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**Hamed Qahri-Saremi**

DePaul University

**Isaac Vaghefi**

Pace University

**Ofir Turel**

California State University

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# **Addiction to Social Networking Sites and User Responses: Toward A Typological Theory and its Relation to Users' Personality Traits**

**Hamed Qahri-Saremi**

DePaul University, Chicago, Illinois, USA

**Isaac Vaghefi**

Pace University, New York, New York, USA

**Ofir Turel**

California State University, Fullerton, California, USA

## Abstract

*Prior studies have primarily used “variable-centered” perspectives to identify factors underlying user responses to social networking site (SNS) addiction, their predictors and outcomes. This paper extends this perspective by taking a person-centered approach to examine (1) the prototypical subpopulations (profiles) of users’ extent of SNS addiction and responses to it, (2) how affiliations with these profiles can explain user behaviors toward SNS use, and (3) how personality traits can predict affiliations with these profiles. To this end, we propose a typological theory of SNS addiction and user responses to it via two empirical, person-centered studies. Study 1 draws on survey data from 188 SNS users to develop a typology of users based on the extent of their SNS addiction and their responses to it. It further examines the relations between affiliation with these profiles and users’ SNS discontinuance intention, as a typical behavioral response to SNS addiction. Study 2 uses survey data from 284 SNS users to validate the user typology developed in study 1 and investigate its relations to users’ Big Five personality traits. Our findings shed light on a typology of five prototypical profiles of SNS users – cautious, regular, consonant, dissonant, and hooked, who differ in their extent of SNS addiction and their cognitive, emotional, and behavioral responses to it. Our findings also demonstrate how Big Five personality traits can predict user affiliations with these prototypical profiles.*

**Keywords:** Social Networking Site Addiction; Discontinuance intention; Latent Profile Analysis; Big Five Personality Traits; Typology.

## Introduction

When people want to make an announcement to their family and friends, learn about new people, read news, or even entertain themselves, what do they do? While some might still use relatively traditional means such as phone, text message, and TV, many will use a social networking site (SNS), such as Facebook, Instagram, or Twitter, to do all these. Indeed, today, a large majority of Americans (72%) use SNS to connect with one another, engage with news content, share information, and entertain themselves (Pew Research Center, 2019). This number was only 5% in 2005 (*ibid*). The same is true for the rest of the World as SNS use is now one of the most popular online activities globally (Clement, 2019) and social technologies now being one of the main drivers of innovations for organizations (Abedin & Qahri-Saremi, 2018). As such, social technologies are exceedingly becoming the cornerstone of modern communication and connection (Qahri-Saremi & Montazemi, 2019; Stieger & Lewetz, 2018). Nonetheless, the accelerating growth of SNS use has not been without major controversies. In this vein, incidents such as Cambridge Analytica scandal (Tharoor, 2018) and warnings by authorities, such as the American Academy of Pediatrics (O’Keeffe et al., 2011), about the negative effects of SNS, such as “Facebook addiction,” has ignited major discussions about the place of SNS in our lives. Indeed, in recent years, as popularity of SNS has increased, so has the number of studies showing how excessive SNS use can turn into a behavioral addiction problem and how much it can negatively impact users’ mental, psychological, and physical wellbeing (Kuss & Griffiths, 2017; Qahri-Saremi & Turel, 2016; Vaghefi et al., 2020).

Recent research on the dark sides of SNS use<sup>1</sup> has conceptualized “SNS addiction” as a maladaptive psychological dependency on the SNS use that is associated with major negative consequences across life domains (Turel, 2015; Turel et al., 2014). This stream of literature has significantly contributed to our understanding of the drivers of SNS addiction, its negative consequences for users, organizations, and the society, as well as the factors that can shape user responses to SNS addiction (Beaudry et al., 2020; Gong et al., 2019; Turel, 2015; Turel, 2017; Vaghefi & Qahri-Saremi, 2017; Vaghefi et al., 2020). In doing so, prior studies on SNS addiction have often focused on the general population of SNS users and measured their extent of addiction to SNS use in order to show how increase in SNS addiction is *associated with* changes in other related factors. However, obviously not all SNS users experience a strong or any addiction to SNS use (i.e., they present different extent of SNS addiction). In fact, recent survey by Pew Research Center shows that 59% of SNS users think it would not be hard to discontinue SNS use, while in contrast, 40% of SNS users think otherwise, including 14% that consider SNS discontinuance as “very hard” to do (Smith & Anderson, 2018). Indeed, while for some users SNS use is not a major part of their daily activities, for others a week without using SNS can cause major withdrawal symptoms (Stieger & Lewetz, 2018). All these suggest that SNS users are *different* in terms of not only their extent of addiction to SNS use, but also their responses to it. While the extant literature acknowledges this variation (Kuss & Griffiths, 2017), it is still not clear whether and how the cognitive and emotional responses to SNS addiction may differ among users with different extent of SNS addiction; and how these variations in user responses to SNS addiction may influence SNS use behaviors.

Why is this important to know? Because users with higher levels of SNS addiction can experience different cognitions, emotions, and thereby behaviors than what normal SNS users will experience (Turel, 2015; Turel, 2017).

Furthermore, these cognitions, emotions, and behaviors are not necessarily uniform among the users with relatively high levels of SNS addiction (e.g., Turel et al., 2018; Vaghefi & Qahri-Saremi, 2018; Vaghefi et al., 2020). In other words, although we have considerable knowledge about the *individual factors* that are associated with SNS addiction, we do not know how these factors together, as a system of factors, will play out among users and what subpopulations of SNS users may emerge as a result of it. Without these “person-centered” details, our knowledge of SNS addiction and user responses to it is incomplete and difficult to translate into practical guidelines.

The reason that the extant literature has largely overlooked investigating subpopulations of users with respect to SNS addiction can be rooted in the nature of the prior studies on SNS addiction. They are predominantly “variable-centered” studies, which are primarily focused on identification of factors and their inter-relations associated with SNS addiction. Most notably, variable-centered studies assume that all users in a sample are drawn from a single population and that a single set of averaged parameters (e.g., path loadings, correlations) are estimated for the whole sample. Such variable-centered studies on SNS addiction have pointed to several plausible factors, such as cognitive dissonance (Turel, 2015; Vaghefi & Qahri-Saremi, 2017), guilt (Du et al., 2018; Meier et al., 2016), self-efficacy (Du et al., 2018; Turel, 2015), and self-accountability (Vaghefi et al., 2020), that can reflect various aspects of users’ responses to SNS addiction. Notwithstanding their valuable insights, these studies are not equipped, nor are focused on identifying the subpopulations of users that such factors may lead to emerge.

This void can be filled by a *person-centered* study, which considers the possibility that a sample of SNS users might in fact comprise of multiple subpopulations characterized by different configurations of parameters (Meyer et al., 2013; Morin et al., 2011). The objective of a person-centered study is to empirically identify a *typology* of users presenting differentiated configurations (profiles) with regard to a system of factors (Meyer & Morin, 2016). Findings of an empirical person-centered study can put the basis of the empirical approach for developing a typological theory (Doty & Glick, 1994). This is important for research on SNS addiction given that users can vary in terms of the extent of their SNS addiction (if any), the nature of their cognitive and emotional responses to it, as well as their personality traits. Nonetheless, while the extant literature provides significant knowledge on the individual factors underlying SNS addiction, it has largely overlooked the plausibility of a typology of SNS addiction and user responses to it; and how such a typology can predict user behaviors. To ameliorate this gap, this paper strives to propose a typological theory by adopting a person-centered perspective to investigate three research questions in the context of SNS addiction: (1) *what are the prototypical subpopulations (profiles) of users in terms of the extent of SNS addiction and responses to it?* (2) *how do affiliations (i.e., similarities) of users with these prototypical profiles explain SNS use behaviors?* and (3) *how do user personality traits predict users’ affiliations with these profiles?*

To this end, we follow Doty and Glick’s (1994) guidelines for empirically proposing a typological theory of users’ SNS addiction and their responses to it. As explained by Doty and Glick’s (1994), a typological theory should be able to explain the relations between the prototypical profiles (i.e., “ideal profiles” in Doty and Glick (1994)) within the typology and a dependent variable, representing the phenomenon under study. In this paper, we focus on SNS discontinuance intention as our dependent variable, given its prevalence as a common response to technology addiction (Maier, 2019; Maier et al., 2015b; Soliman & Rinta-Kahila, 2019). We will first empirically specify a typology of SNS users based on their level of SNS addiction and their cognitive and emotional responses to it. Then, we will empirically test how user affiliations (i.e., similarities) with different prototypical profiles in the typology can predict their SNS discontinuance intention. Finally, we will test to determine how user affiliation with different prototypical profiles can be predicted using their Big Five personality traits, given the role of personality in determining general levels of technology addictions and responses (Hussain & Pontes, 2019).

To this end, we build on cognitive dissonance theory (CDT) (Festinger, 1957) and the findings of prior variable-centered studies on SNS addiction, and conduct two empirical person-centered studies. Study 1 aims at providing answers to our research questions 1 and 2 by empirically developing a typology of prototypical profiles of SNS addiction and user responses to it. In doing so, it relies on self-report empirical data from 188 SNS users to, first, identify the prototypical profiles of users based on the extent of their SNS addiction and their responses to it, and, second, investigates how the strength of affiliation with these prototypical profiles can explain SNS discontinuance intention. Study 2 aims at confirming the validity of the SNS user typology developed in study 1 and addressing research question 3. It validates the findings in study 1 based on self-report data from 284 SNS users, and more importantly, extend them by investigating how users’ Big Five personality traits predict their affiliations with the identified profiles.

## Theoretical and Conceptual foundation

### SNS Addiction

SNS addiction refers to a user's maladaptive psychological dependency on SNS use manifested in typical behavioral addiction symptoms that can result in negative consequences for the users (Turel, 2015). SNS addiction has recently attracted the attention of information systems (IS) scholars. A brief systematic review<sup>2</sup> of the published research on SNS addiction in major IS journals is presented in Table 1.

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Table 1 demonstrates that extant SNS addiction literature comprises predominantly variable-centered studies of the antecedents and consequences of SNS addiction. While these studies greatly enhanced our understanding of important variables that are associated with SNS addiction, there is currently no knowledge of the prototypical profiles of SNS users in terms of their degree of SNS addiction as well as their cognitive, emotional, and behavioral responses to it. To fill this gap, this paper is one of the first attempts to propose a typological theory on this topic.

Resembling other behavioral addictions (He et al., 2017; Király et al., 2017; Rehbein et al., 2015; Wei et al., 2017; Yao et al., 2017), SNS addiction is associated with negative consequences for users' personal and professional life domains (Moqbel & Kock, 2018; Turel, 2015). As a result, it is envisioned that SNS addiction can lead to user responses aimed at alleviating its symptoms and rectifying its negative consequences (Tarafdar et al., 2020). In this vein, prior studies (e.g., Turel, 2015; Turel et al., 2019) have shown that higher degrees of SNS addiction can lead to stronger behavioral responses toward reducing or discontinuing SNS use. At the same time, people with higher levels of SNS addiction, to an extent that they are not able or willing to reduce or discontinue its use, may respond to their SNS addiction in other ways such as trivializing or rationalizing the negative consequences of their SNS addiction<sup>3</sup> (Vaghefi & Qahri-Saremi, 2017). We explain the theoretical foundations and important factors underlying user responses to SNS addiction in the rest of this section.

