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Dual Processes, Buffering/Coping Effects, and Reciprocal Dynamics: The Social Demands–Resources Model of SNS Discontinuance

Completed Research Paper

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Abstract

Prior studies on social networking sites (SNSs) discontinuance focus on the demand side (e.g., social overload) while neglect the resource side. To address this problem, drawing upon the job demands–resources (JD–R) model, we develop the social demands–resources (SD–R) model of SNS discontinuance. Specifically, social overload and social support, as social demands and social resources, are proposed to affect discontinuance through the energetic process and the motivational process respectively. The buffering effect and the coping effect are proposed to explain the cross-links between the dual processes. We also propose the mechanism of reciprocal dynamics to capture the relationship between social support and social overload. Through a study of 479 WeChat users, the results confirm the proposed SD–R model of SNS discontinuance. The implications for research and practice are also discussed.

Keywords: Social networking sites discontinuance, social demands–resources model, buffering effect, coping effect, reciprocal dynamics

Introduction

Social networking sites, web-based services that enable individuals to construct profiles and connect with others, have been widely adopted and are ingrained in our daily lives (Boyd and Ellison 2007). Facebook, the world’s most popular SNS, had 2.41 billion monthly active users around the globe as of June 30, 2019 (Facebook 2019). More than 2.1 billion people use Facebook, Instagram, WhatsApp, or Messenger every day on average (Facebook 2019). Nevertheless, recent years have witnessed a trend of people leaving these social platforms (Lo 2019). For example, Facebook has seen an overall decrease in use — an estimated 15 million fewer US users than it did two years ago (CNET 2019). Such discontinuance behavior not only has concerned social networking service providers but also has drawn scholarly interest in understanding the rationale behind it — why users decide to terminate the use of a SNS (Turel 2016).

Rooted in technostress research, SNS discontinuance is generally regarded as people’s adaption strategy to avoid tiredness derived from SNS usage (Beaudry and Pinsonneault 2005), and the intensity of tiredness varies from a mild experience, i.e., fatigue (e.g., Zhang et al. 2016), to a severe one, i.e.,

exhaustion (e.g., Maier et al. 2015a). As a Facebook user said, “I was grossed out. I was too tired. I deactivated my account...” (Ravindran et al. 2014). These feelings of tiredness are thought to be produced by SNS-stress creators — demands or stimuli in the social networking environment, which a user lacks sufficient capabilities and resources to respond to (Maier et al. 2015b; Ragu-Nathan et al. 2008).

Prior work has revealed a logic chain from SNS-stress creators to exhaustion to discontinuance, but this stress process perspective sees only one side of the coin — a tired SNS user. Being exhausted due to excessive SNS stress actually reflects how deeply a user has already engaged with a SNS, and vice versa. In other words, exhaustion and engagement are closely intertwined, and thus exhaustion may not necessarily lead to SNS discontinuance. Users who are exhausted but involved are unlikely to discontinue using SNS. When fatigued users decide to leave SNS, environmental conditions contributing to user engagement will prevent them from leaving (Turel 2015), and in that case, they tend to find themselves locked in SNS. This “painful but locked-in” experience will be closer to the real psychological state of users who attempt to drag themselves out of SNS. Therefore, the single stress process should be considered in combination with an engaging process to advance the theoretical understanding of SNS discontinuance. In the absence of such understanding, users are unaware of the dilemma concerning SNS use and practitioners lack the know-how to compensate for the negative impacts of SNS stressors (Lo 2019).

This study applies the job demands–resources (JD–R) model as the theoretical lens to formulate a dual-process model of SNS discontinuance. The JD–R model proposes the mechanism of job characteristics (categorized as job demands or job resources) in a balanced approach — a combination of an energy depletion process whereby job demands (e.g., workload) cause exhaustion and a motivational process whereby job resources (e.g., social support) increase engagement (Demerouti et al. 2001). The JD–R model proposed in organizational settings can be applied to SNS due to the conceptual fit (exhaustion and engagement) and the applicability of both the classification scheme (demands versus resources) and the underlying mechanisms (the energetic process of overtaxing and the motivational process). Drawing on the JD–R model, this study correspondingly proposes that the demands and resources concerning SNS use drive an energetic process and a motivational process respectively, and the two pathways in turn lead to SNS discontinuance simultaneously. In particular, this study focuses on the social aspects of SNS, i.e., social demands and social resources, for the primary function of SNS is to socialize with people (Junglas et al. 2013), and the proposed model is termed as the social demands–resources (SD–R) model. Specifically, social demands and social resources are represented by social overload — excessive demands from online contacts, which requires a user’s attention and assistance (Maier et al. 2015a), and social support — the resources or aids exchanged between individuals through interpersonal ties within one’s social network (Oh et al. 2014), respectively. Thus, the first research question is:

RQ1: Will social overload and social support influence SNS discontinuance through the dual process?

Further, while the JD–R model suggests that job demands and job resources take effect together through their respective processes, i.e., the energetic process (job demands → exhaustion) and the motivational process (job resources → engagement), the cross-links between these two processes have not been well understood (i.e., job demands → engagement, and job resources → exhaustion) (Schaufeli and Bakker 2004). Within the context of SNS, it is also interesting to know the significance and valence of the cross-links. This study proposes the cross-links between the dual processes of social demands and social resources, specifically, the impact of social overload on engagement and the impact of social support on exhaustion, according to the buffering effect and the coping effect. Thus, the second research question is:

RQ2: Will the cross-links between the dual processes exist in the context of SNS?

Moreover, although prior studies assumed that social overload might be attributed to the social support received — if a user receives support from friends on a SNS, the user tends to feel obligated to fulfill others’ requests (e.g., Choi and Lim 2016; Maier et al. 2015a), the relationship between social support and social overload has never been investigated. This study proposes the reciprocal dynamics — SNS users who receive more social support will undertake more responsibilities for meeting others’ requests due to the norm of reciprocity, and end up suffering from social overload. Thus, the third research question is:

RQ3: Will social support affect social overload?

This study contributes to SNS literature in three ways. First, beyond the single stress process perspective, this study proposes a dual-process model of SNS discontinuance by blending social demands and social

resources concerning SNS use with the JD–R model. Second, this study explores the cross-links between the dual processes by considering the buffering effect and the coping effect. Third, this study proposes the reciprocal dynamics to capture the linkage between social support and social overload.

Theoretical Development

SNS Discontinuance Research

Discontinuance, as one of post-adoption behaviors (continued adoption versus discontinuance) in IS research, describes the extent to which users decide to quit using an information system after initial adoption (Parthasarathy and Bhattacharjee 1998). Such discontinuance decision is particularly relevant to hedonic IS (e.g., SNS) whose use is voluntary (Turel 2015). Indeed, SNS discontinuance has received increasing research attention, and previous relevant studies are summarized in Table 1.

Table 1. Theories and Factors Used in SNS Discontinuance Research		
Theory	Factors	References
The stress process (Stress-strain-outcome/ Reaction theory/ Stimulus-organism-response/ Stress coping model)	<ul style="list-style-type: none"> ♦ Social overload ♦ SNS-stress creators (complexity, uncertainty, invasion, disclosure, pattern, social overload) ♦ Social aspects (envy, information overload, social overload) ♦ Stressors (system feature overload, information overload, social overload) ♦ Environmental stimuli (excessive social use, excessive hedonic use, excessive cognitive use) ♦ Environmental stimuli (information overload, communication overload, social overload) ♦ Emotional/ SNS exhaustion ♦ Social network fatigue ♦ The threat to freedom of usage ♦ Dissatisfaction ♦ Frustration 	(Gao et al. 2018; Lo 2019; Maier et al. 2015a; Maier et al. 2015b; Shin and Shin 2016; Shokouhyar et al. 2018; Zhang et al. 2016)
The coping model of user adaptation	<ul style="list-style-type: none"> ♦ Switching-stress creators (transition costs, sunk costs, replacement overload) ♦ Switching-exhaustion 	(Maier et al. 2015b)
Social cognitive theory	<ul style="list-style-type: none"> ♦ Drivers (guilt feelings, discontinuance self-efficacy) ♦ Inhibitors (habit, satisfaction) ♦ Addiction 	(Turel 2015)
Technology acceptance model	<ul style="list-style-type: none"> ♦ Technology aspects (perceived usefulness, perceived ease of use, perceived enjoyment) 	(Wirth et al. 2015)
Theory of planned behavior	<ul style="list-style-type: none"> ♦ Subjective norms regarding discontinuance ♦ Attitude toward discontinuance ♦ Perceived behavioral control regarding discontinuance 	(Luqman et al. 2018; Turel 2016)

