and public action (Son & Kim, 2008). For example, individuals can remove their personal information from a website when their information is misused. However, in contrast to the protective responses, the individuals may also choose avoidant coping strategies of disengagement to escape from a stressful situation (Carver, Scheier, & Pozo, 1992). People are more likely to disengage from a stressful situation when they are confronted with an uncontrollable stressor (Lazarus, 1983; Lazarus & Folkman 1984). In this study, the relationship between privacy fatigue caused by a lack of control over personal information and disengagement among users was established. Therefore, this result helps confirm that no-coping strategies are present in online privacy behaviors.

6.2. Practical Implications

Investigating privacy fatigue in the digital environment, this study suggests managerial implications for both online retailers and policy makers. First, online vendors should be aware of the potential effect of privacy fatigue on future services. As stated in the introduction, with advances in ICT applications, online vendors can make better use of customer information to create value-added services. However, in a long-term perspective, if privacy fatigue is prevalent among Internet users, the value of personal information as a business driver decreases because

the syndrome indicates that what was once important became insignificant (Maslach et al., 2001). This sense of loss of meaning leads to low satisfaction, and as prior research on SNS fatigue has demonstrated, this fatigue has a negative impact on users' dissatisfaction in using SNS (Zhang et al., 2016). Second, policy makers need to recognize the existence of privacy fatigue among Internet users. Although the government has generally established regulations on information privacy, online privacy issues should be continuously discussed from the viewpoint of consumers. According to a person-environment fit theory that provides a framework for understanding burnout, psychological strain increases when a misfit between what one hopes for and what the environment affords exceeds a range of tolerance (Edwards, 1998). Individuals would hope that their privacy is not breached, but misuse of information can occur within an environment despite the best intentions to protect one's privacy. Privacy fatigue denotes the situation in which person-privacy fit is not met, exceeding the threshold of tolerance. Thus, there needs to be more discussion on how policies can be enacted to meet an acceptable level of privacy protection.

6.3. Limitations and Future Research

There are a few limitations to this study. First, our sample was drawn from a single country, South Korea. Although the subjects of this study regularly spent time on the Internet (averaged 3.2 hours), the homogeneity of the sample may limit the generalizability of the study. Further, future research could replicate this study across several cultures and countries. There is recent work on developing a context-sensitive model in online security, and the results show the moderating effect of nationality in privacy behaviors (Chen & Zahedi, 2016). Hence, future research could investigate how privacy fatigue influences users' behaviors from a larger contextual lens.

The second limitation is that this study has not examined the antecedents of privacy fatigue. Additionally, the critical point to note is that there may exist many other factors that influence the intention to disclose the information. However, since the primary objective of this study is to conceptualize and empirically examine the role of privacy fatigue, establishment of a full model lies beyond the intended purpose of this work. In order to verify the privacy fatigue in Internet users, other theoretical frameworks can be suggested for future work. In particular, a person-environment fit theory is proposed as an overarching framework to support both individual and contextual aspects of burnout (Leiter & Maslach, 2003). Under such an approach, future work could empirically investigate the antecedents and consequences of privacy fatigue. Furthermore, this study has investigated disclosure intention as a dependent variable. Since the privacy paradox takes the point of view that privacy concerns decrease intention to disclose personal information, but individuals do not actually behave as they intended (Norberg et al., 2007), future research can be applied to the specific contexts that determine actual privacy practices of users.

Third, the present study does not touch on, but future studies could explore, the outcomes of privacy fatigue in users' life contexts. In the IoT paradigm with smart objects surrounding us, privacy issues in data management become more salient in everyday life (Ning, Liu, & Yang, 2013). Although ICT has become more embedded in daily activities, there is scant research on the holistic effects of ICT on human livelihood (Choi, Lee, Im, & Kim, 2007). Prior studies on ICT use have predominantly focused on system-use contexts, including intention to use and system satisfaction (Davis, Bagozzi, & Warshaw, 1992; Wu & Lu, 2013). Because the use of ICT has the potential to achieve the ultimate goal of human well-being (Jung, Pawlowski, & Kim, 2017), research agendas on ICT should address the wider context of human life to promote

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a better understanding of the outcomes of ICT use. To this end, future work could examine

associations between privacy fatigue and psychological well-being.