### Users' Responses to SNS Addiction

#### *Cognitive Dissonance*

Given its viability in explaining a broad range of behavioral changes (Cummings & Venkatesan, 1976) and its applicability for understanding changes in addictive behaviors (Chiou & Wan, 2007), CDT (Festinger, 1957) deems an appropriate theoretical framework for conceptualizing the important factors underlying users' responses to SNS addiction. Cognitive dissonance refers to a state of psychological tension that arises when one experiences discrepancies between relevant-but-inconsistent beliefs and behaviors (Festinger, 1957). A discrepancy may arise when there are two inconsistent cognitions or when cultural rules around norms imply that a behavior does not fit accepted norms (Festinger, 1957). In such a situation, cognitive dissonance arises and individuals become motivated to engage in mental and behavioral actions to reduce the dissonance and the psychological tension it causes (Harmon-Jones et al., 1996; Harmon-Jones & Mills, 2019). Dissonance reduction can happen in two ways (Gosling et al., 2006; Scher & Cooper, 1989): (1) rationalizing or trivializing the dissonance and diminishing its importance, which reduces the cognitive dissonance without necessarily changing the reality of the dissonance-arising behavior (Gosling et al., 2006; Simon et al., 1995), and (2) actively engaging in cognitive and behavioral attempts to change the dissonance-arising behavior and making it more consistent with the belief (Festinger, 1957). Either way, cognitive dissonance can be reduced at least in the short term.

Cognitive dissonance has proven instrumental for understanding how IT users change their behavior when they observe symptoms of IT addiction (Gong et al., 2019; Turel, 2015; Vaghefi & Qahri-Saremi, 2017). Recent studies have shown that when users experience IT addiction symptoms, cognitive dissonance is formed based on the discrepancy between their expectations from using the IT artifact (generally positive perceptions) and the undesirable symptoms and negative consequences of IT addiction. Experiencing higher levels of cognitive dissonance motivates users to engage in efforts to reduce it. Indeed, recent SNS addiction studies have shown that this can result in formation of intentions to discontinue the SNS use (Vaghefi & Qahri-Saremi, 2017). Furthermore, prior SNS addiction studies have suggested that users who do not experience cognitive dissonance regarding their SNS addiction are less likely to discontinue their SNS use, despite their addiction and its negative consequences (Vaghefi & Qahri-Saremi, 2017). This demonstrates *cognitive dissonance* as an important factor underlying users' response to SNS addiction.

## ***Self-Accountability***

CDT further suggests that the extent of self-accountability for the unwanted behavior is also a key factor in influencing people's cognitive dissonance and their responses to the unwanted behavior (Chiou & Wan, 2007; Simon et al., 1995). Cognitive dissonance is determined by whether or not people feel responsible for the unwanted behavior. Individuals will experience cognitive dissonance and engage in behavior change, when they feel responsible for the consequences of their behaviors (Sogin & Pallak, 1976). However, when people have sufficient reasons for attributing the unwanted behavior to others (a.k.a., others accountability), presence of unwanted behavior will not prompt them to feel dissonant, regardless of how negative the consequences are (Scher & Cooper, 1989).

In principle, when an individual chooses something that works out unfavorably, s/he feels accountable for the behavioral consequences and cognitive dissonance is formed. Behavior change is likely to occur when negative consequences are produced and when we feel accountable for these negative consequences (Scher & Cooper, 1989; Sogin & Pallak, 1976). In the same vein, it has been shown that when hedonic IT users consider themselves as accountable for the negative consequences of IT addiction, they are more likely to experience cognitive dissonance and to engage in attempts to change their IT use behavior (Chiou & Wan, 2007; Vaghefi & Qahri-Saremi, 2017). Therefore, extent of *self-accountability* is an important factor in understanding how users respond to their SNS addiction.

## ***Guilt***

Arousal of cognitive dissonance has been associated with increased feeling of guilt, which can be more intense in situations where the person perceives self-accountability for the dissonance-arising behavior (Devine et al., 1991; Stone & Cooper, 2001). Guilt is an emotional response that stems from the gap between one's perceived standards and his or her actions (Potter-Efron & Carruth, 2014). This gap is cognitively reflected in the cognitive dissonance a person experiences, which indicates a personal failure to meet self-standards. The higher the violation of self-standards and the more important they are to the person, the stronger the guilt feeling (Elliot & Devine, 1994; Stone & Cooper, 2001). For instance, when a student is being admonished because s/he spends most of class time exploring SNS, he or she may experience cognitive dissonance, signaling that the current behavior is considered inappropriate and unacceptable, which can result in guilt feeling (Elliot & Devine, 1994; Stone & Cooper, 2001).

Similarly, guilt is a key emotion in defining the way users internalize an addiction and the way they respond to it (Meehan et al., 1996). In the same vein, recent findings in the SNS addiction literature have illustrated that arousal of guilt feeling among addictive SNS users increases the likelihood of SNS discontinuance behavior (Turel, 2015; Turel, 2017; Vaghefi & Qahri-Saremi, 2017). On this basis, we contend that *guilt* is an important emotion in shaping the users' responses to SNS addiction.

## ***Self-Efficacy to Discontinue SNS Use***

Self-efficacy refers to ones' belief in their own ability to "organize and execute the course of action required to produce given levels of attainment" (Bandura, 1998, p. 624). The tendency to change a behavior is driven by the beliefs that one can change his/her own behavior (Bandura, 1986). Self-efficacy perceptions can determine the goals, strengthen the commitment to actions needed to achieve the goals, and finally lead to the intention to execute actions (Turel, 2015). When self-efficacy is high, it is more likely that an intended action is realized.

Prior research on addiction (Condiotte & Lichtenstein, 1981; Eiser & Gossop, 1979; Eiser et al., 1978) has explained that lack of self-efficacy to stop an addiction can indeed change users' responses to addiction-induced cognitive dissonance in two different ways. First, for some users, seeing self as unable to reduce the addiction-induced cognitive dissonance can result in blaming self for an existing addiction; this can harm one's psychological wellbeing and even exacerbate existing addiction (Eiser & Gossop, 1979). Second, other users may use the lack of self-efficacy as an excuse for rationalizing lack of attempts for changing the addictive behavior (Eiser et al., 1978). This is because the addictive behavior is not necessarily dissonance-arousing for users who see (or choose to see) their addictive behavior as beyond their ability to stop. In contrast, those with higher levels of self-efficacy to discontinue their addiction are more likely to engage in efforts to mitigate their addictive behavior in response to their addiction-induced cognitive dissonance (Eiser & Gossop, 1979; Turel, 2015). As such, recent SNS addiction research has established the association between users' self-efficacy to discontinue the SNS use and their discontinuance of SNS addiction (Turel, 2015; Turel, 2017; Vaghefi & Qahri-Saremi, 2017). Therefore, we contend that users' *self-efficacy to discontinue SNS use* is an important factor in shaping the users' responses to their SNS addiction.

## **A Typological Perspective**

We seek to answer our first research question by identifying a typology of users' extent of *SNS addiction* and their responses to it in terms of *cognitive dissonance*, *guilt*, *self-accountability*, and *self-efficacy to discontinue SNS use*. Until now, research on SNS addiction and users' responses to it (e.g., Turel, 2015; Turel, 2017) have been primarily focused on how each of these factors influence users' behavior toward SNS addiction (e.g., users' SNS discontinuance intention). Notwithstanding the important contributions of these variable-centered studies, they do not account for the ways in which these factors may combine within a user in forming responses to their SNS addiction. For example, some users may show high cognitive dissonance in response to their high levels of SNS addiction, whereas others may be consonant (i.e., show low cognitive dissonance) in face of comparable levels of SNS addiction (Vaghefi et al., 2017). Furthermore, among the users with high cognitive dissonance, some may perceive themselves capable of controlling their SNS addiction (i.e., high self-efficacy to discontinue SNS use), while others may not (Turel, 2015). To make it more complicated, some users may consider themselves accountable for their SNS addiction, while others may place the blame on others, which can change the way they respond to their SNS addiction. Therefore, it is important to study these factors in combination — as a system of factors — underlying users' responses rather than in isolation given the plausibility of interactions among them (e.g., see Turel, 2017; Vaghefi & Qahri-Saremi, 2017). By identifying a typology of SNS users, a person-centered approach would allow us to understand how users' extent of SNS addiction combined with their responses to it can lead to emergence of prototypical profiles of SNS users.

Because of the scarcity of prior person-centered studies in this area, there is no conclusive evidence to propose a-priori hypotheses about the number of prototypical profiles. Hence, we followed Doty and Glick (1994) that argued that “both the theoretical and the empirical methods of specifying ideal profiles are appropriate for testing typologies because both of these approaches specify ideal profiles without reference to the dependent variable. Thus, the key in typological theories, that similarity to the ideal types [profiles] determines the dependent variable, can be falsified” (Doty & Glick, 1994, p. 238). Hence, we seek to develop a typology of prototypical profiles of SNS users and test how SNS users' affiliations with these profiles affect their SNS discontinuance intention.

## **Outcome of Users' Responses to SNS Addiction**

To answer the second research question, we focus on a key outcome of users' extent of SNS addiction and their cognitive responses to it, namely SNS discontinuance intention. Doty and Glick (1994) explain that a key aspect of typological theories is falsification of how similarity to the prototypical profiles determines the dependent variable in the study. Therefore, it is important to clarify a pertinent dependent variable in the study and being able to independently test its variations as a result of affiliations with prototypical profiles in the typology. Turel (2015) has established SNS discontinuance intention as a key behavioral outcome of users' responses to SNS addiction. Defined as a tendency toward discontinuing the SNS use, SNS discontinuance intention is an all-encompassing concept that considers users' behavioral intention to cope with the negative consequences of an SNS addiction through behavior change (Maier, 2019; Maier et al., 2015b; Soliman & Rinta-Kahila, 2019; Zhao et al., 2018). Prior SNS addiction research has suggested that higher SNS discontinuance intentions can be driven by cognitive dissonance (Gong et al., 2019), guilt (Turel, 2015; Turel, 2017), self-accountability (Vaghefi & Qahri-Saremi, 2017), and self-efficacy to discontinue SNS use (Griffiths et al., 2014; Turel, 2015). Against this theoretical backdrop and given that these factors can vary across different prototypical profiles, we expect to observe significant variations in users' SNS discontinuance intention based on the affiliations with different prototypical profiles.