The mainstream of prior work explains SNS discontinuance from the theoretical perspective of the stress process — SNS stressors induce fatigue or exhaustion as a psychological reaction, which in turn produces discontinuous usage intentions as a behavioral response (e.g., Maier et al. 2015b). This dominant reasoning regards discontinuance merely as a consequence of the “dark side” of SNS use. In fact, when SNS stressors threaten an individual away, other factors of the environment are playing a role in keeping the person engaged (Turel 2016), and thus should be included in the determinants of SNS discontinuance.

Regarding several studies that considered protective factors which may counterbalance SNS strain, Maier et al. (2015b) found that discontinuance usage intentions are reduced by switching-stress creators which are related to more than one information system, making the discussion go beyond the scope of simple discontinuance within a SNS. Turel (2015) investigated two inhibitors of SNS discontinuance intentions — habit and satisfaction, but did not propose an overarching framework to cover these factors. Wirth et al. (2015) examined the negative impacts of perceived usefulness, perceived ease of use, and perceived enjoyment on SNS discontinuance, according to the technology acceptance model (TAM). However, as TAM has also been widely used to explain continued adoption (e.g., Jin 2013), suggesting that this theory is unable to distinguish discontinuance from continuance by shedding light on the uniqueness of discontinuance. In summary, these theoretical frameworks are conceptually inadequate for explaining how the dual characteristics of the social networking environment influence SNS discontinuance. Hence, to fill the research gap, this study draws on a dual-process model, specifically, the job demands–resources model in job stress research as the theoretical foundation of this study.

Job Demands–Resources Model as an Overarching Framework

The job demands–resources (JD–R) model combines two research traditions in occupational health psychology, i.e., job stress and work motivation, to study both the detrimental and beneficial impacts of job characteristics on employee well-being across occupations (Bakker and Demerouti 2014). It suggests that while every occupation may have its own contributing factors to employee well-being, these factors can be generally categorized as job demands or job resources. Job demands refer to a job's physical, mental, organizational, or social aspects that require constant physical and/or mental effort and are therefore related to certain physiological and psychological costs, such as role ambiguity and workload. Job resources refer to those that may help to achieve work goals, reduce physiological and psychological costs, and promote personal growth, such as autonomy and social support (Demerouti et al. 2001).

Job demands and job resources initiate an energy depletion process and a motivational process respectively (Bakker and Demerouti 2017). Job demands sap energy and the depletion of energy gets employees worn out, resulting in poor health and negative organizational outcomes, while job resources fulfill psychological needs and foster employees' growth, learning, and development, leading to increased well-being and positive organizational outcomes (Bakker et al. 2014). Extensive empirical evidence has supported the main effects of job demands on exhaustion (the energetic process) and job resources on work engagement (the motivational process) (Crawford et al. 2010; Lesener et al. 2019; Nahrgang et al. 2011). Further research has proved the explanatory power of the JD–R model to various organizational outcomes — both positive outcomes, such as performance and organizational commitment, and negative outcomes, such as health complaints and turnover intentions (Bakker and Demerouti 2017).

