Understanding social media discontinuance behavior in China: A perspective of social cognitive theory

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Abstract

Purpose - To understand the mechanisms underlying social media discontinuance behavior, this study explores factors affecting social media discontinuance behavior from the perspective of social cognitive theory.

Design/methodology/approach - Based on social cognitive theory, this study puts forward a theoretical model incorporating habit, excessive use, and negative emotions to predict social media discontinuance behavior. The proposed research model was empirically tested with 465 responses collected from WeChat users in China via an online survey. WeChat is one of the most popular social media in China. However, it also faces the challenges of reduced or terminated usage among its users. Partial least squares structural equation modeling (PLS-SEM) technique was used to analyze the data.

Findings - The research results in this study show that habit exerts a negative effect on social media discontinuance behavior, while exhaustion and regret have positive influences. In addition, habit positively affects excessive use, which further leads to negative emotions of social media exhaustion and regret. Moreover, gender moderates the relationship between habit and social media discontinuance behavior.

Originality/value - This study adds to the literature of information system (IS) use lifecycle by investigating user behavioral changes regarding a transition from habituated to excessive use and further to discontinuance behavior. This study also helps elucidate the complex role of habit by explaining social media discontinuance from the social cognitive view. Furthermore, this study advances the current understanding of gender difference in social media discontinuance in the Chinese context. The study also offers insights to practitioners on how to prevent individuals from discontinuing their use of social media.

Keywords social media discontinuance, social cognitive theory, habit, excessive use, regret, exhaustion, WeChat

1 Introduction

In recent years, social media discontinuance has attracted substantial attention among scholars and practitioners. Social media discontinuance reflects users' behavioral patterns of reducing usage intensity and frequency, suspending, or quitting their social media usage (Maier *et al.*, 2015b). For example, Facebook has reported a slow and steady decline in its user population in recent years (Roose, 2021). Similarly, statistical reports show that 95% of individuals in China have taken actions to attenuate the negative effects of social media use, such as prohibiting social media use on certain occasions or at specific times (Kantar, 2018).

Past studies have indicated a developmental view of social media use. For instance, users could obtain a variety of benefits from their use of social media (Liu *et al.*, 2016; Wang *et al.*, 2012), and they could develop their habitual social media usage over time with minimal cognitive resources (Soror *et al.*, 2015; Turel, 2015). Such habitual use could also become excessive and lead to negative consequences for users (Caplan and High, 2006; Hou *et al.*, 2017; Limayem *et al.*, 2007). In such situations, users may make self-evaluations and judgments on their social media usage. The negative assessment of their social media use experiences and negative emotions of regret and exhaustion may further trigger their social media discontinuance behaviors; and reduced or terminated usage may occur for users to cope with the situation (Luqman *et al.*, 2017; Luqman *et al.*, 2020; Masood *et al.*, 2021). Such social media discontinuance could lead to large losses for social media providers, as retaining users is critical for their long-term success and sustainable development (Bhattacherjee, 2001). Therefore, it is necessary to understand the antecedents of social media discontinuance from a developmental perspective.

Although there is extant research on social media discontinuance, there is a lack of knowledge on social media discontinuance from the perspective of user behavioral changes, such as the evolution of habitual use to excessive use and further to discontinuance behavior. There is also a lack of research on the role of habit in influencing social media discontinuance from the perspective of user behavioral changes and negative emotions.

In response to these research gaps, this study endeavors to explore the factors affecting discontinuance behavior in social media use from the developmental view of user behavioral changes. This study aims to answer the following research questions: (1) What is the role of habit in shaping social media discontinuance behavior? (2) What are the impacts of excessive use and negative emotions in driving social media discontinuance behavior?

WeChat, a Chinese social media, was chosen as the research context for the current study. According to the latest report from China Internet Network Information Center (CNNIC), there are about 1.051 billion Internet users, and Internet penetration reached 74.4% of the Chinese population as of June 2022 (CNNIC, 2022). Social media has developed rapidly in China. As of December 2021, there are over 1 billion social media and messenger users, and China accounts for 21.6% of the world's 4.65 billion social media users (Datareportal, 2022). WeChat is currently one of the most popular social media in China, and provides various functions to users, such as peer communication, information sharing and recording, marketing, and public service information searching (Tencent, 2021). However, these users also face challenges in their use of WeChat, such as social overload, information overload, and excessive use. And some users have reduced or quit their WeChat use. Therefore, it is appropriate to study WeChat in the current study.

This study employs social cognitive theory (SCT) (Bandura, 1986) as the research framework to investigate the factors affecting social media discontinuance behavior. Specifically, this study conceptualized social media discontinuance behavior as the reduced, controlled, or suspended use of social media (Ravindran *et al.*, 2014). Habit and excessive use are considered personal factors that trigger users' personal self-judgments of exhaustion and regret in their WeChat use. Exhaustion and regret are considered personal self-judgment factors shaping WeChat users' discontinuance behavior as a behavioral response. The proposed research model was tested with data collected from 465 WeChat users in China.

In this vein, this study contributes to the literature on the IS use lifecycle by investigating user behavioral changes in the transition from habituated social media use to excessive use and further to discontinued use. This study also extends the body of knowledge on the direct and indirect influences of

habit driving social media discontinuance from the view of negative emotions. Furthermore, this study advances the current understanding of how gender influences social media discontinuance behavior.

The remainder of this paper is organized as follows. A review of related studies and theoretical background on social media discontinuance and social cognitive theory is offered in Section two. The proposed research model and hypotheses are then put forward in Section three, followed by an introduction of research methodology in Section four. Data analysis and results are presented in Section five, and Section six discusses the research findings. The paper concludes with a discussion of the theoretical and managerial implications, as well as its limitations and the future research avenues in Section seven.

2 Theoretical Background

2.1 Social media discontinuance

Social media discontinuance has been increasingly studied in IS literature. Past studies have identified factors influencing social media discontinuance, as shown in Table 1. A variety of theories have been used to explain social media discontinuance, such as stimulus-organism-response model (Luqman *et al.*, 2017), social cognitive theory (Turel, 2015), expectation confirmation theory (Tang *et al.*, 2019), and theory of planned behavior (Turel, 2016).