## **Personality Predictors of Users' Responses to SNS Addiction**

In response to the third research question, we seek to understand how personality traits can predict user similarities to prototypical profiles of SNS addiction and responses to it. Indeed, prior research on addiction shows that personality traits can play a key role in differentiating people with higher addictive tendencies from those with lower ones (Claes et al., 2006; Kayaş et al., 2016; Terracciano & Costa, 2004; Vaghefi & Qahri-Saremi, 2018). Likewise, personality traits can predispose users to lower or higher levels of SNS addiction and different responses to it (Turel et al., 2018; Vaghefi & Qahri-Saremi, 2018). For example, user personality can influence their tendency to experience SNS addiction (Blackwell et al., 2017; Vaghefi & Qahri-Saremi, 2018), self-efficacy (Perera et al., 2018), and predisposition to guilt feeling (Giammarco & Vernon, 2015). As such, we propose that personality traits can help predict users' affiliations with prototypical profiles of SNS addiction and responses to it. Rather than arbitrarily selecting a handful of personality traits that may (or may not) relate to the SNS addiction, we follow a theory-driven approach. Specifically, we draw upon the Big Five personality traits (Carver & Connor-Smith, 2010), given their characterization as context-free, stable, with a great breadth among different measures of personality (Chen &

Roberts, 2019; Maier et al., 2019; Vaghefi & Qahri-Saremi, 2018). Big Five personality traits are among the most widely accepted personality frameworks (Li et al., 2014). They include *openness to experience*, *neuroticism*, *conscientiousness*, *agreeableness*, and *extraversion*; which “theoretically capture the essence of one’s personality” (McElroy et al., 2007, p. 810). Prior research has shown that Big Five personality traits can be helpful in explaining excessive and compulsive use of technology, including SNS addiction (Buckner et al., 2012; Kayış et al., 2016; McElroy et al., 2007; Vaghefi & Qahri-Saremi, 2018; Witt et al., 2011; Zhou et al., 2017). Next, we briefly define each of the Big Five personality traits and their relations to SNS addiction and responses to it.

*Openness to experience* reflects the extent of being creative, unconventional and artistically sensitive, and willing to involve in an unknown experience. The research findings regarding the relation between openness to experience and technology addiction is mixed. On one hand, some studies (Kayış et al., 2016) showed a significant negative relation between users’ openness to experience and their extent of internet addiction. On the other hand, other research (e.g., McElroy et al., 2007) showed that openness to experience can increase a user’s extent of IT use, which in extreme case can lead to high levels of IT addiction.

*Neuroticism* refers to a user’s tendency to experience negative emotions in forms of stress, anxiety, or depression when faced with real-life challenges. These users often experience negative feelings and try to cope with stressful situations by means of maladaptive coping strategies such as delay and denial (Carver & Connor-Smith, 2010). Therefore, neurotic users have higher tendency to use IT and engage in addictive IT use behaviors to cope with stress in their daily lives (Ehrenberg et al., 2008). Furthermore, recent research demonstrated that neuroticism can magnify users’ perceived negative consequences of SNS addiction (Turel et al., 2018), thus increase users’ perceptions of SNS addiction and cognitive /emotional responses to it. Against this backdrop, we expect to see higher levels of neuroticism in user profiles with higher levels of SNS addiction.

*Conscientiousness* refers to the ability of a user to direct and persist at goals, and to self-regulate impulses. Conscientious users are less likely to use the technology for what they see as unproductive activities (McElroy et al., 2007). They tend to spend less time online in leisure pursuits and more time online engaged in productive and job-related pursuits (McElroy et al., 2007). As a result, prior research has found a negative relation between conscientiousness and problematic IT use (Kayış et al., 2016) as well as SNS addiction (Vaghefi & Qahri-Saremi, 2018). On this basis, lower levels of conscientiousness can be expected in user profiles with higher levels of SNS addiction.

*Agreeableness* refers to qualities related to empathy, helpfulness, cooperativeness and having the ability to impede one’s negative feelings. Research on the intersection of agreeableness and IT addiction has suggested a negative relation between the two (Ehrenberg et al., 2008; Kayış et al., 2016), with less agreeable users showing higher tendency toward spending more time online (McElroy et al., 2007) and toward IT addiction (Ehrenberg et al., 2008; Kayış et al., 2016). On this basis, we expect to find lower levels of agreeableness in profiles of users with higher levels of SNS addiction.

Finally, *extraversion* refers to the degree to which a person is social, warm, and active and is linked to elements such as assertiveness and confidence (Carver & Connor-Smith, 2010; Srivastava et al., 2015). It has been contended that extraverts prefer face-to-face interactions and typically spend less time on the Internet especially for online social activities such as SNS use (McElroy et al., 2007). While this suggests a negative relation between extraversion and SNS addiction, especially for social IT such as SNS, not all prior findings support this relation. In particular, while some studies have demonstrated a negative relation between the two (e.g., Kayış et al., 2016), others have found a positive relation between them (e.g., Hwang et al., 2014), and a third group of studies could not find significant relation between them (e.g., Buckner et al., 2012).

Overall, we seek to answer our third research question by investigating how Big Five personality traits can predict user affiliations with different prototypical profiles of SNS addiction and responses to it.

## **Research Design and Methodology**

To investigate our three research questions, we conduct two person-centered empirical studies of SNS users using cross-sectional, multi-wave self-report data and employing three-step latent profile analysis (LPA) (Asparouhov & Muthén, 2014). As portrayed in Figure 1, study 1 examines how the extent of SNS addiction and users’ responses lead to different prototypical profiles of SNS users. We then estimate the relation between affiliations with different prototypical profiles and the SNS discontinuance intention as the outcome. In study 2, we first replicate the prototypical profiles identified in study 1 to show their validity and stability across different samples of SNS users’ population. Then, we investigate how Big Five personality traits can predict users’ affiliations with these profiles.



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Three-step LPA was deemed appropriate for this paper due to its advantages over other clustering and classification methods. First, most of the common cluster analysis and classification methods, such as K-means, are essentially classification systems that categorize cases into *mutually exclusive and exhaustive sets* with a series of discrete decision rules. Such a discrete classification of cases is inconsistent with the concept of typological theory, where cases can have different extent of similarities (a.k.a., affiliations) with different prototypical profiles (Doty & Glick, 1994). By estimating the degree of affiliations with different prototypical profiles for each case (i.e., each case can be affiliated with different profiles, with different degrees of affiliation, called *membership*), LPA is deemed more conducive for person-centered (typological) research. Second, unlike other cluster analysis methods such as K-means, LPA does not require an a-priori knowledge of the number of clusters (profiles) needed; it uses an iterative process of testing multiple solutions, which allows detecting the optimal number of profiles that best fits the empirical data (Wade et al., 2006). Third, LPA is a model-based approach that uses the maximum-likelihood method to estimate the model parameters, which generates a statistically consistent criterion (i.e., likelihood) for affiliating users to the latent profiles. This is in contrast with the heuristic approach in other cluster analysis techniques, such as k-means, for allocating cases to clusters (Wang & Hanges, 2011). Fourth, LPA uses Bayesian information criterion (BIC) (Melas et al., 2014; Nylund et al., 2007) and the Parametric Bootstrapped Likelihood Ratio (PBLR) Test to determine the optimal number of latent profiles in data, which is a more statistically robust approach as compared to traditionally more common cluster analysis techniques such as k-means. Fifth, LPA uses continuous indicators as inputs, thus overcomes the need for the often-needed dichotomization (e.g., high/low) of continuous factors that can lead to loss of information (Mueller et al., 2010; Wade et al., 2006).

## Study 1

### Sample and Procedure

Data for study 1 were collected via two online, cross-sectional surveys, administered one week apart ( $t_1$ : week 1: and  $t_2$ : week 2). The sample consisted of SNS users who were students at a large North American university. Out of 230 invitees, 188 (40% female, average age: 20, range:18-29,  $SD=1.5$ ) provided complete responses (82% response rate). Participation was voluntary and participants received 2% course bonus credits for their time. Respondents, on average, had more than five years of SNS experience and spent over one hour/day on a SNS. The survey asked participants to focus on their most-frequently-used SNS (Facebook: 45%, Twitter: 19%, Instagram: 17%, Snapchat: 11%, others (e.g., WeChat, Weibo): 8%).

### Measures

Measurement items were adapted from established scales in the literature (see Appendix A). The  $t_1$  survey captured (1) *SNS addiction* scores with an SNS addiction scale (Turel, 2015), (2) *cognitive dissonance* with Metzger et al. (2015) scale that was adapted to the context of this paper, (3) *guilt feelings* when using the SNS with the PANAS-X items for guilt (Watson & Clark, 1994), (4) *self-accountability* with the Passyn and Sujan (2006) scale adapted to the context of SNS use, (5) *self-efficacy to discontinue SNS* use with measures from Dzewaltowski et al. (1990) adapted to the context of SNS use (Turel, 2015), and (6) *demographic factors*, such as age and gender along with the most-frequently-used SNS. The  $t_2$  survey captured users' *SNS discontinuance intention* using Turel (2015) scale.

### Preliminary Analyses

A series of preliminary data analyses ensured the reliability as well as the content and discriminant validity of factors in study 1 (see Appendix B).

### Three-Step Latent Profile Analysis (LPA) with a Distal Outcome

To identify prototypical profiles of users' responses to SNS addiction, we employed the three-step LPA with a distal outcome using Mplus 7.4 (Asparouhov & Muthén, 2014). The first step estimated an LPA model to identify the optimal number of latent profiles using extent of *SNS addiction*, *cognitive dissonance*, *self-accountability*, *self-*

*efficacy to discontinue SNS use*, and *guilt* as the continuous indicators. The second step estimated the measurement error for the best LPA solution determined in step 1, which was then used in the third step. The third step introduced *SNS discontinuance intention* as the distal outcome to the analysis (i.e., independent from the indicators) and estimated the statistical association between cases' affiliation with latent profiles identified in step 1 and *SNS discontinuance intention*. Consistent with Asparouhov and Muthén (2014), we did not make any assumption of equal means and variances in the distal outcome factor across the identified profiles to improve the generalizability of the findings. All three steps were carried out consecutively using “DU3STEP” auxiliary variable option in the Mixture analysis in Mplus 7.4 (see Asparouhov & Muthén, 2014).

To identify the optimal number of profiles, we iteratively conducted three-step LPA with a distal outcome for different number of profiles — from two to eight profiles (the maximum number of profiles that allowed the LPA to converge). The optimal number of profiles was assessed based on (1) parsimony and interpretability of the emergent profiles from LPA (Merz & Roesch, 2011), (2) BIC (Table 2) (Melas et al., 2014), and (3) PBLR Test (Table 3) (Muthén & Muthén, 1998-2015). The results of LPA suggested five profiles that best explained the heterogeneity in the data (see Figure 2(a)).