References

Acquisti, A., Friedman, A., & Telang, R. (2006). Is there a cost to privacy breaches? An event study. Paper presented at the *Proceedings of the 27th International Conference on Information Systems* (pp. 1563-1580).

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. CA: Sage Publications.

Anderson, B. B., Vance, A., Kirwan, C. B., Jenkins, J. L., & Eargle, D. (2016). From warning to wallpaper: Why the brain habituates to security warnings and what can be done about it. *Journal of Management Information Systems*, *33*(3), 713-743. http://dx.doi.org/ 10.1080/07421222.2016.1243947

Anderson, C. L., & Agarwal, R. (2011). The digitization of healthcare: boundary risks, emotion, and consumer willingness to disclose personal health information. *Information Systems Research, 22*(3), 469-490. https://doi.org/10.1287/isre.1100.0335

Andersson, L. M. (1996). Employee cynicism: An examination using a contract violation framework. *Human Relations, 49*(11), 1395-1418.

Ax, S., Gregg, V. H., & Jones, D. (2001). Coping and illness cognitions: chronic fatigue syndrome. *Clinical Psychology Review, 21*(2), 161-182. https://doi.org/10.1016/S02727358(99)00031-8

Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, *36*(3), 421-458.

Bakker, A. B., Demerouti, E., De Boer, E., & Schaufeli, W. B. (2003). Job demands and job

resources as predictors of absence duration and frequency. *Journal of Vocational Behavior*, *62*(2), 341-356. https://doi.org/10.1016/S0001-8791(02)00030-1

Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management, 43*(1), 83-104. https://doi.org/10.1002/hrm.20004

Bansal, G., & Gefen, D. (2010). The impact of personal dispositions on information sensitivity, privacy concern and trust in disclosing health information online. *Decision Support Systems, 49*(2), 138-150. https://doi.org/10.1016/j.dss.2010.01.010

Barnes, S. B. (2006). A privacy paradox: Social networking in the United States. *First Monday*, *11*(9).

Boksem, M. A., Meijman, T. F., & Lorist, M. M. (2006). Mental fatigue, motivation and action monitoring. *Biological Psychology*, *72*(2), 123-132. https://doi.org/10.1016/j.biopsycho. 2005.08.007

Burke, R. J., Greenglass, E. R., & Schwarzer, R. (1996). Predicting teacher burnout over time: Effects of work stress, social support, and self-doubts on burnout and its consequences. *Anxiety, Stress, and Coping, 9*(3), 261-275.

Carver, S. C., Scheier, M. F. & Pozo, C. (1992). Conceptualizing the process of coping with health problems. In H. S. Friedman (Ed.), *Hostility, coping, and health* (pp. 167-187). Washington, DC: American Psychological Association.

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology*, *56*(2), 267-283.

Cate, F. H. (2010). The limits of notice and choice. *IEEE Security & Privacy*, *8*(2), 59-62. http://dx.doi.org/10.1109/MSP.2010.84

Chen, Y., & Zahedi, F. M. (2016). Individuals' Internet security perceptions and behaviors: Polycontextual contrasts between the United States and China. *MIS Quarterly*, *40*(1), 205-222.

Chin, W. W. (1998). Issues and opinion on structural equation modeling. *MIS Quarterly, 22*(1), 7-16.

Choi, H., Lee, M., Im, K. S., & Kim, J. (2007). Contribution to quality of life: a new outcome variable for mobile data service. *Journal of the Association for Information Systems*, *8*(12), 598-618.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. NJ: Lawrence Earlbaum, Hilsdale.