The JD–R model can be applied to the context of SNS for several reasons. First, the two basic concepts in the JD–R model (i.e., exhaustion and engagement) are the theoretical foundations of SNS exhaustion and SNS engagement respectively. The definition of SNS exhaustion is derived from “exhaustion” used in IS stress research (Maier et al. 2015b), which is conceptualized based on organizational stress research (Tarafdar et al. 2019). The definition of SNS engagement is derived from “engagement” used in online games studies (Turel and Serenko 2012), which is conceptualized based on “work engagement” used in organizational research (Cheung et al. 2011). Second, the two basic sets in the JD–R model (i.e., job demands and job resources) pertain to any job demand and any job resource in various work settings, and in essence outline a heuristic classification scheme (demands versus resources), which is also appropriate for classifying environmental conditions of SNS because demands and resources have their respective counterparts in the context of SNS. Demands are conceptually equivalent to stressors, which correspond to SNS stressors (Ragu-Nathan et al. 2008). As for resources, social resources are embedded in social relationships and interactions within one's online social network, similar to those available in offline contexts (Ellison et al. 2014). Third, the dual processes which the JD–R model holds (i.e., the energetic process and the motivational process) are suitable for the context of SNS as well. The energetic process is explained by Hockey (1993)'s control model of demand management which suggests that individuals employ a performance-protection strategy (i.e., greater concern or increased subjective effort) under stress (Demerouti et al. 2001). The motivational process is explained by theories about health promotion and maintenance (e.g., Antonovsky 1987) in psychological studies on health and illness, which suggest that people use psychological, social, and cultural resources to manage stress and stay healthy (Demerouti

et al. 2001). The mechanisms underlying the dual processes exhibit universal behavioral patterns irrespective of contexts, which can be applied to a wide range of contexts including SNS.

Based on the JD–R model and the social aspects of SNS, this study proposes the social demands–resources (SD–R) model of SNS discontinuance. The SD–R model argues that social demands drain people’s energy and thus result in SNS exhaustion (an energetic process) which in turn positively affects SNS discontinuance, and meanwhile, social resources exert motivational potential and thus lead to SNS engagement (a motivational process) which in turn negatively affects SNS discontinuance. Specifically, social demands and social resources are represented by social overload and social support respectively.

The coping model of user adaptation in IS research suggests that when individuals feel threatened by an information system, they will implement adaptation strategies such as ending its use to exit the situation, to restore emotional stability, and to minimize the negative outcomes (Beaudry and Pinsonneault 2005). SNS exhaustion refers to the exhausting state due to the usage of a particular SNS — a situation sounds like “I got tired of minding everybody else’s business.” (Maier et al. 2015a). Hence, when users feel emotionally overextended and exhausted by their online social network, they may intend to stop using it as a coping strategy to avoid the problematic situation (Maier et al. 2015b). Hence, we hypothesize that:

H1: SNS exhaustion is positively associated with SNS discontinuance.

The theory of engagement in the marketing literature suggests that engaged customers experience positive emotion and satisfaction, and thus will add value to firms through direct or indirect contribution (Pansari and Kumar 2017). In the domain of IS, Ray et al. (2014) suggested that engaged online community members are cognitively and emotionally energized, and thus are likely to make knowledge contributions and spread positive word of mouth. Online game studies found that engaged players are fully activated and tend to increase their spending on games (e.g., Cheung et al. 2015). SNS engagement refers to a motivational state of vigor, dedication, and absorption described when an individual uses a particular SNS — imagine a person keeps scrolling down the Facebook news feed, reading and replying, and is happily engrossed in it (Cheung et al. 2015). Vigor is the level of mental resilience and energy while using a SNS, the willingness to invest effort in it, and the persistence in the face of difficulties. Dedication is the level of involvement in a SNS and a sense of challenge, enthusiasm, and significance. Absorption is being fully concentrated on a SNS (Cheung et al. 2015). Engaged users are willing to invest effort in a SNS (vigor), are strongly involved in SNS activities (dedication), and are absorbed while using it (absorption), and thus this positive state of mind will promote their attachment to the platform (i.e., a low tendency to leave). Turel and Serenko (2012) also suggested that highly engaged users are more enthusiastic about the use of SNS and tend to make its use a central part of their lives. Therefore, we hypothesize that:

H2: SNS engagement is negatively associated with SNS discontinuance.

According to the JD–R model, demands are “the things that have to be done” (Schaufeli et al. 2009), and drive an energy depletion process which leads to exhaustion (Bakker et al. 2014). Social overload means excessive social demands that require a SNS user’s attention and answers, such as messages directly asking for help (e.g., “My boyfriend dumped me. What should I do?”) or posts that pressure people to give a like (e.g., “Happy Birthday to me!”) (Maier et al. 2015b). As demands within one’s online social network, social overload drains a user’s energy when meeting these overwhelming social demands takes high effort, and thus the user exposed to social overload will be chronically exhausted. Stated formally:

H3: Social overload is positively associated with SNS exhaustion.