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Furthermore, the results of pair-wise chi-square tests across the five prototypical profiles showed significant variations in terms of their SNS discontinuance intention, as depicted in Figure 2(b) and Table 4. The five prototypical profiles show the ideal subpopulations of SNS users with respect to the extent of their SNS addiction and their responses to it. Considering the characteristics of these profiles, we label them (1) cautious (n=25), (2) regular (n=104), (3) consonant (n=35), (4) dissonant (n=17), and (5) hooked (n=7) prototypical profiles.

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The *cautious* prototypical profile represents SNS users with the lowest levels of SNS addiction and some of the lowest levels of cognitive dissonance, self-accountability, and guilt. Therefore, it seems that these users are cautious of their extent of SNS use. Moreover, they expressed the lowest levels of SNS discontinuance intention in the sample. This is expected, given their relatively weak SNS addiction and therefore their insignificant cognitive and emotional responses to it.

The *regular* prototypical profile represents the largest profile of SNS users in the sample (n=104). The regular users reported average levels of SNS addiction, which is lower than that of cautious users. However, their average SNS addiction is accompanied with relatively low levels of cognitive dissonance, guilt, and self-accountability. Moreover, their SNS discontinuance intention is relatively low, and not significantly different from that of the cautious profile.

The *consonant* prototypical profile characterizes SNS users with high levels of SNS addiction, which is significantly higher than those of cautious and regular profiles. However, despite this, consonant profile shows average levels of cognitive dissonance, guilt, and self-accountability toward SNS addiction, which suggest their consonance with the status-quo and their high levels of SNS addiction. Therefore, they are labelled “consonant”. Their SNS discontinuance intention is low, not significantly different from those of cautious and regular profiles, which is compatible with their consonant response to SNS addiction.

In contrast to the consonant profile, the *dissonant* prototypical profile represents SNS users with a high level, the second highest level, of SNS addiction who respond to it with a high level of cognitive dissonance and guilt. In

addition, these users perceive themselves as highly accountable for their SNS addiction (i.e., high self-accountability) and have one of the highest levels of self-efficacy to discontinue SNS use. Moreover, this profile of SNS users possesses highest level of SNS discontinuance intention, which is warranted given their dissonant response to their SNS addiction.

Lastly, the *hooked* prototypical profile represents users with the highest levels of SNS addiction and guilt in the sample and one of the highest levels of cognitive dissonance, as well as self-accountability. They are relatively similar to the dissonant prototypical profile, except for their low levels of self-efficacy to discontinue SNS use. This is noteworthy in light of the fact that hooked profile shows a relatively low levels of SNS discontinuance intention, which is significantly lower than dissonant profile and not significantly different from other prototypical profiles. Drawing on the findings of prior variable-centered studies (e.g., Turel, 2015; Vaghefi & Qahri-Saremi, 2017), we contend that this can be attributed to their markedly low levels of self-efficacy to discontinue SNS use. In other words, hooked profile represents SNS users who experience high levels of SNS addiction but see themselves as unable to discontinue it; hence labelled “hooked”.

**Discussion of Study 1 Findings**

The findings responded to research question 1 by revealing a typology of five prototypical profiles of users’ SNS addiction and their responses to it. In addition, the findings also addressed our research question 2 by showing that affiliations with the five prototypical profiles in the typology can explain differences in the SNS discontinuance intention of users. This is an important element toward proposing a typological theory of SNS addiction and users’ responses to it (Doty & Glick, 1994).

**Study 2**

The objectives of study 2 are twofold: (1) to replicate, hence validate the findings of study 1 for their generalizability and stability, and (2) to investigate whether and how users’ Big Five personality traits can predict their affiliations with the five identified profiles.

**Data Collection**

A similar process to study 1 was used to collect data for study 2 from a separate cross-sectional sample of SNS users using online surveys. Out of 300 invitees, 284 (95% response rate) provided complete responses (50% female, average age: 21, range:18-39, SD=2.62). Similar to study 1, the participation was voluntary, and respondents received 2 bonus course credits as incentives. We asked participants to focus on their most-frequently-used SNS (Facebook: 42%, Snapchat: 21%, Instagram: 18%, Twitter: 7%, others (e.g., WeChat, Weibo): 12%).

**Measures & Preliminary Analyses**

Scales were identical to those used in study 1 (see Appendix A) except for the addition of Big Five personality traits to the t<sub>1</sub> survey, using Srivastava et al. (2015). Preliminary analyses, similar to those used in study 1, assured the reliability as well as the content and discriminant validity of factors in study 2 (see Appendix B).

**Three-Step Latent Profile Analysis (LPA)**

First, we replicated the study 1 analyses using the study 2 dataset. Consistent with study 1’s findings, five latent profiles emerged as the best solution (see Tables 5 and 6).

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The interpretation of the five profiles was largely consistent with study 1’s findings. Furthermore, the results of pair-wise chi-square tests showed significant variations in terms of users’ SNS discontinuance intention in ways consistent with study 1’s findings (see Table 7 and Figure 3).

After successfully replicating study 1's findings (i.e., the five prototypical profiles and their outcome) in study 2, we used multinomial logistic regressions to test the effects of Big Five personality traits on users' affiliations with the five replicated profiles to investigate our third research question: *how users' personality traits can predict users' affiliations with these profiles*. We utilized the "R3STEP" auxiliary variable option in the Mixture analysis in Mplus 7.4 (Asparouhov & Muthén, 2014).

The results demonstrate significant differences across the five prototypical profiles of SNS users in terms of their Big Five personality traits (see Appendix C). Specifically, taking the regular profile as the reference, we observe that the cautious profile is associated with lower levels of openness to experience and conscientiousness. The consonant and hooked profiles were both associated with lower levels of conscientiousness as compared to the regular profile, while their direct comparison shows that the hooked profile is associated with significantly lower levels of Extraversion as compared to the consonant profile.

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Among all five profiles, the dissonant profile is the most distinct in comparison with the regular profile; they significantly differ in terms of all Big Five personality traits, as they are associated with lower levels of openness to experience, agreeableness, conscientiousness, and extraversion, and higher levels of neuroticism. Moreover, among the three profiles with relatively higher levels of SNS addiction, namely the consonant, dissonant, and hooked profiles, we observe that the hooked profile is associated with significantly lower levels of neuroticism and extraversion, and higher levels of agreeableness as compared to the dissonant profile. Similarly, the consonant profile is associated with higher levels of agreeableness and lower levels of neuroticism compared to the dissonant profile. This makes them more similar to the hooked profile. As noted earlier, extraversion differentiates between the hooked and the consonant profiles. All in all, each of the five prototypical profiles can be predicted by a unique combination of Big Five personality traits. This points to the importance of SNS users' personality as a predictor of their affiliations with the profiles. Figure 4 depicts the characteristics of the five prototypical profiles in terms of Big Five personality traits.

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## Discussion of Study 2 Findings

Study 2 provided two main findings. First, it validated the study 1 results in terms of the typology of SNS users and its association with their SNS discontinuance intention. This increases confidence in the reliability, stability and generalizability of the five prototypical profiles of users' SNS addiction and their responses to it. Second, study 2 findings addressed research question 3 by showing that affiliation with different profiles in the typology can be explained by SNS users' Big Five personality traits. Therefore, personality tests can help determine user proclivity to experience SNS addiction, responses to it, and ultimately SNS discontinuance intention.

## General Discussion

### Contributions to Research

This research sought to propose a typological theory of users' prototypical profiles of SNS addiction and their responses to it. This approach can produce unique and complementary insights beyond current variable-centred findings (see Table 1 for a review). Typological insights are important as they provide a new, complex perspective on the degree of SNS addiction users experience, and how and why users differ in their responses to it.

In response to the *first research question*, our findings consistently point to the existence of a typology of SNS users comprised of five prototypical profiles — cautious, regular, consonant, dissonant, and hooked. These findings show

the systematic differences among the users in terms of their extent of SNS addiction and the ways they internalize and respond to it (i.e., different configurations across five prototypical profiles). While most SNS users do not experience high levels of SNS addiction, the ones who do, internalize it and respond to it in markedly different ways (Maier, 2019; Tarafdar et al., 2020; Vaghefi & Qahri-Saremi, 2017). From these findings, we put together five propositions, *one for each prototypical profile*, based on the validated configurations of the factors used in our typology: P1(a) to P5(a) in Table 8. Two points in this regard are noteworthy. First, we observe that the users who experience high levels of SNS addiction internalize and respond to it in markedly different ways, from being consonant, to being dissonant, and to feeling hooked. These propositions point to the importance of looking at a system of factors in investigating user responses to SNS addiction in future studies. For example, one noteworthy finding is that even the regular profile of users experiences an average level of SNS addiction (i.e., respectively 3.10 and 3.07 out of 7 in study 1 and 2 samples), while they do not perceive addiction as a significant issue that they need to respond to cognitively or emotionally. Indeed, the only profile that experiences significantly low level of SNS addiction is the cautious profile, which represents a relative minority in both of our samples (they are the third smallest profile in both studies). This can be further examined in future research.

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Second, the prototypical profiles in our typology show compatibility with the distinctions made in three prior studies on addiction to substance and smartphone use. In particular, the configurations of consonant and dissonant prototypical profiles in our typology respectively resemble the “consonant” and “dissonant” profiles of smokers discussed in Eiser et al. (1978). Consonant smokers in Eiser et al. (1978) were described as those holding relatively positive attitudes about their addiction to smoking without any strong intention to quit, whereas dissonant smokers were described as those who were heavily addicted to smoking despite their cognitive dissonance and strong intention to quit smoking. Likewise, the consonant prototypical profile of SNS users in our typology also resembles the “fanatic” profile of smartphone users in Vaghefi et al. (2017), who despite spending a significant amount of time per day using their smartphone, “tend to be unconcerned about the intensity of their usage” (p. 144). Moreover, the hooked prototypical profile of SNS users resembles a configurationally similar profile of “hooked” addicts to substance use identified in Eiser and Gossop (1979), who despite their high cognitive dissonance, were marked by less confidence in their ability to give up their addiction and a tendency to blame others for their addiction. Similarly, the cautious and regular profiles in our typology are respectively similar to the configurations of “thoughtful” and “regular” types of smartphone users identified in Vaghefi et al. (2017). Therefore, while our findings provide a unique perspective on typology of SNS users in terms of their SNS addiction and responses to it, they are by-in-large compatible with typological findings in other similar fields. This further adds to the external validity of our findings in this study and demonstrates the resemblance between other addiction domains and SNS addiction.

