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Developing a (Bad) Habit: Antecedents and Adverse Consequences of Social Networking Website Use Habit

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ABSTRACT

IS habit has emerged as an important determinant of continued use. In this study, we advance our understanding of this concept by shifting attention from desired IS use outcomes, which have been the focus of past IS continuance and habit research, to potential adverse outcomes of IS habit, namely technology addiction and high engagement. We argue that “bad” IS habits can also develop, and explore their nomological net. We do so with SEM techniques applied to data collected from 197 social networking website users.

Keywords

Habit, high engagement, technology addiction, social networking website, Facebook

INTRODUCTION

The reasons users employ information system (IS) have long intrigued the IS research community. The focus of this line of work has changed over the years, from initial technology adoption decisions (Davis, 1989) to continued use (Bhattacharjee, 2001). The emergent IS continuance models build on initial adoption considerations, but also challenge the pure rational paradigm that we have often utilized for explaining adoption decisions (de Guinea and Markus, 2009). To do so, IS continuance models introduce new factors that are pertinent to post-adoption use decisions (Kim, 2009). One such factor is IS use habit, which has been shown to moderate the transition of behavioral use intentions into actual use behavior (Limayem et al., 2007). As such, it is a key determinant of the future use of an IS. Hence we focus on some of its antecedents and outcomes in this study.

One gap in the current literature is that IS habit has been linked to mostly, if not only, positive and desirable outcomes, such as productive automatic use of IS. This follows a key theme in MIS research arguing that IS use should be encouraged in order to harvest the benefits of the investment. However, IS use is not always productive or desirable (Charlton and Danforth, 2007). Hence, should habit always be encouraged? In this study, we argue that bad habits can also be formed, which may lead to adverse outcomes, such as technology addiction. We do so in the context of social networking websites, because anecdotal evidence suggests that there may be worrisome levels of habitual pathological use behaviors among social network website users (Karaiskos et al., 2010, Pempek et al., 2009), and that social networking websites are addiction-prone technologies (Echeburua and de Corral, 2010). We test and support our model that includes key antecedents of social networking website use habit as well as key overuse outcomes, with SEM techniques applied to data collected from 197 users.

THEORETICAL BACKGROUND

IS Habit

Habits are learned sequences “of acts that have become automatic responses to specific cues, and are functional in obtaining certain goals or end-states” (Verplanken and Aarts, 1999, p. 104). They have been studied for over a century (Watson, 1914) because of their pertinence in human behavior. Repeated enjoyable behaviors can eventually form a habit. Over time, a mental relationship between the goal and the best course of action is developed and particular cue – response links become highly accessible in the memory (Ouellette and Wood, 1998). People are cognitive misers; they tend to minimize the amount

of cognitive load when they are faced with a specific task. As a result, if familiar environmental or situational cues are present, individuals may not engage in fully conscious decision making-processes, and often automatically engage in habitual behaviors (Verplanken and Orbell, 2003, Wood et al., 2002). Habitual behaviors are often both volitional and automatic (e.g., driving), and hence they can be informed by intentional reasoned systems (Ouellette and Wood, 1998). In the context of IS, habit refers to the “extent to which people tend to perform behaviors (use IS) automatically because of learning” (Limayem et al., 2007, p. 709). It can therefore play an important role in continued IS use (de Guinea and Markus, 2009).

Antecedents of Social Networking Website Use Habit

The first antecedent of social networking website use habit is experience gained with repetitive practice and use. It modifies peoples’ cognitions and their neurobehavioral pathways, which ultimately guide future behavior (Neal et al., 2006). First, ongoing practice creates links in the memory between the cue and the necessary action. Second, an implicit association may emerge between the goal and required behavior within particular context. Third, when a specific course of action has been consistently rewarded (e.g., by heightened enjoyment), respective goal-seeking behaviors are automatically triggered with expectations of subsequent rewards. Thus, an ongoing engagement in the same behavior can inform learning processes that establish links between the behavior and the expected outcome, and be the basis upon which habit is formed. While this ongoing engagement in a behavior has been often conceptualized as the frequency of past usage of an IT artifact (Limayem and Cheung, 2011, Limayem et al., 2007), we suggest that consistent with Venkatesh et al. (2008), it is also plausible that gaining experience with a social networking website is evident through the time-per-day one had spent on it (i.e., duration of use). Therefore:

***H1:** The average daily use duration of a social networking website has a positive direct effect on social networking website use habit.*