Cohen, J. D., McClure, S. M., & Angela, J. Y. (2007). Should I stay or should I go? How the human brain manages the trade-off between exploitation and exploration. *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, *362*(1481), 933-942.

Cropanzano, R., Rupp, D. E., & Byrne, Z. S. (2003). The relationship of emotional exhaustion to work attitudes, job performance, and organizational citizenship behaviors. *Journal of Applied Psychology, 88*(1), 160-169. http://dx.doi.org/10.1098/rstb.2007.2098

Culnan, M. J., & Armstrong, P. K. (1999). Information privacy concerns, procedural fairness, and impersonal trust: An empirical investigation. *Organization Science, 10*(1), 104-115. http://dx.doi.org/10.1287/orsc.10.1.104

Davidshofer, K. R., & Murphy, C. O. (2005). *Psychological testing: principles and applications*. New Jersey: Pearson/Prentice-Upper Saddle River.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace1. *Journal of Applied Social Psychology*, *22*(14), 1111-1132.

https://doi.org/10.1111/j.1559-1816.1992.tb00945.x

Debatin, B., Lovejoy, J. P., Horn, A. K., & Hughes, B. N. (2009). Facebook and online privacy: Attitudes, behaviors, and unintended consequences. *Journal of Computer‑Mediated Communication*, *15*(1), 83-108. https://doi.org/10.1111/j.1083-6101.2009.01494.x

Demerouti, E., Mostert, K., & Bakker, A. B. (2010). Burnout and work engagement: a thorough investigation of the independency of both constructs. *Journal of Occupational Health Psychology, 15*(3), 209-222. http://dx.doi.org/10.1037/a0019408

Dienlin, T., & Metzger, M. J. (2016). An extended privacy calculus model for SNSs: Analyzing self‑disclosure and self‑withdrawal in a representative US Sample. *Journal of Computer‑Mediated Communication*, *21*(5), 368-383. https://doi.org/10.1111/jcc4.12163

Dinev, T., & Hart, P. (2006). An extended privacy calculus model for e-commerce transactions. *Information Systems Research, 17*(1), 61-80. https://doi.org/10.1287/isre.1060.0080

Edwards, J. R., Caplan, R. D., & Harrison, R. V. (1998). Person-environment fit theory: Conceptual foundations, empirical evidence, and directions for future research. In C. L. Cooper (Ed.), *Theories of organizational stress* (pp. 28-67). Oxford: Oxford University Press.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50. https://doi.org/10.2307/3151312

Forsythe, S. M., & Shi, B. (2003). Consumer patronage and risk perceptions in Internet shopping. *Journal of Business Research*, *56*(11), 867-875. https://doi.org/10.1016/s01482963(01)00273-9

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Fraenkel, J. R., & Wallen, N. E. (2000). *How to design and evaluate research in education*. New York: McGraw-Hill.

Freudenberger, H. J., & Richelson, G. (1980). *Burn-out: The high cost of high achievement. What it is and how to survive it*. New York: Anchor Press.

Furnell, S., & Thomson, K. L. (2009). Recognising and addressing 'security fatigue'. *Computer Fraud & Security, 2009*(11), 7-11.

Goetz, T. E., & Dweck, C. S. (1980). Learned helplessness in social situations. *Journal of Personality and Social Psychology*, *39*(2), 246-255. https://doi.org/10.1037//0022-3514.39.2.246

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis*. Englewood Cliffs, NJ: Printice Hall.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice, 19*(2), 139-152.

Hallam, C., & Zanella, G. (2017). Online self-disclosure: The privacy paradox explained as a temporally discounted balance between concerns and rewards. *Computers in Human Behavior*, *68*, 217-227. https://doi.org/10.1016/j.chb.2016.11.033

Hargittai, E., & Marwick, A. (2016). "What Can I Really Do?" Explaining the Privacy Paradox with Online Apathy. *International Journal of Communication, 10*, 3737-3757.

Harman, H. H. (1976). *Modern factor analysis*. Chicago: University of Chicago Press.