In response to our *second research question* and as an important element of a typological theory (Doty & Glick, 1994), our findings shed light on the complex relationship between users’ extent of affiliations with prototypical profiles in the typology and their SNS discontinuance intention. Based on these findings, we added five propositions—one for each prototypical profile, as presented in P1(b) to P5(b) in Table 8. A case in point is the difference between the dissonant and hooked profiles. While both of these prototypical profiles involve high levels of SNS addiction, dissonant users responded with high levels of SNS discontinuance intention, while hooked users showed only average levels of SNS discontinuance intention. Interestingly, we observe that the level of SNS discontinuance intention in hooked users is not considerably different than that of the consonant users despite the very different ways that they internalize their SNS addiction. In fact, hooked users show considerably higher levels of cognitive dissonance, guilt, and self-accountability as compared to consonant users (see P3(a) and P4(a) in Table 8). We observe that a distinguishing factor is the users’ self-efficacy to discontinue SNS use (Du et al., 2018; Turel, 2015). While dissonant users have high self-efficacy to discontinue SNS use, hooked users do not. This finding raises an important question about the foregone assumption that SNS addiction invariably leads to higher SNS discontinuance intentions (Vaghefi & Qahri-Saremi, 2017). Our findings show that this is the case in one profile — dissonant — out of three profiles that reported relatively high levels of SNS addiction (i.e., consonant, dissonant, and hooked). This points to the importance of self-efficacy when examining the relationship between SNS addiction and SNS discontinuance intentions.

In response to the *third research question*, our findings shed light on the complex associations between users’ Big Five personality traits and their affiliated prototypical profiles within the typology. Overall, results show that profiles with higher levels of cognitive dissonance and guilt also exhibit higher levels of neuroticism and lower levels of

conscientiousness. This points to neuroticism and conscientiousness as important predictors of dissonant and hooked profiles, which is in line with recent findings showing that neuroticism can magnify the negative consequences of SNS addiction for users (Turel et al., 2018). Furthermore, we found that consonant users are associated with lower levels of contentiousness as compared to regular SNS users. On this basis, we added five more propositions, each of which related to the role of Big Five personality traits in predicting one specific user profile, presented in P1(c) to P5(c) in Table 8. Given the relative stability of Big Five personality traits (Maier et al., 2019; McElroy et al., 2007), they can be used in future research and practice as predictors of users' potential for developing SNS addiction and how they may respond to it.

### Implications for Practice

From a practical standpoint, our findings show that a profile-specific treatment of SNS users is plausible. Users' profiles with low and average levels of SNS addiction — cautious and regular — are unlikely to require treatment or concerted self-regulation effort. In contrast, consonant profile, which is characterized by high levels of SNS addiction, but average levels of cognitive dissonance and guilt, can benefit from enhanced awareness regarding the problematic nature of their SNS addiction (e.g., through therapy, educational videos). In contrast, users in the dissonant profile are aware of the negative consequences of their SNS addiction and will likely pursue ways to overcome it. Providing training, monitoring, and follow-ups can support them. Lastly, users in the hooked profile, unlike users in the consonant profile, experience high levels of cognitive dissonance and guilt as a result of their high levels of SNS addiction, which indicate their awareness of their SNS addiction problem. As such, unlike consonant profile, increasing their awareness may not be helpful and may even exacerbate their sense of being "hooked" (i.e., feeling of being trapped) given their low self-efficacy to discontinue SNS use. As such, this profile of SNS users can benefit from therapies that emphasize empowerment and self-confidence (Maier, 2019).

Our findings also suggest that users' personality can predict profile affiliation, and specifically that high neuroticism and low conscientiousness can serve as risk factors for affiliation with profiles that may require treatment and may resist the idea of SNS discontinuance. Hence, personality tests combined with testing for the above-mentioned factors can help practitioners understand the best treatment path, and why some SNS users are more resistant than others to changing their SNS use behaviors. The efficacy of these approaches, though, requires further research.

Lastly, although our data was collected from SNS users who are students, it is plausible that they follow a similar pattern of SNS use behavior in the workplace (Sriwilai & Charoensukmongkol, 2016). For organizations, SNS addiction can lead to employees' problematic and unproductive patterns of Internet use (Sriwilai & Charoensukmongkol, 2016; Turel & Qahri-Saremi, 2016) such as cyberloafing (Andreassen et al., 2014). Our findings can help managers better understand users' different internalization and responses to their SNS addiction and adapt their pertinent policies accordingly. Many organizations currently employ policies that uniformly limit or prohibit employees' access to SNS at work. While these policies may help one group of employees with high levels of SNS addiction and strong discontinuance intentions (i.e., dissonant) to be more productive, it may lead to dissatisfaction for other groups of employees with strong addictive patterns of SNS use but weak discontinuance intentions (i.e., consonants). Such employees may first need to be made aware of the negative consequences of their SNS addiction to be able to view the prohibition of access as a helpful policy toward their increased productivity. Moreover, prohibiting and blaming access to SNS at work may also work against employees who are hooked on their SNS addiction, especially if they find themselves unable to follow the workplace policies to completely avoid SNS use. For hooked employees every login to SNS at work can be another sign of their lack of self-efficacy to discontinue SNS use, which can further exacerbate their SNS addiction problem.

### Limitations and Future Research

Future research can build on and extend findings in this paper in several ways. First, while this paper focused on SNS discontinuance, future research could also use the prototypical profiles identified in this paper to study other related behavioral outcomes, such as *SNS use reduction* (Osatuyi & Turel, 2020), *limit use* (Vaghefi & Tulu, 2019), *abstinence*, and *vacillation* (Qahri-Saremi & Turel, Forthcoming), as plausible steps before SNS use discontinuance. In the same vein, while hooked profiles may lack the self-efficacy to discontinue SNS use cold turkey, with the right treatment to increase self-efficacy they may be able to gradually reduce SNS use (Maier, 2019). Therefore, future research should investigate if focusing on abstinence and gradual reduction of SNS use, rather than discontinuance, can empower hooked users toward mitigating their SNS addiction. Second, while this paper looked at Big Five personality traits, future research could consider the effects of other personality traits, such as the dark triad of personality (i.e., Narcissism, Machiavellianism, and Psychopathy) (Paulhus & Williams, 2002) as well as more

dynamic and context-specific individual differences (e.g., personal innovativeness in IT and IT mindfulness) (Maier et al., 2019), on users' SNS addiction and responses to it. Lastly, while this paper focused on the SNS use context, extensions to other addictive technologies, such as video games, in future research are warranted.

## Conclusion

Through two multi-wave empirical studies, we took first strides toward a typological theory of (1) users' prototypical profiles of SNS addiction and responses to it, (2) the effects of users' affiliations with these prototypical profiles on their SNS discontinuance intentions, and (3) the effects of users' Big Five personality traits on their affiliations with the prototypical profiles. Using LPA, we empirically proposed a typology of five prototypical profiles – (1) cautious, (2) regular, (3) consonant, (4) dissonant, and (5) hooked users – that differ in their configurations, their SNS discontinuance intentions, as well as the Big Five personality traits underlying them. These findings are articulated in form of five propositions that put the basis toward a typological theory of SNS addiction and users' responses to it. As such, this study made important theoretical and practical implications and provided a starting point for future theory-based research on user typologies.

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## Notes

<sup>1</sup> The literature on the dark-side of SNS use is not limited to SNS addiction; other relevant topics, such as technostress related to SNS (Maier et al., 2012, 2015a), fake news on SNS (Allcott & Gentzkow, 2017), trolling on SNS (Bharati et al., 2019), swearing on SNS (Turel & Qahri-Saremi, 2018), problematic use of SNS (Turel & Qahri-Saremi, 2016), and ambivalence toward SNS use (Qahri-Saremi & Turel, Forthcoming), have also received scholarly attention.

<sup>2</sup> Consistent with best practices in the literature (e.g., Montazemi et al., 2012; Montazemi & Qahri-Saremi, 2014, 2015; Qahri-Saremi & Montazemi, 2019), we used different combinations of “addiction” and “excessive use” keywords with any of the keywords related to SNS, namely “social media”, “social networks”, and “social networking sites”, to perform a systematic search for published studies. Our search target was the Association for Information Systems (AIS) Senior Scholars' Basket of Eight journals (<https://aisnet.org/page/SeniorScholarBasket>) in addition to Information & Management, Decision Support Systems, Information and Organization, and The DATABASE for Advances in Information Systems.

<sup>3</sup> Similar to “Fanatic” users identified in Vaghefi et al. (2017) in the context of smartphone addiction.

<sup>4</sup> Similar to the LPA for study 1, SNS discontinuance intention factor was not used in identifying the latent profiles. It was only added as a distal outcome in the third step of LPA as the dependent variable in pair-wise chi-square tests. However, in consideration of space, it is presented along with other factors in this figure.

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## About the Authors

**Hamed Qahri-Saremi** ([hamed.saremi@depaul.edu](mailto:hamed.saremi@depaul.edu)) is an Assistant Professor of Information Systems at DePaul University in Chicago, IL. He holds a Ph.D. in business administration with a concentration on information systems from the DeGroote School of Business, McMaster University, Ontario, Canada. His research investigates the design and use of social information systems, such as social media and online review platforms, and their impacts for users and organizations. His research papers have appeared in a number of journals, such as *Journal of Management Information Systems*, *Journal of Strategic Information Systems*, *Information & Management*, *New Media & Society*, *The Data Base for Advances in Information Systems*, *Internet Research*, *Computers & Education*, *Expert Systems with Applications*, *Journal of Organizational Computing and Electronic Commerce*, and *European Financial Review*, as well as the proceedings of various academic conferences. He has served in various capacities as an associate editor, a track chair, a mini-track chair, a session chair, and a reviewer for a number of journals and conferences in the information systems, computer science, and psychology disciplines.

**Isaac Vaghefi** ([sashrafvaghefi@pace.edu](mailto:sashrafvaghefi@pace.edu); corresponding author) is an Assistant Professor of Information Systems at Pace University - New York. He holds a Ph.D. in business administration – information systems from the Desautels Faculty of Management, McGill University, Montreal, Canada. His research primarily focuses on the negative aspect of technology use such as especially technology addictions, as well as use of technology in healthcare. His works have been published at *Information Systems Journal*, *Journal of the American Medical Informatics Association*, *The Data Base for Advances in Information Systems*, *Communications of the Association for Information Systems*, *Journal of Medical Internet Research*, *European Business Review*, *Internet Research*, and *Psychiatry Research*, and were presented at premier conferences of Information Systems and Management disciplines. He has served as editor and reviewer for multiple journals, and as chair and reviewer for major conferences in Information Systems, Medical Informatics, and Psychology disciplines.

**Ofir Turel** ([oturel@fullerton.edu](mailto:oturel@fullerton.edu)) is Professor of Information Systems and Decision Sciences at the College of Business and Economics, California State University, Fullerton, and Scholar in Residence at the Decision Neuroscience Program, Department of Psychology at the University of Southern California (USC). His research interests include a broad range of behavioral, bio-physiological and managerial issues in various information systems use contexts. He has published over 140 articles in business, research methods, psychology, psychiatry and medicine journals. Example business outlets include *MIS Quarterly*, *Journal of MIS*, *MIT Sloan Management Review*, *European Journal of Information Systems*, *Information Systems Journal*, and *Communications of the ACM*. Example psychology outlets include *Addiction Biology*, *Journal of Psychiatric Research*, *Cognitive Affective & Behavioral Neuroscience*, *Social Neuroscience*, *Behavioral Brain Research*, *Neuroscience Letters*, *Substance Use and Misuse*, *Journal of Behavioral Addictions*, *Progress in Neuropsychopharmacology & Biological Psychiatry*, *Scientific Reports*, *The Data Base for Advances in Information Systems*, and *Psychiatry Research: Neuroimaging*. He is currently an Associate Editor for the *MIS Quarterly* and *Scientific Reports* (by Nature).