The second antecedent of social networking website use habit is usage comprehensiveness, which captures the degree “to which an individual makes use of the various applications offered under the umbrella of a single IS” (Limayem et al., 2007, p. 715). It is a new concept in IS research which extends the idea of “deep usage” (Schwarz and Chin, 2007) and feature-centric view of technology (Jaspersen et al., 2005). Social networking websites provide users with various features and functions. When a broad set of features is utilized, it increases the use of the social networking websites and the ongoing practice and learning processes that underlie habit formation. A broad use of system features allows users to discover new ways to gratify their expectations. Furthermore, people who use more features are likely to develop a psychological connection with the IT, identify themselves with the system, and create an automatic response to use it for all suitable activities (Schwarz and Chin, 2007). Thus:

***H2:** The comprehensiveness of usage of a social networking website has a positive direct effect on social networking website use habit.*

The third key antecedent of habit is perceived enjoyment, defined as “the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated” (Davis et al., 1992, p. 1113). This concept has been recognized as one of the most important constructs in MIS models (van der Heijden, 2003). Perceived enjoyment is instrumental to habit formation because the development of habit is magnified by pleasure gratification (LaRose, 2010). One of the reasons is that emotions influence human memory. Positive emotional stimuli, including joy, trigger cognitive and neural mechanisms that increase one’s explicit memory (Hamann, 2001). As a result, people memorize facts, events, and actions associated with positive emotions faster and remember them longer (Sharot and Phelps, 2004). Therefore, when system use is accompanied by enjoyment, users are likely to form stronger usage habits. Extending this idea to social networking websites, we propose:

***H3:** Perceived enjoyment with a social networking website has a positive direct effect on social networking website use habit.*

Adverse Consequences of Social Networking Website Use Habit

Habits are not always productive, and in many contexts people develop bad habits. Bad habits are automatic and repetitive counterproductive or harmful behaviors, such as substance abuse or repetitive deviant behavior. They often represent “acts that yield short-term rewards that are inconsistent with long-term-intentions and goals” (Ouellette and Wood, 1998, p.56). In this study we focus on key cyber-world equivalents, i.e. technology addiction (a pathological problematic state) and high engagement (a non-pathological state). Building on the definition of drug addiction (Robinson and Berridge, 2003), we define technology addiction as a user’s psychological state of dependency on the IT use which is manifested through the compulsive pattern of IT-seeking and IT-use behaviors that take place at the expense of other important activities. Such technology-related addictions have been observed in numerous contexts, including, for example, online video games

(Charlton and Danforth, 2007) and online gambling (McBride and Derevensky, 2009). Technology addiction is an investigation worthy phenomenon, because it can negatively influence school and social performance, and cause depression, loneliness, family conflict and financial problems (Billieux et al., 2008, Caplan, 2002, Turel et al., 2008).

Some users of social networking websites can be considered addicted (Karaïskos et al., 2010). Consistent with common technology addiction symptoms (Ferraro et al., 2007), we suggest that this addiction can be manifested through a number of core symptoms, which interfere with other activities and normal functioning. These include conflict (i.e., the addictive activity conflicts with other tasks), withdrawal (i.e., negative emotions arise if the activity cannot be conducted), relapse and reinstatement (i.e., inability to voluntarily reduce usage), and behavioral salience (i.e., the addictive activity dominates other tasks). The strength or frequency of these symptoms is often used for calculating addiction levels; i.e., addiction is often conceptualized as a continuous variable that pertains to all users by ranging from weak or no symptoms (low addiction scores) to people with many, strong symptoms (high addiction scores) (Charlton and Danforth, 2007). While such scores can be used for classifying users as addicted or not, there are no acceptable cutoff criteria (Block, 2008). We hence also treat addiction as a continuous concept.

Many individuals who habitually use a social networking website may develop only low levels and infrequent addiction symptoms. While the terms habits and addiction are sometimes used interchangeably (Astin, 1962, Hollender, 1980), they are different. Habits are often a prerequisite for the formation of addiction; and bad habits do not always become addictions. Moreover, “habits are not intrinsically compulsive in any motivational sense, no matter how automatic they are” (Robinson and Berridge, 2003, p.33). We follow this logic and suggest that social networking website use habit is a mandatory and instrumental prerequisite for the formation of addiction. From a psychological perspective, the cognitive model of addiction suggests that addiction-driven actions are automatic behaviors resulting from over-learned habits which become very strong, compulsive, and uncontrollable (Tiffany, 1990). From a neurobehavioral perspective, there may be a habit-driven process of “neural sensitization;” i.e., when habitual social networking website use increases, the brain can become more sensitive to use cues and overemphasize the salience of the thrill, until it forms a pathological state of “wanting” (Robinson and Berridge, 2003). As such, addiction is a potential outcome of over-practiced and over-learned hedonic habits. Therefore:

H4: *Usage habit has a positive direct effect on addiction to a social networking website.*

In contrast to most other addiction-driven behaviors, computer usage is generally encouraged. Furthermore, many cases of habitual overuse may not be considered pathological and should not require treatment. For example, a user may spend many hours per day using social networking websites, develop a strong use habit, but core addiction symptoms (e.g., withdrawal) may never emerge. In such cases, users may still present non-core, or peripheral, symptoms, i.e., non-harmful symptoms that do not directly interfere with normal functioning. These include for example exaggerated euphoria (i.e., joy derived from the activity) and tolerance (i.e., the activity should be conducted to a greater extent to produce positive emotions) (Charlton and Danforth, 2007). These non-pathological symptoms manifest from high engagement, which is a positive degree of psychological involvement when using a system, or low apathy towards system use (Charlton and Danforth, 2010). In contrast to addiction, high engagement is a non-pathological state which does not require intervention and may be controlled by users. Nevertheless, high engagement may be still considered a somewhat undesirable state from the end-user perspective, when, for example, users have to stay online longer to produce positive emotions. Different individuals who use a system to the same degree may exhibit different levels of high engagement and addiction symptoms, depending on their personalities and the emergence of core and peripheral symptoms (Charlton and Danforth, 2010).

When social networking website use grows to be habitual, it fulfills a central role in one’s life. The automatic and increasing use of the social networking website becomes the obvious means to achieve social goals and hedonic thrills. By striving to reach optimal levels of experience, users become more engaged in and less apathetic toward such use behaviors (Delle Fave and Massimini, 2005). In addition, the automatic habitual use of social networking websites can allow users to devote less cognitive resources to using the system, and more resources to euphoria production, which is encapsulated by one’s engagement. Therefore:

H5: *Usage habit has a positive direct effect on high engagement with a social networking website.*

METHODOLOGY

Sample

Data were collected by means of an online questionnaire administered to social networking website users who were taking a sophomore year marketing class at a large USA business school. Students in this class could voluntarily participate in this research project for two bonus points. Those who have not used social networking websites had the opportunity to participate

in alternative projects for the same incentive. No restriction on the type of the social networking website was placed, and only those participants with at least three months of usage experience were selected. Out of the 226 students in this course, 204 completed the survey. After removing incomplete submissions, 197 usable responses were retained (response rate of 87%).

The sample included 52% men and 48% women. Their ages ranged from 19 to 40 years old, with the average of 23. They had on average 10.6 years of Internet experience, 2.9 years of social networking experience, 2.5 years of full-time work experience, and 3.7 years of part-time work experience. They managed from 5 to 1,000 contacts on their networks, with an average of 225 contacts. The respondents utilized multiple social networking websites (from 1 to 4 per person), with an average of 1.7 websites per user. Ninety percent used Facebook, 56% – MySpace, 16% – Twitter, 8% – LinkedIn, and 7 % – other social networking websites (e.g., Hi5.com, Wretch.cc, KhmerLife.com, Xing.com, and Cyworld). They employed social networking websites in order to: stay in touch with close friends and relatives (98%); read messages (62%); post messages and photos (56%); browse the pages of people in their network (39%); meet new people (24%); stay in touch with people they met on this social networking website (20%); play online video games (19%); watch videos (16%); post videos (10%); and send virtual gifts (3%).

Survey Instrument

Because people can use more than one social networking website, respondents were asked to reflect on their experience with the most frequently used social networking website. All multi-item scales were adapted from well-established research instruments, and measured on 7-point Likert-type scales. To capture addiction and engagement short versions of the Charlton and Danforth (2007) scales were used. They included only items that presented loadings higher than 0.6 in the original study. This was done to economize on items for participants, and to increase the degrees of freedom for the analysis. Self-reported past usage behaviors (comprehensiveness and time-per-day) were measured with open-ended questions adapted from Limayem et al. (2007) to the context of social networking websites. Habit and perceived enjoyment were measured as suggested by Limayem et al. (2007) and Davis et al. (1992), respectively. Online Appendix A (<http://foba.lakeheadu.ca/serenko/AMCIS2011HabitQuestionnaire.pdf>) presents the items. Demographic variables (age, gender, work experience) were also collected.

RESULTS

Preliminary Assessment

As a first step, the viability of the measurement instruments was assessed. Descriptive statistics and inter-construct correlations are provided in Table 2. Reliability scores (Cronbach's Alphas) are given on the diagonal. The bottom part of the table includes potential control variables. As can be seen, all constructs presented sufficient variation and were reliable.