Extant research has explored social media discontinuance from different perspectives. One research stream has revealed the impacts of cognition-related factors in affecting social media discontinuance. Negative cognitions such as information overload, social overload, technology overload, and habit are found to have significant effects on social media discontinuance (Maier *et al.*, 2015a; Xie and Tsai, 2021). Maier *et al.* (2015a) indicated that social overload has a significant positive impact on discontinuous intention to use social media. Xie and Tsai (2021) found a significant positive effect of perceived information overload on microblog discontinuance intention. Turel (2015) showed that habit and self-efficacy to discontinue exert significant negative and positive influences on discontinuance intention to use Facebook, respectively. Turel (2016) indicated that attitude toward discontinuance and subjective norms regarding discontinuance significantly affect SNS discontinuance intention. Fan *et al.* (2021) noted that privacy concerns have significant positive effects on intention to control WeChat Moments use. Tang *et al.* (2019) argued that expectation disconfirmation, interest shifts, and person brand unfitness exert significant positive impacts on brand microblog discontinuance.

Another research stream has paid attention to the effects of emotion-related factors on social media discontinuance, such as exhaustion, fatigue, and flow (Lin *et al.*, 2020; Maier *et al.*, 2015b; Turel, 2015). Maier *et al.* (2015b) indicated that SNS-exhaustion and switching-exhaustion have significant influences on SNS discontinuance behavior. Turel (2015) verified a positive effect of guilt feeling as well as a negative effect of satisfaction on SNS discontinuance intention. Lin *et al.* (2020) revealed that flow experience exerts a negative effect on WeChat discontinuance intention, while fatigue has a positive influence. Lin *et al.* (2021) noted that adaptive coping strategies significantly and negatively affect WeChat discontinuous usage intention, while maladaptive coping strategies exert significant and positive impacts; also, the relationships are moderated by fatigue and flow. Other negative emotions have also been found to have positive effects on social media discontinuance, such as technostress (Luqman *et al.*, 2017), distress (Cao *et al.*, 2020), and envy (Wang *et al.*, 2021).

Moreover, recent studies have attempted to explore the impact of gender on social media discontinuance behavior, resulting in controversial views. For instance, while Maier *et al.* (2015b) reported an insignificant influence of gender on Facebook discontinuous usage behavior, the studies of Luqman *et al.* (2018) and Zhang *et al.* (2016) showed a significant effect of gender on SNS

discontinuance intention. Such effort resonates with past IS studies that investigated the influence of gender on IS behavior in various IS contexts (e.g., Venkatesh and Morris, 2000).

Table 1. Summary of prior studies on social media discontinuance

Reference	Contexts	Research method	Theoretical background	Dependent variables	Key findings
Cao *et al.* (2020)	Facebook, WeChat	online survey	social cognitive theory	discontinuance intention	Distress and SNS exhaustion significantly affect discontinuance intention.
Cao and Sun (2018)	social media	online survey	stimulus-organism-response model	discontinuance intention	Exhaustion and regret significantly influence discontinuance intention.
Fan *et al.* (2021)	WeChat	online survey	social cognitive theory	discontinuance intention	Privacy concerns significantly influence intention of control activities, while fatigue significantly affects intentions of control activities, short breaks, and suspend usage.
Huang and Miao (2021)	WeChat Moments	semi-structured interview	/	discontinuance behavior	Reasons of a personal tactic to maintain a balanced life and regain focus make individuals develop a periodic loop of "use, non-use, reuse" on WeChat Moments.
Luqman *et al.* (2017)	Facebook	online survey	stimulus-organism-response model	discontinuance intention	Technostress and SNS-exhaustion have significant effects on discontinuance intention.
Lin *et al.* (2020)	WeChat	online survey	stimulus-organism-response model	discontinuance intention	Fatigue has a positive effect on discontinuance intention, and flow experience exerts a negative effect.
Lin *et al.* (2021)	WeChat	online survey	stress dynamics and coping theory	discontinuance intention	Adaptive coping strategies have negative effects on discontinuance intention, maladaptive coping strategies have positive effects, and fatigue and flow experience play moderating roles.
Maier *et al.* (2015a)	Facebook	interview and online survey	social support theory	discontinuous intention	Social overload has a significant effect on discontinuous usage intention.
Maier *et al.* (2015b)	Facebook	experimental study	technostress	discontinuous behavior	SNS-exhaustion and switching-exhaustion significantly influence discontinued usage behavior through discontinuous usage

					intention; and individual difference plays an important role in affecting discontinued usage behavior.
Ravindran *et al.* (2014)	Facebook	mixed-method	/	discontinuance behavior	Factors relating to social dynamics, content, immersion, platform and community life cycle significantly affect social network fatigue, which further significantly impacts discontinuance behavior (short breaks, controlled and suspended social network activities).
Tang *et al.* (2019)	brand microblog	mixed-method	technology acceptance model; expectation confirmation theory	unfollow intention	Dissatisfaction with information quality, expectation disconfirmation, interest shifts and person brand unfit exert significant impacts on discontinuance motivation.
Turel (2015)	Facebook	online survey	social cognitive theory	discontinuance intention	Satisfaction with the site and habit of using the site exert negative impacts on discontinuance intention, while self-efficacy to discontinue and guilt feelings have positive influences.
Turel (2016)	Facebook	online survey	theory of planned behavior	discontinuance intention	Attitude toward discontinuance, subjective norms regarding discontinuance and guilt feelings significantly impact discontinuance intention.
Wang *et al.* (2021)	social media	experimental study	social comparison	discontinuance intention	Benign envy and malicious envy significantly influence discontinuance intention.
Wang *et al.* (2021)	WeChat	online survey	two-factor model	discontinuance intention	Regret has a significant positive effect on WeChat discontinuance intention, while inertia exerts a significant negative impact.
Xie and Tsai (2021)	Weibo	online survey	stimulus-organism-response model	discontinuance intention	Perceived information overload and fatigue have significant effects on discontinuance intention.
Zhang *et al.* (2019)	WeChat subscriptions	online survey	social exchange theory	unfollow intention	Perceived costs (actual cost and opportunity cost) have significant positive effects on unfollow intention, while perceived benefit (Perceived usefulness) has a significant negative impact.