## Appendix A: Measurement Instruments

**Table A.1. Constructs and Measures**

Factor & Source	Study	Time	Measurement Items
SNS Addiction  (Serenko & Turel, 2015; Turel et al., 2011)	1 & 2	t <sub>1</sub>	Indicate the extent to which you agree with the following statements regarding the use of the SNS: (strongly disagree (1) to strongly agree (7)) <ul style="list-style-type: none"> <li>• Much of my time is occupied by thoughts about using this social networking site.</li> <li>• My thoughts about using this social networking site interfere with my social, school, work, or role functioning.</li> <li>• My thoughts about using this social networking site cause me anxiety and/or distress.</li> <li>• I often try to turn my attention away from the thoughts about using this social networking site.</li> <li>• I have much control over my thoughts about using this social networking site. (reversed)</li> <li>• I spend much of my time using this social networking site.</li> <li>• My use of this social networking site interferes with my social, school, work, and/or role functioning.</li> <li>• I become anxious and/or distressed when I am prevented from using this social networking site.</li> <li>• I often try to resist my compulsion toward using this social networking site.</li> <li>• I have ability to curb the use of this social networking site. (reversed)</li> </ul>
Cognitive Dissonance  (Metzger et al., 2015)	1 & 2	t <sub>1</sub>	Indicate the extent to which you agree with the following statements regarding your experience with your most frequently used social networking site: (strongly disagree (1) to strongly agree (7)) <ul style="list-style-type: none"> <li>• I regret using this social networking site.</li> <li>• Using this social networking site makes me uncomfortable.</li> <li>• I dislike using this social networking site because it challenges my beliefs.</li> <li>• I feel conflicted while using this social networking site.</li> <li>• Using this social networking site makes me question my own beliefs.</li> </ul>
Self-Accountability  (Passyn & Sujan, 2006)	1 & 2	t <sub>1</sub>	Please consider your recent unwanted and negative experience with your most frequently used social networking site and answer the following questions: (Not at all (1) to Extremely (7)) <ul style="list-style-type: none"> <li>• To what extent do you consider yourself to be responsible for the consequences that using this social networking site can have for your life?</li> <li>• To what extent do you consider yourself to be accountable for the effects of using this social networking site on your life?</li> <li>• To what extent do you think that you should be blamed for the effects of using this social networking site on your life?</li> <li>• To what extent do you think the consequences of using this site on your life can be attributed to your actions and your decisions?</li> </ul>
Guilt  (Watson & Clark, 1994)	1 & 2	t <sub>1</sub>	This list consists of a number of words and phrases that describe different emotions you may have had when interacting with your most frequently used social networking site. Please reflect on your interactions with this site, and indicate to what extent you have felt this way when using the site: (Very Slightly or Not at all (1) to Extremely (7)) <ul style="list-style-type: none"> <li>• guilty</li> <li>• ashamed</li> <li>• blameworthy</li> <li>• angry at self</li> <li>• disgusted with self</li> <li>• dissatisfied with self</li> </ul>

Factor & Source	Study	Time	Measurement Items
Self-Efficacy to Discontinue SNS Use (Turel, 2015)	1 & 2	t <sub>1</sub>	Based on your interaction with this site, please indicate your level of confidence that if you wanted, you would be able to ... (No confidence at all (1) to Extremely confident (7)) <ul style="list-style-type: none"> <li>... Stop using this social networking site within the next 4 weeks</li> <li>... Stop using this social networking site within the next 8 weeks</li> <li>... Stop using this social networking site within the next 3 months</li> </ul>
SNS Discontinuance Intention (Turel, 2015)	1 & 2	t <sub>2</sub>	Based on your interaction with this site over the last three weeks, please indicate the extent to which you agree with the following statements: (strongly disagree (1) to strongly agree (7)) <ul style="list-style-type: none"> <li>I intend to stop using this social networking website in the next 3 months</li> <li>I predict I would stop using this social networking website in the next 3 months</li> <li>I plan to stop using this social networking website in the next 3 months</li> </ul>
Openness to Experience (Srivastava et al., 2015)	2	t <sub>1</sub>	I see myself as... <ul style="list-style-type: none"> <li>... creative.</li> <li>... imaginative.</li> <li>... unconventional.</li> </ul>
Neuroticism (Srivastava et al., 2015)	2	t <sub>1</sub>	I see myself as... <ul style="list-style-type: none"> <li>... moody.</li> <li>... easily upset.</li> <li>... anxious.</li> </ul>
Conscientiousness (Srivastava et al., 2015)	2	t <sub>1</sub>	I see myself as... <ul style="list-style-type: none"> <li>... organized</li> <li>... self-disciplined.</li> </ul>
Agreeableness (Srivastava et al., 2015)	2	t <sub>1</sub>	I see myself as... <ul style="list-style-type: none"> <li>... sympathetic.</li> <li>... warm.</li> <li>... kind.</li> </ul>
Extraversion (Srivastava et al., 2015)	2	t <sub>1</sub>	I see myself as... <ul style="list-style-type: none"> <li>... extraverted.</li> <li>... enthusiastic.</li> <li>... talkative.</li> </ul>

## Appendix B: Preliminary Analyses

**Table B1. Descriptive Statistics, Correlations, and Square Roots of Average Variance Extracted (on Diagonal) for Study 1 (n = 188)**

		Mean (SD)	Cronbach Alpha	1	2	3	4	5	6	7	8
1	SNS Addiction	3.10 (1.06)	0.86	0.66							
2	Cognitive Dissonance	2.41 (0.95)	0.89	.40	0.83						
3	Guilt	1.71 (1.05)	0.93	.41	.46	0.86					
4	Self-Accountability	3.28 (1.96)	0.95	.29	.24	.35	0.93				
5	Self-Efficacy to Discontinue SNS Use	3.15 (1.68)	0.95	-.19	.15	-.03	.05	0.95			
6	SNS Discontinuance Intention	2.02 (1.09)	0.96	.20	.40	.27	.15	.16	0.96		
7	Age	20.16 (1.50)	1.00	.16	.12	.10	.04	.01	.12	1.00	
8	Gender (Female: 1, Male: 2)	1.60 (0.49)	1.00	-.21	.07	.09	.11	.23	.07	-.07	1.00

**Table B2. Descriptive Statistics, Correlations, and Square Roots of Average Variance Extracted (on Diagonal) for Study 2 (n = 284)**

		Mean (SD)	Cronbach Alpha	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Openness to Experience	5.32 (1.22)	0.70	0.72												
2	Neuroticism	3.85 (1.33)	0.75	0.01	0.82											
3	Conscientiousness	5.32 (1.29)	0.76	0.13	-0.14	0.85										
4	Agreeableness	5.53 (0.90)	0.75	0.23	0.10	0.22	0.72									
5	Extraversion	4.87 (1.27)	0.82	0.38	-0.15	0.24	0.31	0.71								
6	SNS Addiction	3.07 (0.92)	0.79	0.02	0.23	-0.11	-0.04	-0.02	0.75							
7	Cognitive Dissonance	2.19 (1.04)	0.90	-0.05	0.21	-0.08	-0.12	-0.10	0.50	0.85						
8	Guilt	2.39 (1.35)	0.95	-0.01	0.27	-0.2	-0.07	-0.01	0.52	0.51	0.89					
9	Self-Accountability	3.91 (1.66)	0.96	-0.18	0.11	-0.12	-0.08	-0.12	0.27	0.12	0.28	0.95				
10	Self-Efficacy to Discontinue SNS Use	3.39 (2.06)	0.97	-0.15	-0.08	-0.12	-0.11	-0.07	-0.25	-0.05	-0.10	-0.13	0.97			
11	SNS Discontinuance Intention	1.98 (1.35)	0.96	0.04	0.14	-0.08	0.01	0.02	0.28	0.41	0.27	0.02	0.12	0.96		
12	Age	20.95 (2.62)	1.00	0.07	-0.01	-0.14	0.06	-0.06	0.07	0.07	-0.02	0.00	0.02	0.12	1.00	
13	Gender (Female: 1, Male: 2)	1.51 (0.51)	1.00	-0.09	-0.12	-0.07	-0.08	0.02	-0.19	-0.08	-0.01	-0.08	0.19	-0.08	-0.10	1.00

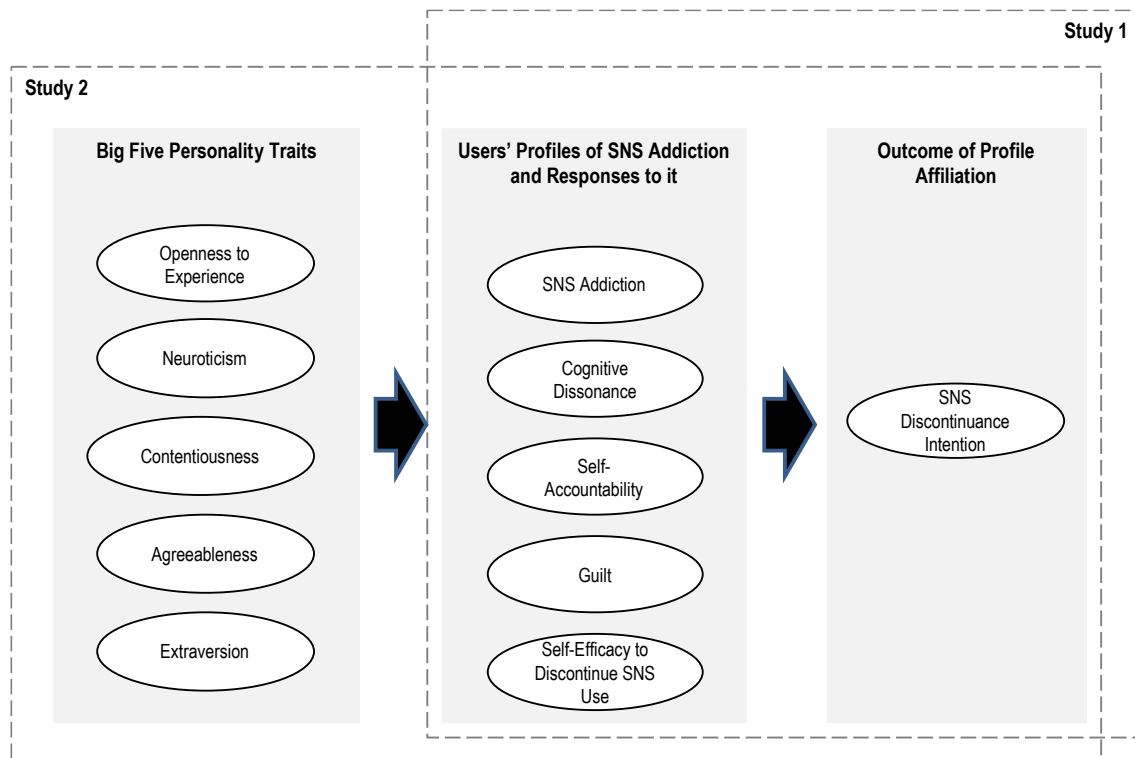


## Appendix C: Multinomial Logistics Regression Results for Study 2

**Table C1. Multinomial Logistic Regression Results for the Effects of Big Five Personality Traits on Memberships in the Five Latent Profiles**