In the second step, the potential influence of common method variance (CMV) was assessed. This risk was first mitigated in the survey design phase: negatively-worded items were occasionally utilized, and multiple measurement scale types (Likert and open-ended numerical questions) were employed. However, given the self-reported nature of the data, the risk, while often not meaningful (Malhotra et al., 2006), still exists (Sharma et al., 2009). Because all CMV detection techniques have limitations (Podsakoff et al., 2003), potential CMV risk in this study was assessed by several methods.

First, Harman's single-factor test was conducted. An exploratory principal components analysis was applied with no rotation to all multi-item scales. It produced four components; the first explained only 41% of the variance, and the remaining explained additional 31%. Second, the procedure specified by Pavlou et al. (2007) was applied. The correlation matrix (Table 2) was examined, and correlations in excess of 0.9 were not detected. Such correlations can raise the suspicion of CMV, but the correlations in our case ranged from 0.18 to 0.68. This further implies that there was no systematic bias in the data. Nevertheless, because such techniques are imperfect and may have uncertain benefits (Richardson et al., 2009), we caution readers that more research is warranted to increase confidence in this conclusion.

Model Estimation

The two step procedure for model estimation (Anderson and Gerbing, 1988) using AMOS 18 was followed. First, a confirmatory factor analysis (CFA) model in which all constructs were allowed to freely correlate was specified and estimated. The model had a good fit ($\chi^2(135) = 218.13$, CFI=0.96, IFI=0.96, RMSEA=0.056 with p-close = 0.23, and SRMR = 0.068) that meets recommended cut-off criteria (Hu and Bentler, 1999). All factor loadings were significant ($p < 0.001$), which further indicates that the measurement model fits the data.

Because the CFA model was adequate, a structural model that included potential control variables (age, gender, and number of contacts) as predictors of all endogenous constructs was specified and estimated. This model also yielded good fit indices

($\chi^2(180) = 296.87$, CFI=0.95, IFI=0.95, RMSEA=0.058 with p-close = 0.14, and SRMR = 0.073). While all hypothesized effects were significant (at $p < 0.01$ and below), only one control variable, age, had a significant effect on habit ($p < 0.01$). For parsimony reasons the non-significant control variable paths were removed, and the model as depicted in Figure 1 was specified and estimated. The model fits the data well ($\chi^2(156) = 261.04$, CFI=0.95, IFI=0.96, RMSEA=0.059 with p-close = 0.13, and SRMR = 0.078), which supports the theory we put forth. Figure 1 provides the standardized path coefficients and the squared multiple correlations (SMC – % of explained variance).

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Time-per-day (Minuets)	43.18	49.46	-								
(2) Usage Comprehensiveness	3.73	2.08	0.18*	-							
(3) Perceived Enjoyment	5.04	1.28	0.35**	0.37**	0.95						
(4) Habit	4.63	1.56	0.40**	0.38**	0.68**	0.86					
(5) Addiction	2.26	1.23	0.29**	0.27**	0.29**	0.40**	0.86				
(6) High Engagement	3.71	1.07	0.41**	0.42**	0.56**	0.55**	0.50**	0.71			
(7) Age	23.08	3.64	-0.13	-0.10	-0.05	-0.18**	-0.15*	-0.14	-		
(8) Gender	-	-	-0.04	0.06	-0.06	-0.01	0.04	-0.00	0.07	-	
(9) Number of Contacts	225.11	176.07	0.28**	0.13	0.23**	0.24**	0.10	0.22*	-0.26*	-0.16*	-