The existing body of literature has significantly advanced the understanding of different factors influencing social media discontinuance. However, little research has attempted to examine social media discontinuance from the developmental view of user behavioral changes, specifically the transition from habituated use to excessive use and further to discontinuance use. Additionally, although some studies have examined the impact of habit on social media discontinuance, there is a lack of knowledge on the role of habit in influencing social media discontinuance from the perspective of user behavioral changes and negative emotions. Also, while the majority of the extant literature focuses on discontinuance intention, it is necessary to examine social media discontinuance behavior.

2.2 Social cognitive theory

Social cognitive theory (SCT) posits that individual, environment, and behavior are in a dynamic and reciprocal interaction, while individuals actively self-regulate their behaviors (Bandura, 1986). According to SCT, individuals observe the changes triggered by the environment, then make judgments and take steps to cope with those changes (Bandura, 1986). Further, individuals invoke an evaluation process to assess the current situation, thereby shaping their behaviors (Bandura, 1986).

SCT has been extensively applied to examine different user behavior in the social media context (see Table 2). Khang *et al.* (2014) showed that deficient self-regulation and social media experience have significant effects on habit strength, while habit strength and deficient self-regulation have significant impacts on social media usage. Islam *et al.* (2020) revealed that entertainment, exploration, and deficient self-regulation have significant effects on social media fatigue, while entertainment, social media fatigue, and personal attributes (exploration, religiosity, and deficient self-regulation) have significant effects on unverified information sharing on social media. Turel (2015) indicated that satisfaction and habit have negative effects on intention to discontinue using Facebook, while self-efficacy and guilt exert positive effects. Fu *et al.* (2020) found that information overload and social overload exert positive effects on social media fatigue and dissatisfaction with social media use, which in turn lead to reduced usage and abandoned usage of social media.

Extant studies have shown that SCT is suitable to explain social media user behavior. SCT provides a general framework to incorporate different environmental and personal factors to explain individuals' self-regulated behavior (Bandura, 1986). Thus, this study attempts to employ social cognitive theory to examine factors affecting social media discontinuance behavior.

Table 2. Summary of prior studies applying SCT in the social media context

Reference	Contexts	Environmental factors	Personal factors	Behavioral response
Fu *et al.* (2020)	Facebook	technology overload, information overload, social overload	social media fatigue, dissatisfaction	reduced-usage behavior, abandoned-usage behavior
Islam *et al.* (2020)	social media	/	entertainment, exploration, deficient self-regulation, social media fatigue and personal attributes (exploration, religiosity and deficient self-regulation)	unverified information sharing
Khang *et al.* (2014)	social media	/	perceived self-efficacy, deficient self-regulation, habit strength and past experience	social media usage
Lee *et al.* (2017)	social network service	positive relationship with their parents	habit strength, deficient self-regulation, self-reactive outcome expectation, depression and self-identity	time spent on SNS
Lin and Chang (2018)	Facebook	human-to-human interaction, human-to-information interaction	outcome expectation	health information exchange
Shi *et al.* (2021)	online Q&A community	others' modeled performance	social status, favorable historical performance	informativeness of knowledge contribution
Turel (2015)	Facebook	/	addiction, satisfaction, guilt, habit, self-efficacy	discontinuance intention

3 Research model and hypotheses

3.1 Research model

Following the SCT framework and literature review above, the research hypotheses of this study are structured and depicted in Figure 1. Specifically, habit and excessive use are set as personal factors because they reflect individuals' different usage states, which may affect their evaluation and judgment of social media use (Limayem *et al.*, 2007; Polites and Karahanna, 2012). Exhaustion and regret are regarded as personal self-judgment factors. Users are more likely to perceive exhaustion and regret during excessive use of social media, and make self-assessments of their perceptions of exhaustion and regret in their social media use, which shape their behavior changes (Ravindran *et al.*, 2014; Turel, 2015). Discontinuance behavior, which is a common activity pertinent to user behavioral change in social media use, is set as a behavioral response. Therefore, the present study examines whether habit and excessive use affect discontinuance behavior by inducing exhaustion and regret. This study hypothesized that social media use habit leads to excessive use and discontinuance usage of social media, excessive use affects both exhaustion and regret, and exhaustion affects regret. Moreover, exhaustion and regret lead to discontinuance usage. Some demographic and system use-related variables, such as age, WeChat usage time, frequency of use, and system experience, are included as control variables in the research model.
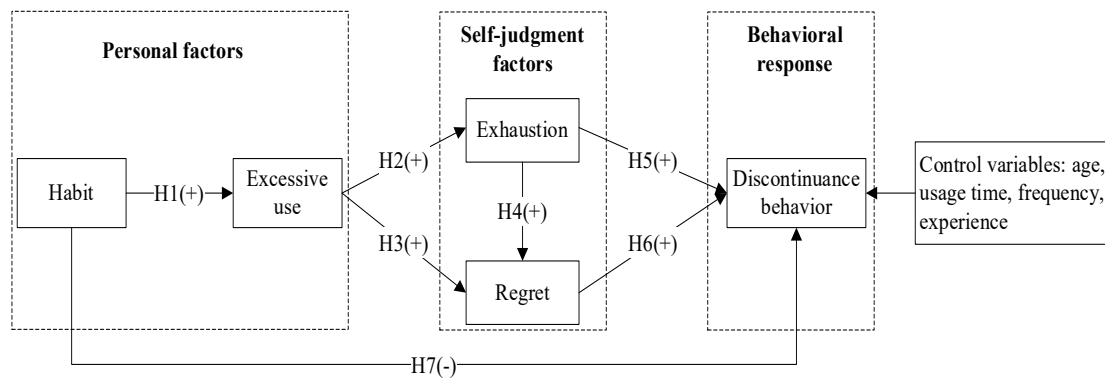

Fig. 1. Research model

Table 3 shows the definition of constructs in the research model.