		Cautious Profile as Reference		Regular Profile as Reference		Consonant Profile as Reference		Dissonant Profile as Reference	
Profile	Predictor	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value
Regular	Intercept	0.372 (0.195)	<b>0.056</b>						
	Openness to Experience	0.388 (0.205)	<b>0.058</b>						
	Neuroticism	0.267 (0.201)	0.185						
	Agreeableness	-0.034 (0.226)	0.881						
	Conscientiousness	0.438 (0.222)	<b>0.049</b>						
	Extraversion	0.248 (0.227)	0.274						
Consonant	Intercept	0.045 (0.218)	0.836	-0.327 (0.204)	0.108				
	Openness to Experience	0.179 (0.229)	0.435	-0.21 (0.227)	0.356				
	Neuroticism	0.232 (0.242)	0.338	-0.035 (0.205)	0.864				
	Agreeableness	-0.186 (0.264)	0.479	-0.153 (0.224)	0.496				
	Conscientiousness	0.015 (0.244)	0.951	-0.424 (0.213)	<b>0.046</b>				
	Extraversion	0.572 (0.27)	<b>0.034</b>	0.324 (0.247)	0.189				
Dissonant	Intercept	-1.639 (0.346)	<b>0.000</b>	-2.011 (0.335)	<b>0.000</b>	-1.684 (0.353)	<b>0.000</b>		
	Openness to Experience	-0.214 (0.275)	0.437	-0.602 (0.279)	<b>0.031</b>	-0.393 (0.28)	0.162		
	Neuroticism	1.063 (0.269)	<b>0.000</b>	0.796 (0.246)	<b>0.001</b>	0.831 (0.274)	<b>0.002</b>		
	Agreeableness	-0.965 (0.305)	<b>0.002</b>	-0.932 (0.302)	<b>0.002</b>	-0.779 (0.333)	<b>0.019</b>		
	Conscientiousness	0.04 (0.251)	0.874	-0.399 (0.19)	<b>0.035</b>	0.025 (0.248)	0.920		
	Extraversion	0.75 (0.279)	<b>0.007</b>	0.501 (0.273)	<b>0.067</b>	0.178 (0.278)	0.523		
Hooked	Intercept	-0.461 (0.242)	<b>0.056</b>	-0.834 (0.238)	<b>0.000</b>	-0.506 (0.243)	<b>0.037</b>	1.178 (0.365)	<b>0.001</b>
	Openness to Experience	0.224 (0.228)	0.324	-0.164 (0.241)	0.495	0.046 (0.238)	0.848	0.438 (0.302)	0.147
	Neuroticism	0.395 (0.15)	<b>0.008</b>	0.128 (0.267)	0.632	0.163 (0.275)	0.554	-0.668 (0.297)	<b>0.024</b>
	Agreeableness	-0.052 (0.276)	0.850	-0.018 (0.278)	0.947	0.134 (0.284)	0.636	0.913 (0.374)	<b>0.015</b>
	Conscientiousness	-0.152 (0.253)	0.548	-0.591 (0.26)	<b>0.023</b>	-0.167 (0.242)	0.490	-0.192 (0.275)	0.485
	Extraversion	0.117 (0.287)	0.684	-0.131 (0.313)	0.675	-0.455 (0.197)	<b>0.020</b>	-0.633 (0.309)	<b>0.041</b>

*Note: Bold p-values are < 0.10.*



**Figure 1. Research Design and the Scope of Studies 1 and 2**

Figure2 (a):  
Characteristics of  
the Five  
Prototypical  
Profiles of SNS  
Users.

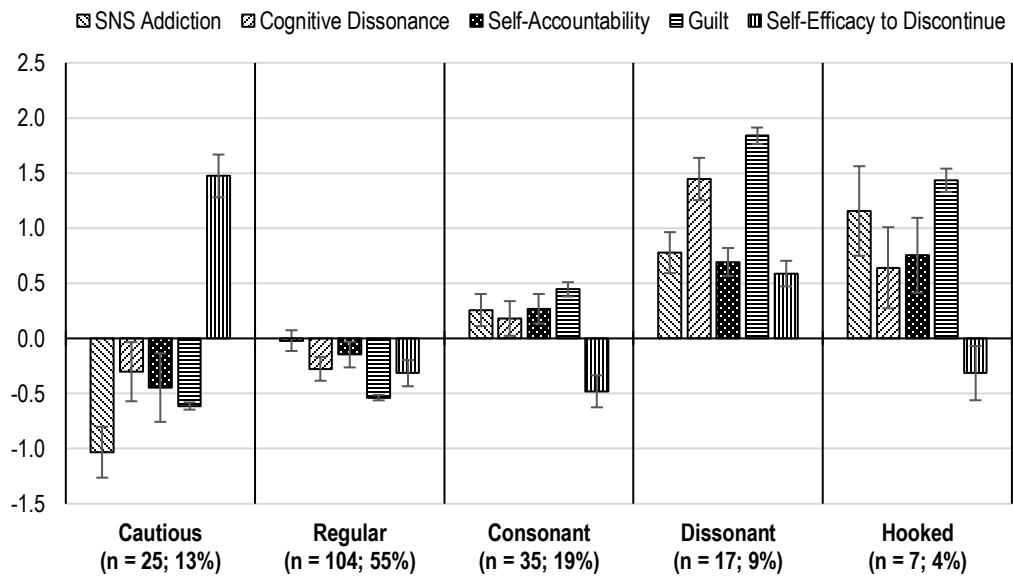
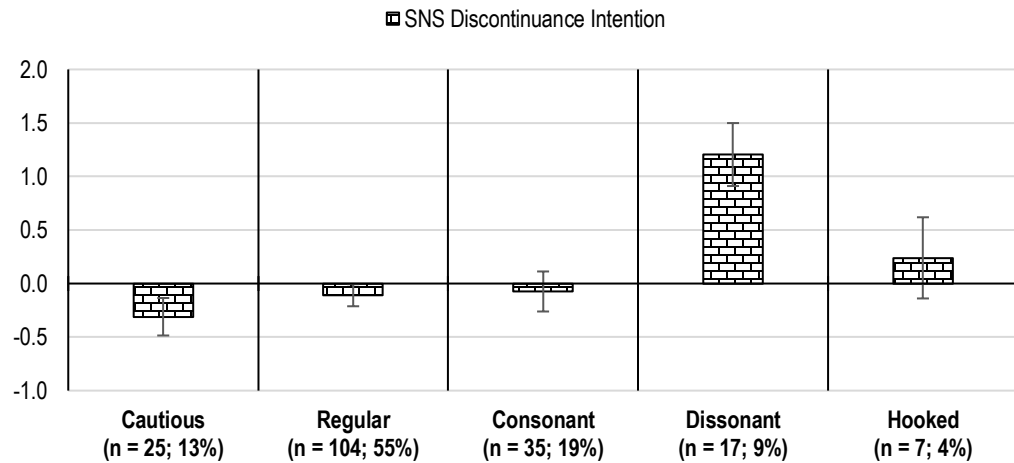
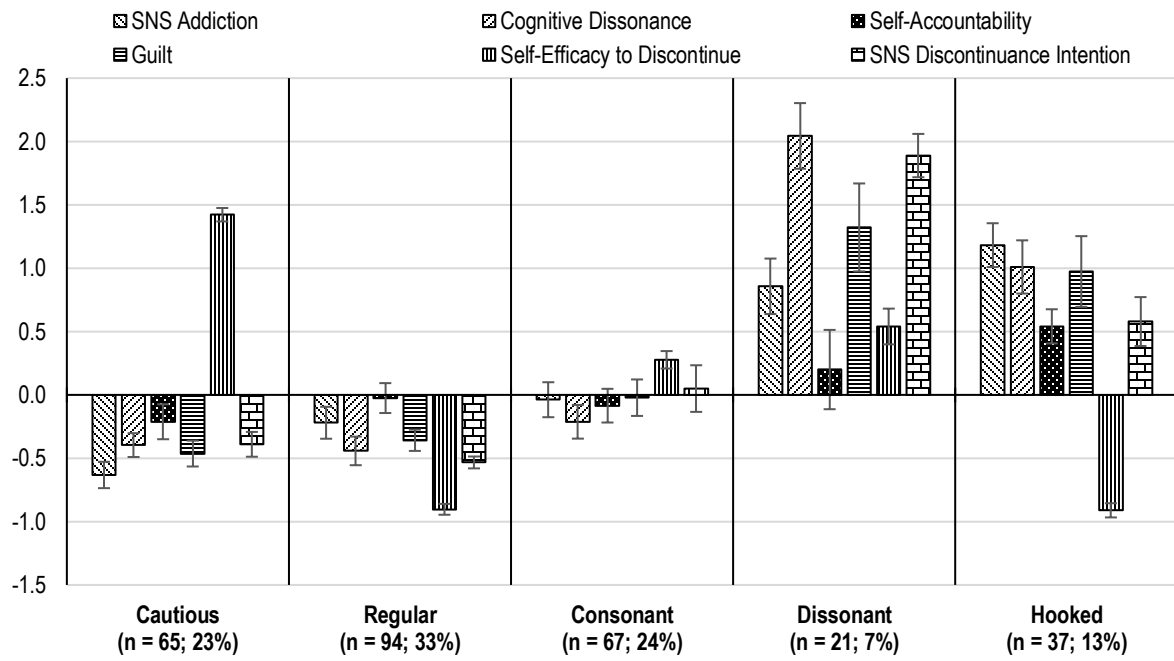