Table 2. Descriptive Statistics, Reliabilities, and Correlations

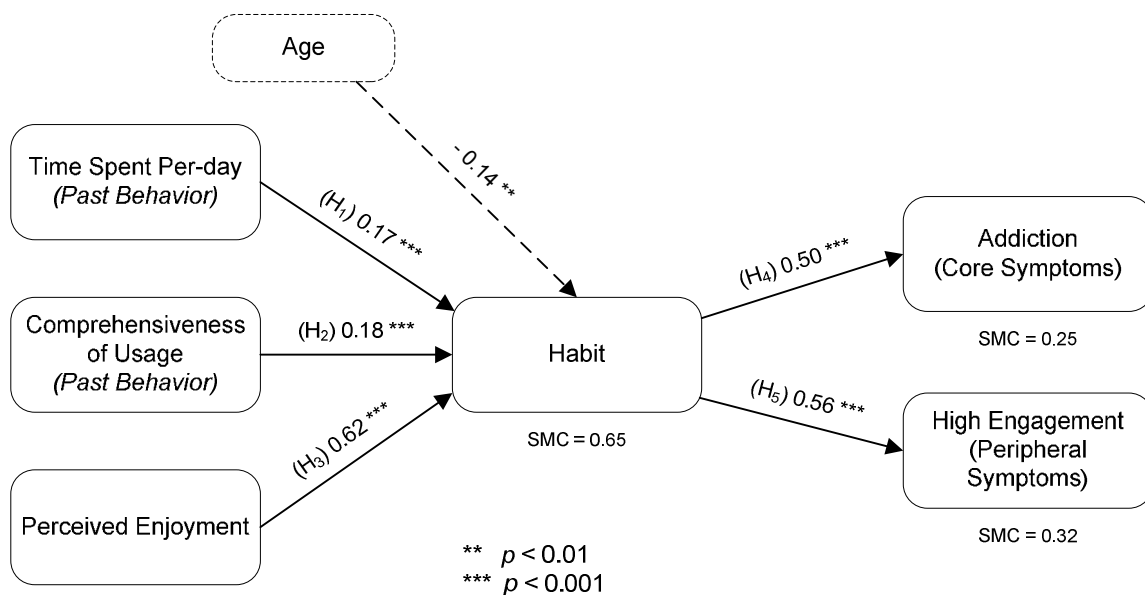


Figure 1. Research Model

DISCUSSION AND CONCLUSION

The purpose of this study was to advance our understanding of the antecedents and consequences of social networking website use habit, while emphasizing the potential existence of “bad habits,” which have been mostly ignored thus far in MIS research. For this, a model was suggested based on the literature and tested through a survey of 197 users. The findings support the idea that IS use is no different from other behaviors, and that bad IS use habits, i.e., habits that have unproductive and undesirable outcomes, may emerge.

Specifically, the findings suggest that addiction and high engagement represent two distinct constructs, which supports previous arguments that were tested only in the online gaming environment (Charlton and Danforth, 2007, Charlton and Danforth, 2010). Importantly, both addiction and high engagement are augmented by habit; i.e., in some cases high habit leads to high levels of addiction (an unproductive and undesirable outcome) and becomes a “bad habit.” We do not specify or study the threshold in which this transition takes place; and hence, call for future research to make these screening and classification judgments which require a different study design. In addition, age had a negative effect and habit ($\beta=-0.14$), and it also negatively correlated with addiction ($r=-0.15$). This implies that younger individuals are more likely to develop social networking website use habits, which can later turn into addiction, than their older counterparts. This corroborate previous findings that younger users are more at risk of technology addiction (Ferraro et al., 2007), but our study also explains why this is the case: younger users are more prone to develop social networking website use habit, which can increase their levels of addiction.

The findings further demonstrate that the habit antecedents suggested by Limayem et al. (2007), even though operationalized slightly differently in this study, still hold in the case of online social networking websites. Perceived enjoyment was found to be the key antecedent of habit ($\beta=0.62$). This is not surprising given that user enjoyment is one of the key reasons for using social networking websites, which are hedonic artifacts by nature. Past practice of the behavior, operationalized as the average daily use duration ($\beta=0.17$) and comprehensiveness of use ($\beta=0.18$) were less salient yet important antecedents of habit. The strength of these links in our context, which was narrow and specific, was slightly above those observed by Limayem et al. (2007) (0.11 and 0.12, respectively) in the broader context of the Internet.

From a practical stand point, social networking websites may want to promote habitual use for driving high engagement. But this may come at a cost to the users, who may develop too-strong or bad-habits which help forming addiction. Users should therefore be aware of this, and try to regulate their use such that normal functioning is maintained.

From the user’s perspective, both addiction and potentially high engagement are adverse outcomes that they may want to prevent, if possible. Even though high engagement is non-pathological, highly engaged users may spend too much time using social networking websites at the expense of other important activities, and this is often a prerequisite to the development of core addiction symptoms. Some elements, such as personality, that relate to these factors cannot be controlled by them. However, users should at least be aware of these potential adverse outcomes, and try to regulate their use such that normal functioning is maintained. Furthermore, schools, parents and employers can probably help in the self-assessment of use habit and provide early signs for the development of technology addiction. While the lay person may not be able to apply psychometric scales, the measurement of usage comprehensiveness and past use is fairly easy to conduct. These concepts do not even need to be self-reported (can be taken from computer use logs, if available). These are, as demonstrated in this study, indirect antecedents of addiction. The problem is that there are no acceptable cutoff criteria. Parents, employers and teachers can therefore detect anomalies, rather than focusing on defined criteria when attempting to detect potential cases of addiction.

Overall, this study presents the first attempt to show that not all IS habits are created equal; and that in some cases “bad habits” that lead to technology addiction may be developed. The nomological nets of such habits deserve future research.

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