Table 3. Definition of constructs in the research model

Construct	Definition	Source
Habit	The extent to which users tend to automatically make an action due to learning	Limayem *et al.* (2007)
Excessive use	Users lose control of their social media use and have difficulty in imposing appropriate limits on their behavior.	Young (1998)
Exhaustion	Users' weariness feeling from using social media due to its psychological strain or potentially harmful influences.	Ayyagari *et al.* (2011)
Regret	A negative emotional reaction to the unfavorable comparison between the outcomes of the chosen and abandoned alternatives.	Inman *et al.* (1997)
Discontinuance behavior	Users' decision to discontinue using social media, including reduced, controlled, or suspended use of social media.	Ravindran *et al.* (2014)

3.2 Research hypotheses

Habit minimizes users' cognitive efforts to perform similar behaviors and highlights the short-term salience of thrills from actions (Turel and Serenko, 2012). Users may desire to repeat their behavior when they are rewarded with a positive experience (Turel, 2015). However, when such automatic actions become strong, they may recur frequently and be more easily provoked by stimuli (LaRose and Eastin, 2004). This in turn becomes uncontrollable where the actions become annoying (Vishwanath, 2015), such as problematic use (Ouellette and Wood, 1998) and excessive use (Oulasvirta *et al.*, 2012). That is, when users develop a habitual behavior with regard to social media, they will be more likely to e.g., spend more time than expected on social media. Thus, the following hypothesis is formulated:

H1: Habit of social media use is positively associated with excessive use of social media.

Excessive use may induce social media exhaustion, which reflects users' psychological and behavioral reactions to such stress-creating situations (Maier *et al.*, 2015a). For example, excessive social use may be accompanied by more demands for social support from friends, which consumes time and energy. Users are likely to tire of coping with such social requests and become more exhausted (Ayyagari *et al.*, 2011; Tangney, 1991). Previous studies have revealed the relationship between excessive use and exhaustion. Luqman *et al.* (2017) showed that excessive social, hedonic, and cognitive use significantly affects exhaustion in Facebook use. Zheng and Lee (2016) investigated the negative consequences of excessive use of social media among Chinese users and found that excessive social media use inevitably leads to users' negative emotions, such as exhaustion. Consequently, it is reasonable to assume that the more excessive the use of social media, the greater the exhaustion felt. Therefore, the following hypothesis is developed:

H2: Excessive use of social media is positively associated with exhaustion in social media use.

Also, excessive use of social media exposes users to uncontrolled stress, which strengthens their wrong-doing reflections (Turel, 2016) and cause a psychological change in users (Kuss and Griffiths, 2011). Users tend to amend their behavior when they perceive it as problematic (Bandura, 1986). When users use social media excessively, for example, when they use it for longer periods and/or more frequently than expected (Caplan and High, 2006), they may experience feelings of regret because they feel they could have made better use of their time (Kang *et al.*, 2009). Extant research has revealed the effect of excessive social media use on users' feelings of regret. Dhir *et al.* (2016) found that excessive Facebook users are more likely to feel stronger regret. It is expected that the more excessively Chinese users use social media, the more likely they are to experience regret. Hence, the following hypothesis is assumed:

H3: Excessive use of social media is positively associated with regret in social media use.

Users may feel exhausted because they feel their lives have been invaded by social media. This unpleasant experience may lead them to evaluate their prior choices and decisions. Regret may develop, particularly if there is a perception that better outcomes would have ensued if different choices had been made (Zeelenberg *et al.*, 2000). Previous studies have suggested a significant relationship between exhaustion and regret. Nawaz *et al.* (2018) revealed a significant influence of SNS exhaustion on regret. Cao and Sun (2018) noted that exhaustion from social media use among Chinese social media users significantly promotes regret. It is assumed that when Chinese users perceive stronger exhaustion following time on social media, their feelings of regret increase. Therefore, the following hypothesis is proposed:

H4: Exhaustion in social media is positively associated with regret in social media use.

Prior research has shown that users who perceive exhaustion tend to change their behavior (Podsakoff *et al.*, 2003), and take actions to alleviate or avoid such negative emotions, such as short breaks from social media, or use it less (Ravindran *et al.*, 2014), which, in turn, generate social media

discontinuance. Prior studies have noted that a higher level of exhaustion leads to greater SNS discontinuance intention, such as Facebook and WeChat (Fan *et al.*, 2021; Luqman *et al.*, 2017; Maier *et al.*, 2015b). Fu *et al.* (2020) revealed that exhaustion induces social media users' discontinuance behavior among Facebook users. Based on the above discussion, it is reasonable to expect that exhaustion exerts a significant impact on social media discontinuance behavior. Therefore, the following hypothesis is put forward:

H5: Exhaustion in social media use is positively associated with discontinuance behavior regarding social media use.

According to the regret theory, users may feel regret when evaluating an outcome if choosing an alternative would have produced a better outcome (Bell, 1982; Loomes and Sugden, 1982). Regret is an unpleasant experience that stems from a comparison of one outcome with a better one, which would have occurred if an alternative action had been chosen (Kang *et al.*, 2009). This unpleasant experience may induce adverse consequences, because users may regulate their behavior to avoid negative emotions (Bandura, 1986). Previous studies have noted the significant effect of regret on social media discontinuance behavior. Nawaz *et al.* (2018) found that regret significantly affects SNS discontinuance intention. Cao and Sun (2018) revealed the significant effect of regret on social media discontinuance intention among Chinese social media users. Wang *et al.* (2021) also found that regret exerts a significant positive effect on WeChat discontinuance intention. Prior research has argued that when users have unpleasant experiences on social media, they become aware of their problematic behavior and adapt accordingly, such as in the context of Facebook and WeChat (Cao and Sun, 2018; Turel, 2015). Thus, it is reasonable to assume that users who feel a high level of regret with regard to using social media will make decisions to discontinue using the service. Hence, the following hypothesis is proposed:

H6: Regret in social media use is positively associated with discontinuance behavior regarding social media use.

Habit indicates that users use social media automatically without conscious thinking (Limayem *et al.*, 2007). Habit weakens users' self-observation process during the use of social media (Turel and Serenko, 2012), as it 'drives (user) behavior through inertia and in parallel to cognitive processes' (Turel, 2015. p. 436). Habit alleviates users' cognitive consideration about their use and its consequences (Ouellette and Wood, 1998). Thus, habitual use of IS as automatic and repeated IS use is less likely to lead to IS discontinuance (Limayem *et al.*, 2007). Turel (2015) confirmed the negative effect of the habit of using Facebook on intentions to discontinue using Facebook. Huang *et al.* (2019) found that habit exerts a negative influence on gamification app discontinuance intention. When the use of social media becomes habitual, users may use it automatically or naturally, which would weaken their consideration of discontinuing its use. It is expected that habit decreases the level of social media discontinuance behavior among Chinese social media users. Hence, the following hypothesis is assumed:

H7: Habit in social media use is negatively associated with discontinuance behavior regarding social media use.