Hardy, G. E., Shapiro, D. A., & Borrill, C. S. (1997). Fatigue in the workforce of National Health Service Trusts: levels of symptomatology and links with minor psychiatric disorder, demographic, occupational and work role factors. *Journal of Psychosomatic Research, 43*(1), 83-92. https://doi.org/10.1016/s0022-3999(97)00019-6

Hockey, G. R. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive-energetical framework. *Biological Psychology, 45*(1), 73-93. https://doi.org/10.1016/S0301-0511(96)05223-4

Hopstaken, J. F., Linden, D., Bakker, A. B., & Kompier, M. A. (2015). A multifaceted investigation of the link between mental fatigue and task disengagement. *Psychophysiology*, *52*(3), 305-315. https://doi.org/10.1111/psyp.12339

Johnson, J. L., & O'Leary-Kelly, A. M. (2003). The effects of psychological contract breach and organizational cynicism: Not all social exchange violations are created equal. *Journal of Organizational Behavior, 24*(5), 627-647. https://doi.org/10.1002/job.207

Jung, Y., Pawlowski, S. D., & Kim, H. W. (2017). Exploring associations between young adults' facebook use and psychological well-being: A goal hierarchy approach. *International Journal of Information Management*, *37*(1), 1391-1404. https://doi.org/10.1016/j.ijinfomgt.2016. 10.005

Junglas, I. A., Johnson, N. A., & Spitzmüller, C. (2008). Personality traits and concern for privacy: an empirical study in the context of location-based services. *European Journal of Information Systems, 17*(4), 387-402. https://doi.org/10.1057/ejis.2008.29

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, *33*(4), 692-724. https://doi.org/10.2307/256287

Keith, M. J., Maynes, C., Lowry, P. B., & Babb, J. (2014). Privacy fatigue: The effect of privacy control complexity on consumer electronic information disclosure. Paper presented at the *Thirty Fifth International Conference on Information Systems,* Auckland.

Kline, P. (1994). *An easy guide to factor analysis*. London: Routledge.

Kwon, J., & Johnson, M. E. (2015). The Market Effect of Healthcare Security: Do Patients Care about Data Breaches?. Paper presented at the *Workshop on the Economics of Information Security (WEIS 15)*.

Lazarus, R. S. (1998). The costs and benefits of denial. In S. Breznitz (ed.), *The denial of stress* (pp. 1-30). New York: International Universities Press, Inc.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. Springer. New York: Springer.

Lee, A. R., Son, S. M., & Kim, K. K. (2016). Information and communication technology overload and social networking service fatigue: A stress perspective. *Computers in Human Behavior, 55*, 51-61. https://doi.org/10.1016/j.chb.2015.08.011

Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology, 81*, 123–133. http://dx.doi.org/10.1037/0021-9010.81.2.123

Leiter, M. P., & Maslach, C. (2003). Areas of worklife: A structured approach to organizational predictors of job burnout. *Emotional and Physiological Processes and Positive Intervention Strategies*, 91–134. https://doi.org/10.1016/s1479-3555(03)03003-8

Levav, J., Heitmann, M., Herrmann, A., & Iyengar, S. S. (2010). Order in product customization decisions: Evidence from field experiments. *Journal of Political Economy*, *118*(2), 274-299. https://doi.org/10.1086/652463

Lewis, G., & Wessely, S. (1992). The epidemiology of fatigue: more questions than answers. *Journal of Epidemiology and Community Health, 46*(2), 92-97.

Lohmöller, J. B. (2013). *Latent variable path modeling with partial least squares*. Springer Science & Business Media.

Lowry, P. B., & Gaskin, J. (2014). Partial least squares (PLS) structural equation modeling

(SEM) for building and testing behavioral causal theory: When to choose it and how to use it.