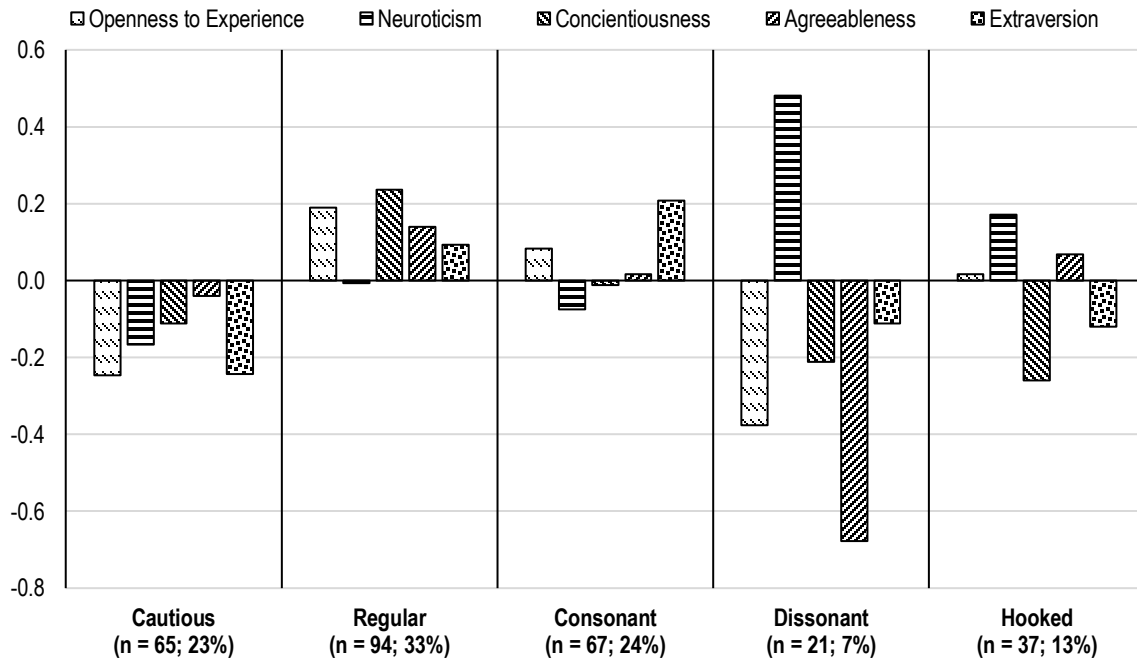
Figure 2 (b):  
Extent of SNS  
Discontinuance  
Intention across  
the Five  
Prototypical  
Profiles of SNS  
Users.



**Figure 2. The Characteristics of the Five Prototypical profiles of SNS Users and the Extent of SNS Discontinuance Intention across them in Study 1 Sample (Standardized Means and Standard Errors)**



**Figure 3. Results of Three-Step Latent Profile Analysis with a Distal Outcome for Study 2 (Standardized Means and Standard Errors).**



**Figure 4. Characteristics of Five Prototypical Profiles on Big Five Personality Traits in Study 2 (Standardized Values)**

**Table 1. A Review of Prior SNS Addiction Studies in IS Literature**

Study	Subject	Research Approach	Major Findings
James et al. (2017)	Antecedents of obsessive-compulsive disorder in the use of SNS	Variable-centered	SNS belongingness is positively associated with use of the SNS for gratification of the purposive value and social enhancement needs, which in turn increase the likelihood of obsessive-compulsive use of SNS. Furthermore, while SNS belongingness decreases the likelihood of envy and anxiety emotions on SNS, it slightly increases the likelihood of fear of missing out experience on SNS; notably, all three of these negative emotions can increase obsessive-compulsive use of SNS.
Kwon et al. (2016)	A rational addiction perspective on excessive dependence on mobile SNS apps	Variable-centered, followed by a person-centered (typological) analysis of age and gender	Drawing on the rational addiction framework, this study shows that the average social app user conducts herself in a forward-looking manner and rationally adjusts consumption over time to derive optimal utility (rational addicts). The subgroup analysis, however, indicates that substantial variations in addictiveness and forward-looking propensities exist across demographically diverse groups. For example, addictive behaviors toward SNS are more myopic (i.e., less rational) in nature among older, less-educated, high-income groups. Additionally, the type of social app moderates the effects of demographic characteristics on the nature of addictive behaviors (i.e., rational vs. myopic addiction).
Li et al. (2017)	The impacts of patterns of microblog posting on gratification and addiction to microblogs	Variable-centered	This paper shows that the overall posting frequency is not related to gratification and addiction to microblogs (i.e., an SNS). Nonetheless, it shows that heavy weekend SNS users tend to feel more socially gratified and are most likely to be addicted. In contrast, heavy weekday SNS users are usually not addicted, and reported the lowest levels of gratification among all users. Balanced SNS users that do not display distinguishable difference between weekdays and weekends manifest gratification levels around the average levels, and are less addicted than weekend users, even if their overall SNS usage amounts are heavy.
Moqbel and Kock (2018)	Personal and work-related consequences of SNS addiction	Variable-centered	This paper shows how SNS addiction can have negative consequences for the personal and work environments. SNS addiction reduces positive emotions that augment performance and enhance health and fosters task distraction, which inhibits performance.
Tarafdar et al. (2020)	Explaining the relation between technostress and SNS addiction	Variable-centered	This paper explains the distraction as a coping mechanism that can lead to SNS addiction in response to a stress from the use of the same SNS.
Turel (2015)	Quitting the SNS addiction	Variable-centered	This paper shows guilt feelings and self-efficacy to discontinue an SNS use as important mediating factors that can positively link SNS addiction to discontinuance intentions toward the SNS use.
Turel and Qahri-Saremi	Antecedents and consequences of the problematic	Variable-centered	Drawing on dual-system theory, this study focuses on problematic SNS use, which they can be a symptom or an outcome of a SNS addiction. It shows that the imbalance between two systems in the human mind, involving strong

Study	Subject	Research Approach	Major Findings
(2016)	use of an SNS		cognitive-emotional preoccupation with using the SNS and weak cognitive behavioral control over using the SNS, as the driver of problematic SNS use behaviors. Problematic use of SNS, in turn, diminishes users' academic performance.
Turel and Serenko (2012)	The danger of perceived enjoyment of SNS use when it leads to SNS addiction	Variable-centered	This paper shows that while perceived enjoyment with SNS use can lead to presumably positive outcomes, such as high engagement, it can also facilitate the development of a strong habit and reinforce it until it becomes a 'bad habit', that can lead to formation of a strong pathological and maladaptive psychological dependency on the SNS use, namely SNS addiction.
Wang et al. (2015)	A theory of SNS dependence in the microblogging context	Variable-centered	Building on the theory of rational addiction, this study shows that SNS dependence is initially developed from habit. However, maladaptive cognition and affect tend to distort habit into psychological dependence on SNS (i.e., SNS addiction) overtime.

**Table 2. BIC for LPA Results for Study 1**

Number of Profiles	Bayesian Information Criterion (BIC)
2	2545.556
3	2519.108
4	2461.498
<b>5</b>	<b>2452.972</b>
6	2454.329
7	2461.530
8	2471.277
Note: Bold value indicates the optimal solution (minimum BIC value).	



**Table 3. PBLR Test Statistic for 5 versus 4 profiles (H0) for Study 1**

H0 Log Likelihood Value	-1157.439
2 Times the Log Likelihood Difference	39.944
Difference in the Number of Parameters	6
Approximate P-Value	0.0000
Successful Bootstrap Draws	20

**Table 4. Pair-wise Chi-Square Tests for Mean Differences of SNS Discontinuance Intention Across the Five Prototypical Profiles for Study 1**

Outcome	Profile I	Profile J	Chi-Square (Class I vs. Class J)	P-Value
SNS Discontinuance Intention	Cautious	Regular	0.77	0.380
		Consonant	0.88	0.348
		Dissonant	19.59	0.000
		Hooked	1.73	0.188
	Regular	Consonant	0.02	0.877
		Dissonant	17.76	0.000
		Hooked	0.79	0.374
	Consonant	Dissonant	13.42	0.000
		Hooked	0.55	0.457
	Dissonant	Hooked	4.04	0.044
	Overall Test		22.02	0.000

**Table 5. BIC for LPA Results for Study 2**

Number of Profiles	BIC
2	3893.201
3	3864.118
4	3852.158
<b>5</b>	<b>3835.360</b>
6	3837.581
7	3836.410
8	3837.197
Note: Bold value indicates the optimal solution (minimum BIC value).	

**Table 6. PBLR Test Statistic for 5 versus 4 profiles (H0) for Study 2**

H0 Log Likelihood Value	-1846.994
2 Times the Log Likelihood Difference	50.692
Difference in the Number of Parameters	6
Approximate P-Value	0.0000
Successful Bootstrap Draws	20

**Table 7. Pair-wise Chi-Square Tests for Mean Differences of SNS Discontinuance Intention Across Five Profiles in Study 2**

Outcome	Class I	Class J	Chi-Square (Class I vs. Class J)	P-Value
SNS Discontinuance Intention	Cautious	Regular	1.80	0.179
		Consonant	3.69	0.055
		Dissonant	142.86	0.000
		Hooked	20.11	0.000
	Regular	Consonant	9.13	0.003
		Dissonant	189.58	0.000
		Hooked	31.60	0.000
	Consonant	Dissonant	48.52	0.000
		Hooked	3.54	0.060
	Dissonant	Hooked	26.44	0.000
	Overall Test		224.80	0.000

**Table 8. Propositions**

	<b>(a) User profile</b> (in line with research question 1)	<b>(b) Outcome</b> (in line with research question 2)	<b>(c) Big Five personality traits</b> (in line with research question 3)
<b>Proposition 1 (P1):</b> "Cautious" profile	(a) Users with low levels of SNS addiction accompanied with low levels of cognitive dissonance and guilt about SNS addiction are most strongly affiliated with "cautious" prototypical profile.	(b) low levels of SNS discontinuance intentions.	(c) low levels of openness to experience, neuroticism, conscientiousness, agreeableness, and extraversion, as compared to other users.
<b>Proposition 2 (P2):</b> "Regular" profile	(a) Users with average levels of SNS addiction accompanied with low levels of cognitive dissonance and guilt about their SNS addiction are most strongly affiliated with "regular" prototypical profile.	(b) have average levels of SNS discontinuance intentions.	(c) high levels of openness to experience, contentiousness, agreeableness, and extraversion, and average levels of neuroticism, as compared to other users.
<b>Proposition 3 (P3):</b> "Consonant" profile	(a) Users with high levels of SNS addiction accompanied by average levels of cognitive dissonance, guilt, and self-accountability are most strongly affiliated with "consonant" prototypical profile.	(b) average levels of SNS discontinuance intentions.	(c) high levels of openness to experience and extraversion, average levels of contentiousness and agreeableness, and low levels of neuroticism, as compared to other users.
<b>Proposition 4 (P4):</b> "Dissonant" profile	(a) Users with high levels of SNS addiction, cognitive dissonance, guilt, self-accountability, and self-efficacy to discontinue SNS use are most strongly affiliated with "dissonant" prototypical profile.	(b) high levels of SNS discontinuance intentions.	(c) These users are associated with low levels of openness to experience, contentiousness, agreeableness, and extraversion, and high levels of neuroticism, as compared to other users.
<b>Proposition 5 (P5):</b> "Hooked" profile	(a) Users with high levels of SNS addiction, cognitive dissonance, guilt, and self-accountability, but low levels of self-efficacy to discontinue SNS use are most strongly affiliated with "hooked" prototypical profile.	(b) average levels of SNS discontinuance intentions.	(c) These users are associated with average levels of openness to experience and agreeableness, high levels of neuroticism, and low levels of contentiousness and extraversion, as compared to other users.