4 Research methodology

4.1 Items Measurement

All six constructs in the proposed research model were reflectively measured, which were adapted from prior research, and further modified to fit the current context. Items of habit were taken from Limayem *et al.* (2007). Items of excessive use were modified from Caplan and High (2006). Items of exhaustion were derived from Ayyagari *et al.* (2011). Items of regret were modified from Kang *et al.* (2013). Items of discontinuance behavior were adapted from Ravindran *et al.* (2014).

Because the questionnaire was originally created in English, a back-translation procedure was carried to ensure its validity. The English questionnaire was first translated into Chinese by a researcher,

and then translated back into English by another researcher. Further, the two English versions were compared to ensure the consistency of the content. When the initial questionnaire was developed, three experts in the IS field were invited to give feedback to the questionnaire. In addition, a pilot survey was conducted among twenty-five students with WeChat discontinuance experience. According to their feedback, modifications were made to improve the clarity and understandability of the questionnaire. All items were measured with a seven-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). The Appendix presents the items for each construct in the current study.

4.2 Data Collection

WeChat users in China were recruited as the research samples in this study. An online survey was delivered on Sojump, a widely used professional online survey platform in China. To ensure that respondents who answered the questionnaire met the research context, the question "Have you had an experience of WeChat discontinuance, such as reducing WeChat usage frequency, consciously controlling WeChat usage time, or temporarily not using WeChat?" was set at the beginning of the questionnaire. Only those who answered "Yes" were allowed to proceed. Respondents received a monetary reward of 5 CNY after they completed the questionnaire. The data collection process lasted for two weeks. A total of 516 responses were collected and scrutinized, and 54 responses with the same scores to all questions were removed. As a result, a valid sample of 462 responses was used for further analysis.

Table 4 shows the demographic characteristics and WeChat use experience of the 462 respondents. Among the respondents, 225 (48.7%) were male and 237 (51.3%) were female. The majority (80.9%) of respondents were aged between 18 and 28 years old. Also, 34.2% and 28.4% of the respondents used WeChat for 4-6 and 2-4 years, respectively. 66.5% used WeChat for 2-5 hours each day, while 62.1% used WeChat several times each day. The sample is appropriate for investigating social media discontinuance behavior as its gender and age distributions are consistent with the WeChat user population in China as reported by CNNIC in 2022 (CNNIC, 2022).

Table 4. Demographic characteristics and WeChat use experience of the valid samples

Variable	Category	Frequency (%)	Variable	Category	Frequency (%)
Gender	Male	225 (48.7)		1-2 years	54 (11.7)
	Female	237 (51.3)	WeChat	2-4 years	131 (28.4)
	18-22	269 (58.2)	usage	4-6 years	158 (34.2)
	23-28	105 (22.7)	experience	6-8 years	79 (17.1)
Age	29-39	41 (8.9)		Over 8 years	40 (8.7)
	40-49	34 (7.4)		Many times a day	81 (17.5)
	Over 49	13 (2.8)	WeChat	Several times a day	287 (62.1)
Average	Less than 1 hour	17 (3.7)	usage	Once a day	77 (16.7)
daily time	1-2 hours	54 (11.7)	frequency	Several times a week	12 (2.6)
spent on	2-5 hours	307 (66.5)		Once a week	5 (1.1)
WeChat	Over 5 hours	84 (18.2)			

5 Data analysis and results

SPSS 20.0 was used to test the nonresponse bias and common method bias. And partial least squares structural equation modeling (PLS-SEM) was employed to examine the measurement model and structural model. In comparison with covariance-based structural equation modeling (CB-SEM), PLS-SEM makes no assumptions about data distribution (Hair *et al.*, 2019; Shiau *et al.*, 2020), and maximizes the explained variance of endogenous variables (Hair *et al.*, 2022). In addition, PLS is more suitable for research focusing on a prediction perspective, with a complex structural model, or with a small sample

(Gefen *et al.*, 2011; Hair *et al.*, 2019; Shiau *et al.*, 2020). Thus, it is better suited to use the PLS-SEM technique in data analysis due to the relatively small sample size, the complex structure model, and the predictive focus in the current study.

5.1 Nonresponse bias

Considering the data was collected via the survey method, nonresponse bias was assessed (Gefen *et al.*, 2011). Following the procedure suggested by Armstrong and Overton (1977), this study compared the gender and age variables for the early and late 25% of respondents. Results from the Chi-Square tests show that there are no significant differences between different age and gender groups. Therefore, nonresponse bias is not a critical issue in the current study.

5.2 Common method bias

As with self-reported data, there is a potential concern for common method bias (Podsakoff *et al.*, 2003). Therefore, a Harman's one-factor test (Podsakoff and Organ, 1986) was conducted. The result from the principal component factor analysis shows that five factors with eigenvalues greater than 1 were extracted, and the highest variance explained by a single factor was 36.71%, which is lower than 50%, indicating that common method biases are unlikely a concern in this study (Podsakoff *et al.*, 2003).

5.3 Measurement model evaluation

The measurement model was evaluated via convergent and discriminant validity tests. Convergent validity can be assessed by examining Cronbach's alpha (Cronbach's α), composite reliability (CR) and average variance extracted (AVE) (Chin, 1998). As shown in Table 5, all values of CR and Cronbach's α for the constructs were greater than the threshold value of 0.7, and all AVE scores exceeded the recommended acceptable value of 0.5, indicating that the measurements have good reliability (Fornell and Larcker, 1981). In addition, as presented in Table 6, all item loadings for the items were over 0.7, implying that the measurements have acceptable convergent validity (Fornell and Larcker, 1981).