IEEE Transactions on Professional Communication, 57(2), 123-146.

https://10.1109/TPC.2014.2312452

Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet users' information privacy concerns

(IUIPC): The construct, the scale, and a causal model. *Information Systems Research, 15*(4),

336-355. https://doi.org/10.1287/isre.1040.0032

Marcoulides, G. A., Chin, W. W., & Saunders, C. (2009). A critical look at partial least squares

modeling. *MIS Quarterly, 33*(1), 171-175.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of*

Psychology, 52(1), 397-422. https://doi.org/10.1146/annurev.psych.52.1.397

Ning, H., Liu, H., & Yang, L. T. (2013). Cyberentity security in the internet of

things. *Computer*, *46*(4), 46-53. https://doi.org/10.1109/mc.2013.74

Norberg, P. A., Horne, D. R., & Horne, D. A. (2007). The privacy paradox: Personal information

disclosure intentions versus behaviors. *Journal of Consumer Affairs*, *41*(1), 100-126.

https://doi.org/10.1111/j.1745-6606.2006.00070.x

Pavlou, P. A. (2011). State of the information privacy literature: where are we now and where

should we go?, *MIS Quarterly, 35*(4), 977-988.

Piper, B. F., Lindsey, A. M., & Dodd, M. J. (1987). Fatigue mechanisms in cancer patients:

developing nursing theory. *Oncology Nursing Forum, 14*(6), 17-23.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method

biases in behavioral research: a critical review of the literature and recommended

remedies. *Journal of Applied Psychology*, *88*(5), 879-903.

https://doi.org/10.1037/00219010.88.5.879

Ponemon. (2014). *The aftermath of a data breach: Consumer sentiment.* Retrieved from:

http://www.ponemon.org/blog/the-aftermath-of-a-data-breach-consumer-sentiment

Potempa, K., Lopez, M., Reid, C., & Lawson, L. (1986). Chronic fatigue. *Image: The Journal of*

Nursing Scholarship, 18(4), 165-169. https://doi.org/10.1111/j.1547-5069.1986.tb00569.x

Preibusch, S., Krol, K., & Beresford, A. R. (2013). The privacy economics of voluntary over-

disclosure in Web forms. In *The Economics of Information Security and Privacy* (pp. 183-

209). Springer Berlin Heidelberg.

Ray, C., Jefferies, S., & Weir, W. R. (1997). Coping and other predictors of outcome in chronic

fatigue syndrome: a 1-year follow-up. *Journal of Psychosomatic Research, 43*(4), 405-415.

https://doi.org/10.1016/S0022-3999(97)00111-6

Ream, E., & Richardson, A. (1996). Fatigue: a concept analysis. *International Journal of*

Nursing Studies, 33(5), 519-529. https://doi.org/10.1016/0020-7489(96)00004-1

Schermer, B. W., Custers, B., & van der Hof, S. (2014). The crisis of consent: how stronger legal

protection may lead to weaker consent in data protection. *Ethics and Information*

Technology, *16*(2), 171-182. https://doi.org/10.1007/s10676-014-9343-8

Schaufeli, W., & Enzmann, D. (1998). *The burnout companion to study and practice: A critical*

analysis. London: Taylor & Francis.

Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). The Maslach Burnout

Inventory–General Survey. In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.), *MBI manual*

(3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Schaufeli, W. B., & Taris, T. W. (2005). The conceptualization and measurement of burnout:

Common ground and worlds apart. *Work & Stress, 19*(3), 256-262.

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https://doi.org/10.1080/02678370500385913

Shirom, A. (1989). Burnout in work organizations. In C. L. Cooper & I. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 25–48). New York: Wiley.

Sen, R., & Borle, S. (2015). Estimating the contextual risk of data breach: An empirical approach. *Journal of Management Information Systems*, *32*(2), 314-341. https://doi.org/10.1080/07421222.2015.1063315

Smith, H. J., Milberg, S. J., & Burke, S. J. (1996). Information privacy: measuring individuals' concerns about organizational practices. *MIS Quarterly, 20*(2), 167-196. https://doi.org/10.2307/249477

Son, J. Y., & Kim, S. S. (2008). Internet users' information privacy-protective responses: A taxonomy and a nomological model. *MIS Quarterly*, *32*(3), 503-529.