Table 5. Construct reliability and validity

	AVE	Cronbach's α	CR
DISC	0.882	0.933	0.957
EXH	0.862	0.920	0.949
EXU	0.786	0.864	0.916
HAB	0.832	0.900	0.937
REG	0.897	0.942	0.963

Furthermore, the discriminant validity of all constructs was measured by the Fornell–Larcker criterion, cross-loadings and Heterotrait-Monotrait (HTMT) ratio (Hair *et al.*, 2022; Henseler *et al.*, 2015). As shown in Table 6, discriminant validity was supported as the square root of AVE for each construct is greater than its correlation with other constructs (Fornell and Larcker, 1981). Table 6 also confirmed discriminant validity since each within-construct item loading is higher on the measured construct than the cross-loadings on the other items (Chin, 1998).

Table 6. Discriminant validity: Fornell-Larcker criterion and cross-loadings

	DISC	EXH	EXU	HAB	REG
Fornell-Larcker criterion					
DISC	**0.939**				
EXH	0.469	**0.929**			
EXU	0.124	0.374	**0.887**		
HAB	-0.099	0.072	0.443	**0.912**	
REG	0.407	0.452	0.334	0.035	**0.947**
Cross-loadings					

DISC1	0.915	0.461	0.149	-0.055	0.408
DISC2	0.953	0.433	0.097	-0.104	0.367
DISC3	0.949	0.423	0.101	-0.124	0.369
EXH1	0.442	0.896	0.266	0.047	0.370
EXH2	0.435	0.951	0.381	0.097	0.474
EXH3	0.431	0.938	0.385	0.052	0.410
EXU1	0.155	0.367	0.933	0.430	0.342
EXU2	0.086	0.350	0.933	0.460	0.298
EXU3	0.083	0.265	0.785	0.250	0.237
HAB1	-0.120	0.003	0.346	0.898	-0.019
HAB2	-0.104	0.055	0.363	0.932	-0.007
HAB3	-0.058	0.121	0.479	0.906	0.100
REG1	0.364	0.412	0.327	0.046	0.951
REG2	0.387	0.424	0.307	0.022	0.962
REG3	0.403	0.448	0.315	0.032	0.927

Note: The diagonal elements (in bold) are the square roots of AVE for each construct.

The values of HTMT ranged from 0.053 to 0.506 (see Table 7), which were below the threshold value of 0.85 (Henseler *et al.*, 2015). Thus, this analysis further confirms the discriminant validity for all constructs in the model.

Table 7. Discriminant validity: Heterotrait-Monotrait (HTMT)

	DISC	EXH	EXU	HAB	REG
DISC	/				
EXH	0.506				
EXU	0.135	0.410			
HAB	0.113	0.076	0.476		
REG	0.433	0.483	0.365	0.053	/

5.4 Path estimates

The structural model was examined using the bootstrapping technique. The results are shown in Figure 2. The model explained 29.0%, 14.0%, 23.6%, and 19.6% of the variance for social media discontinuance behavior, exhaustion, regret, and excessive use, respectively. Habit has a significant positive effect on excessive use (β=0.443, t=9.021), while it has a significant negative influence on discontinuance behavior (β=-0.132, t=2.530). Excessive use exerts a significant positive effect on exhaustion (β=0.374, t=8.436) and regret (β=0.192, t=3.924), respectively. Exhaustion significantly and positively affects regret (β=0.381, t=8.676) and discontinuance behavior (β=0.365, t=7.036), while regret has a significant positive influence on discontinuance behavior (β=0.248, t=4.608). Therefore, all the hypotheses are confirmed. Also, all control variables, i.e., age (β=0.008, t=0.153), usage time (β=-0.004, t=0.103), usage frequency (β=-0.067, t=1.705) and usage experience (β=-0.004, t=0.083) were found to have no significant effects on social media discontinuance behavior in this study.
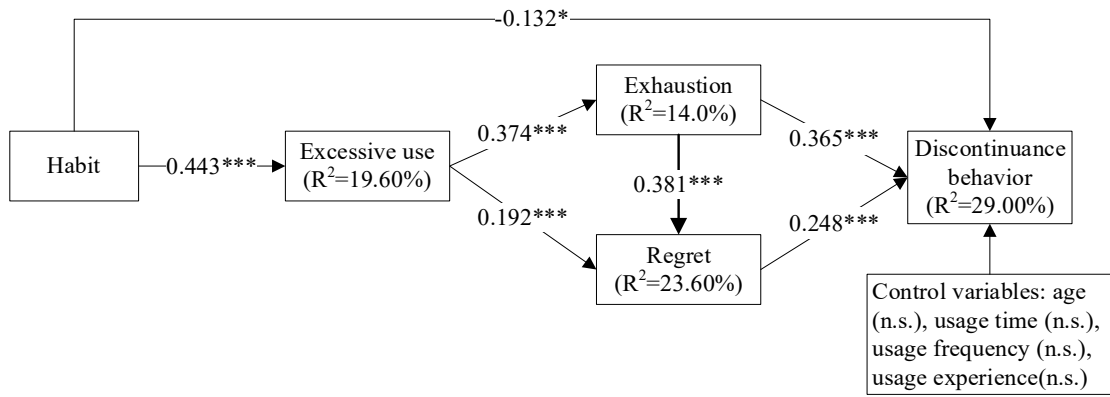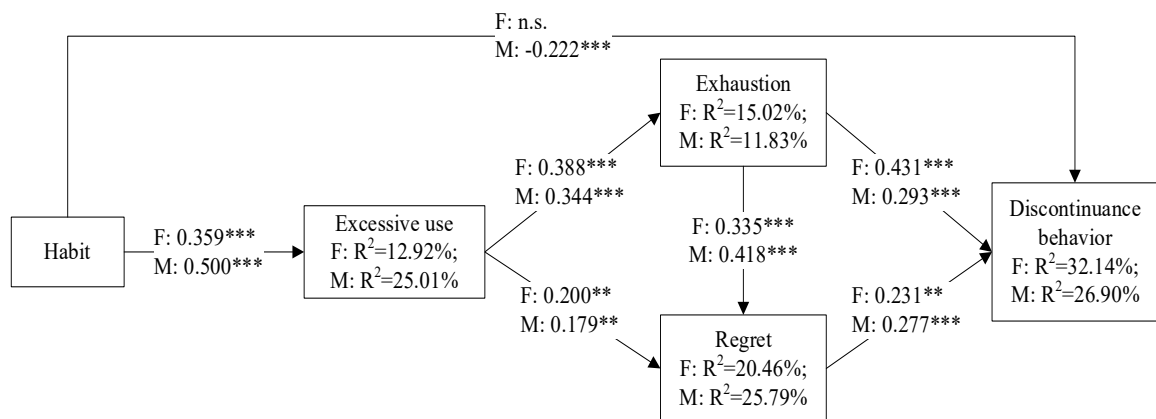
Fig. 2. The structural model (Note: ***p < 0.001; *p < 0.05; n.s.: not significant)

5.5 Post-hoc analysis

As prior studies generated different views on the role of gender in explaining social media discontinuance, a post-hoc analysis was further conducted to reveal the moderating effect of gender on all the proposed relationships (H1-H7) in the model. A multiple-group analysis with PLS was conducted to compare the differences in coefficients of the corresponding structural paths for the two sub-samples (Sarstedt *et al.*, 2011). The results are illustrated in Figure 3 and Table 8.