Stanton, B., Theofanos, M. F., Prettyman, S. S., & Furman, S. (2016). Security fatigue. *IT Professional*, *18*(5), 26-32.

Sutanto, J., Palme, E., Tan, C. H., & Phang, C. W. (2013). Addressing the personalization-privacy paradox: An empirical assessment from a field experiment on smartphone users. *MIS Quarterly, 37*(4), 1141-1164.

Taddicken, M. (2014). The 'Privacy Paradox' in the social web: The impact of privacy concerns, individual characteristics, and the perceived social relevance on different forms of self-disclosure. *Journal of Computer-Mediated Communication*, *19*(2), 248-273. https://doi.org/10.1111/jcc4.12052

Tenenhaus, M., Vinzi, V. E., Chatelin, Y. M., & Lauro, C. (2005). PLS path modeling. *Computational Statistics & Data Analysis, 48*(1), 159-205.

https://doi.org/10.1016/j.csda.2004.03.005

Van Der Linden, D., Frese, M., & Sonnentag, S. (2003). The impact of mental fatigue on exploration in a complex computer task: Rigidity and loss of systematic strategies. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *45*(3), 483-494. https://doi.org/10.1518/hfes.45.3.483.27256

Van Eerde, W., & Thierry, H. (1996). Vroom's expectancy models and work-related criteria: A meta-analysis. *Journal of Applied Psychology*, *81*(5), 575-586. https://doi.org/10.1037//00219010.81.5.575

Van Slyke, C., Shim, J. T., Johnson, R., & Jiang, J. (2006). Concern for information privacy. *Journal of the Association for Information Systems, 7*(6), 415-444.

Vohs, K. D., Baumeister, R. F., Schmeichel, B. J., Twenge, J. M., Nelson, N. M., & Tice, D. M. (2014). Making choices impairs subsequent self-control: A limited-resource account of decision making, self-regulation, and active initiative. *Journal of Personality and Social Psychology, 94*(5), 883-898. https://doi.org/10.1037/0022-3514.94.5.883

Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.

Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, *39*(5), 806-820. https://doi.org/10.1037//0022-3514.39.5.806

Weitzner, D. J., Abelson, H., Berners-Lee, T., Feigenbaum, J., Hendler, J., & Sussman, G. J. (2008). Information accountability. *Communications of the ACM*, *51*(6), 82-87. https://doi.org/10.1145/1349026.1349043

Wetzels, M., Odekerken-Schröder, G., & Van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. *MIS Quarterly, 33*(1), 177-195.

Wrosch, C., Schulz, R., & Heckhausen, J. (2002). Health stresses and depressive symptomatology in the elderly: the importance of health engagement control strategies. *Health Psychology*, *21*(4), 340-348. https://doi.org/10.1037//0278-6133.21.4.340

Wu, K. W., Huang, S. Y., Yen, D. C., & Popova, I. (2012). The effect of online privacy policy on consumer privacy concern and trust. *Computers in human behavior, 28*(3), 889-897. https://doi.org/10.1016/j.chb.2011.12.008

Wu, J., & Lu, X. (2013). Effects of extrinsic and intrinsic motivators on using utilitarian, hedonic, and dual-purposed information systems: A meta-analysis. *Journal of the Association for Information Systems*, *14*(3), 153-191.

Xu, H., Dinev, T., Smith, J., & Hart, P. (2011). Information privacy concerns: Linking individual perceptions with institutional privacy assurances. *Journal of the Association for Information Systems*, *12*(12), 798-824.

Zhang, S., Zhao, L., Lu, Y., & Yang, J. (2016). Do you get tired of socializing? An empirical explanation of discontinuous usage behaviour in social network services. *Information & Management*, *53*(7), 904-914. https://doi.org/10.1016/j.im.2016.03.006