*Note: F: Female, M: Male; ***: p < 0.001, **: p < 0.01, n.s.: not significant*
Fig. 3. The structural model for female and male sub-samples

As shown in Table 8, gender only moderates the relationship between habit and social media discontinuance behavior significantly. Habit has no impact on social media discontinuance behavior among female users but exerts significant negative impact on discontinuance behavior among male users. However, gender has no significant moderating effect on the other relationships in the model, though for female users, the associations between exhaustion and discontinuance behavior, between excessive use and regret as well as exhaustion are stronger than for male users, whereas for male users, the associations between regret and discontinuance behavior, between exhaustion and regret, and between habit and excessive use are stronger than for female users.

Table 8. Path comparison statistics between females and males

Paths	Path Coefficients		p-Value
	Female (N1=237)	Male (N2=225)	
HAB -> EXU	0.359***	0.500***	0.155
EXU -> EXH	0.388***	0.344***	0.621
EXU -> REG	0.200**	0.179**	0.831
EXH -> REG	0.335***	0.418***	0.353
EXH -> DISC	0.431***	0.293***	0.183
REG -> DISC	0.231**	0.277***	0.653
HAB -> DISC	n.s.	-0.222***	0.046***

Note: ***$p < 0.001$; **$p < 0.01$; n.s.: not significant

6 Discussion

This study unveiled factors affecting social media discontinuance behavior based on the social cognition theory. As expected and consistent with prior studies (Cao and Sun, 2018; Maier *et al.*, 2015a), exhaustion and regret were found to exert positive effects on social media discontinuance behavior. Users with higher levels of exhaustion when using WeChat have an increased awareness of such unpleasant emotion. Consequently, they are more likely to reduce their WeChat usage. Moreover, when users experience exhaustion or the feeling of regret in their WeChat use, they alleviate that negative emotion by actions such as reducing WeChat use. In other words, WeChat users who perceive exhaustion or regret would like to alleviate such negative emotions by reducing their use. For example, users may reduce their WeChat use frequency or control the time they spend on it. Users may choose to ignore some information from WeChat friends or groups and selectively pay attention to useful information on WeChat. Users may also periodically stop using some WeChat functions, such as WeChat Moments, and resume using them later.

In addition, habit was revealed to be negatively associated with social media discontinuance behavior. This finding is in line with the study of Limayem *et al.* (2007). Habit enables users to use WeChat with less effort and cognition (Turel and Serenko, 2012). Consistent with the finding of Turel (2015), habit was found to have a significant effect on excessive use. Automatic and unconscious use reduces WeChat users' judgment in terms of behavior, which can lead to excessive use. When WeChat use becomes natural and habitual, they will use it in various contexts, e.g., waiting in line or handling with their work, which may eventually lead them to spend more time on it than expected.

Also, excessive use was found to have positive effects on exhaustion and regret, which is in line with prior findings of Luqman *et al.* (2017) and Dhir *et al.* (2016). Excessive use indicates that users use WeChat without expectations (Caplan and High, 2006). Consequently, users are more likely to feel exhaustion and regret from uncontrolled WeChat use. For example, when users spend more time than expected on WeChat, e.g., processing online friends' requests and browsing overloaded information or advertisements, their energy and cognition are consumed, leading to exhaustion or regret due to a lack of self-control (Du *et al.*, 2018).

Moreover, exhaustion was shown to significantly affect regret, which is consistent with the study of Nawaz *et al.* (2018). WeChat users with greater exhaustion are more likely to generate upward counterfactual thinking (Epstude and Roese, 2008). For example, they get such an idea as "if I didn't spend so much time on browsing WeChat Moment, or chat meaninglessly in WeChat Group, I wouldn't feel so exhausted". In such circumstances, WeChat users are more likely to feel regret.

Furthermore, the post-hoc analysis shows that gender moderates the relationship between habit and WeChat discontinuance behavior. The significant negative impact of habit on discontinuance behavior

among male users and no significant impact among female users could be due to the following reasons. Males are more rational. Thus, males tend to develop their WeChat use habit based on their needs. Males also tend to use cognitive reflection and reasoning to support their decisions (Forgas-Coll *et al.*, 2022). When males develop stronger habit of WeChat use based on their rational needs, they are less likely to discontinue their WeChat usage. In addition, the effects of excessive use on exhaustion and regret are stronger for female WeChat users. Female users tend to be more willing to use the virtual world for social and utilitarian values (Zhou *et al.*, 2014). Similarly, female users may use WeChat excessively for social or utilitarian purposes, e.g., gossiping in the WeChat Group for social support, and reading the recommended advertisements to get so-called shopping discounts. Such uncontrolled use gradually develops their feelings of exhaustion or regret, e.g., exhaustion from meaningless online chatting, or regret from wasting time on unexpected outcomes. Also, the effect of exhaustion on discontinuance is stronger among female WeChat users. Female users have a greater propensity to behave emotionally (Sun *et al.*, 2010). Therefore, when they perceive greater exhaustion, they are more likely to develop discontinuance behavior to avoid such negative emotion. For example, females prefer to reduce WeChat usage time, or only read advertisements of interest. Moreover, both the effect of exhaustion on regret and the influence of regret on discontinuance behavior are stronger among male WeChat users. Males use technologies with a task-oriented purpose (Venkatesh and Morris, 2000), indicating that they focus more on completing tasks and achieving goals in their WeChat use. When they perceive increased exhaustion from WeChat use, they are more likely to regret their previous actions than female users, e.g., they may expect better outcomes if they make other choices. The finding is consistent with prior research findings that male users experience more regret in an online context than female users (Madden, 2012). Therefore, they are more prone to discontinuance behavior. Also, the effect of habit on excessive use is stronger among male WeChat users than the female users. Male users who form a stronger habit of WeChat use are more likely to develop uncontrolled use, leading to excessive WeChat use.

7 Implications and limitations

7.1 Implications for research and practice

This study makes several contributions from the theoretical perspective. First, this study provides an explanation for user behavioral changes with regard to social media use based on social cognitive theory, i.e., from habitual use to excessive use and further to discontinuance. Prior studies have examined individual users' different behaviors regrading social media use, such as habitual use, excessive use, and discontinued usage (Maier *et al.,* 2015b; Soror *et al.*, 2015; Zheng and Lee, 2016). The findings of the current study provide an explanation for users' behavioral changes from habituated to excessive social media use and further to discontinuance behavior, when users make a negative assessment of their social media use, such as negative emotions of regret and exhaustion. Hence, this study advances the understanding of the transition from habituated social media use to excessive use further to discontinuance usage and enriches IS use lifecycle studies by revealing the associations among habitual use, excessive use, and social media discontinuance.

Second, this study points out the significant direct and indirect influences of habit on driving social media discontinuance from the social cognitive view. Prior studies have noted the direct effect of habit in affecting social media discontinuance (e.g., Huang *et al.*, 2019; Turel, 2015). The findings of the current study provide an explanation for not only the direct effect but also the indirect effect of habit on social media discontinuance by examining how habit prevents users from discontinuance directly and how habit leads to excessive use, which triggers negative emotions (e.g., regret and exhaustion) resulting in discontinuance. Therefore, this study helps elucidate the complex role of habit by explaining how habitual and excessive use of social media can lead to discontinuance via negative self-assessment of social media use.

Third, the study focuses on one of the most popular social media in China (i.e., WeChat). It revealed that gender moderates the relationship between habit and social media discontinuance behavior. Extant research generated controversial views on the effect of gender in affecting social media discontinuance (e.g., Maier *et al.*, 2015; Luqman *et al.*, 2018). The empirical evidence highlights the gender difference in the role of habit in predicting social media discontinuance, especially in the context of Chinese users. It therefore expands extant studies on social media research with regard to gender in the Chinese context.

This study also contributes to social media practitioners by offering advice on how to decrease user discontinuance and reduce user churn. First, the study highlights behavioral change with regard to social media use, i.e., from habituated and excessive use to discontinuance. It indicates that service providers should take measures to develop good user habits and encourage more rational use of social media among users. For example, providers could automatically inform users that they have been using social media for a certain length of time, or they could enable users to control their use based on their needs, e.g., by setting a timer. Second, this study reveals exhaustion and regret as vital drivers of social media discontinuance behavior. Hence, social media service providers should endeavor to relieve users' feelings of exhaustion and regret. For example, providers could reduce unnecessary information pushing, and enable users to personalize where they get information from and what kind of information it is. Third, this study reveals the significant moderating effect of gender with regard to the relationship between habit and social media discontinuance behavior. Therefore, social media service providers should consider the impact of gender and take different strategies to retain female and male social media users who have the habit of using social media. For example, social media providers could help male users to develop strong habit of using social media to prevent them from discontinuing their social media use, but this strategy should not be applied to female users as their habit has no impact on their social media discontinuance behavior.

7.2 Limitations and future research

Although this study offers valuable insights, several limitations should also be acknowledged. First, this study collected data from WeChat users in China. Cautions should be taken when generalizing the findings in the current study to other social media platforms, since discontinuance behavior linked to other social media platforms (e.g., microblog and social Q&A) may be driven by different factors due to their distinctive features. Further studies could focus on different social media and compare the similarities and differences in the factors affecting users' discontinuance. Second, this study considers prominent negative emotions derived from social media use (i.e., exhaustion and regret). However, according to the framework for emotions (Beaudry and Pinsonneault, 2010), emotions such as anxiety, stress, and envy may emerge with social media use (Nahl, 2007). Thus, future research could explore the possible influence of other negative emotions on social media discontinuance. Also, the research model explains only 23.6% of the variance of regret and 14.0% of the variance of exhaustion. Thus, future research could investigate the effects of other variables on the two constructs to provide a better understanding of the antecedents of the negative emotions of regret and exhaustion in social media use. Moreover, this study examines how excessive use leads to social media discontinuance behavior via the negative emotions of regret and exhaustion. Future research could also consider examining how regret and exhaustion moderate the relationship between excessive use and social media discontinuance behavior. Finally, social media users usually perform varying degrees of discontinuance behavior, such as short breaks, controlled use, and suspended use (Ravindran *et al.*, 2014). Distinct social media discontinuance behaviors could be driven by different factors. Further studies could consider specific social media discontinuance behaviors and reveal their antecedents.

Appendix. Measurement items

Construct	Items	Source
Habit (HAB)	HAB1: I use WeChat as a matter of habit.	Limayem *et*
	HAB2: Using WeChat has become automatic to me.	*al.* (2007)
	HAB3: Using WeChat is natural to me.	
Excessive Use (EXU)	EXU1: I think the amount of time I spend on WeChat is excessive.	Caplan and
	EXU2: I spend a usually large amount of time on WeChat.	High (2006)
	EXU3: I spend more time on WeChat than most other people.	
Exhaustion (EXH)	EXH1: I feel tired from my WeChat activities.	Ayyagari *et*
	EXH2: I feel drained from activities that require me to use WeChat.	*al.* (2011)
	EXH3: I feel burned out from my WeChat activities.	
Regret (REG)	REG1: I feel sorry for using WeChat frequently.	Kang *et al.*
	REG2: I regret using WeChat excessively.	(2013)
	REG3: I should have spent less time on WeChat.	
Discontinuance Behavior (DISC)	DISC1: I use WeChat far less than before.	Ravindran *et*
	DISC2: I take a short break from using WeChat and return later.	*al.* (2014)
	DISC3: I discontinue my use of WeChat for some time, but that does not mean that I will completely abandon the use of it.	

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