The JD–R model suggests that resources fulfill basic human needs, such as the needs for autonomy, competence, and relatedness, and the satisfaction of these psychological needs activates a motivational process which leads to engagement (Bakker et al. 2014). Social support is defined as the perceived capability of interpersonal resources that can meet a person’s needs stressful events elicit (Cohen and Wills 1985; Liang et al. 2011). Social support is a multiple-dimensional concept and its main dimensions are tangible (or instrumental) support, informational support, and emotional support. Tangible support is the provision of material aid such as financial assistance. Informational support is the provision of pertinent information intended to help a person solve problems or difficulties (e.g., advice or guidance). Emotional support is the expression of caring, love, and empathy (Liang et al. 2011). The last two dimensions are more common in online social networks, for communications via SNS are virtual and online social support is intangible in nature (Hajli 2014; Liang et al. 2011; Liu et al. 2018). A simple

example of social support is the comments expressing care on a typical Facebook post which arouses pity (e.g., “I broke my leg yesterday.”). Therefore, as resources within SNS, social support generates motivation and increases a user’s willingness to dedicate time and effort to a SNS, and the user tends to engage with it. Previous studies on SNS also suggest that social support evokes positive moods (e.g., happiness) (Huang 2016; Lo 2019), brings a sense of belonging (Kuem et al. 2017), and encourages individuals to be more active in SNS activities (Chen and Lee 2013; Gan 2017). Thus, we hypothesize that:

H4: Social support is positively associated with SNS engagement.

Buffering and Coping Effects to Explain the Cross-Links between Dual Processes

Although the original JD–R model considers the energetic process and the motivational process as two independent processes (Demerouti et al. 2001), the follow-up research pays attention to the potential cross-links between these two processes (e.g., Crawford et al. 2010; Schaufeli and Bakker 2004). Within the research context of SNS, we propose that social support negatively affects SNS exhaustion owing to the buffering effect and social overload positively affects SNS engagement owing to the coping effect.

The conservation of resources theory suggests that individuals with a larger pool of resources can meet demands more easily and protect themselves from becoming used up, which is termed as the buffering effect of resources (Crawford et al. 2010). Meta-analytic evidence showed that job resources, particularly social support, are negatively associated with exhaustion (Halbesleben 2006; Lesener et al. 2019). Similarly, social support can increase vitality and help SNS users recover from the energy depletion, and thus mitigates exhaustion. In other words, when social support is sufficient, users are less likely to feel exhausted even if they encounter high degrees of social demands and have to expend a large amount of energy, while they are more likely to feel so when social support is lacking. Lo (2019) also suggested that receiving social support improves psychological functioning and reduces stress. Thus, we hypothesize that:

H5: Social support is negatively associated with SNS exhaustion.

According to the transaction theory of stress or coping theory (Lazarus and Folkman 1984), individuals appraise demands as either challenging or threatening and deal with them with different coping strategies. Cavanaugh et al. (2000) further distinguished challenge demands from hindrance demands, and challenge demands “have the potential to promote mastery, personal growth, or future gains” while hindrance demands “have the potential to thwart personal growth, learning, and goal attainment” (Crawford et al. 2010, p. 836). Consequently, challenge demands tend to trigger positive emotions and an active or problem-solving style of coping, which leads to more energy investment or engagement. In contrast, hindrance demands tend to trigger negative emotions and a passive or emotional style of coping, which results in less energy investment or disengagement. Therefore, challenge demands are expected to be positively associated with engagement, while hindrance demands are expected to be negatively associated with engagement (Crawford et al. 2010). Social overload is regarded as a challenge demand rather than a hindrance demand, for social overload has possible returns in the future (Li et al. 2015). Fulfilling social demands can improve people’s relationship with others, which leads to a future flow of benefits, such as superior access to information and power, and these benefits can help them achieve personal goals (Shin and Shin 2016). Hence, as a challenge demand, social overload will encourage SNS users to adopt an active or problem-solving coping style that increases engagement. Lo (2019) also found that some SNS users react to social overload with greater SNS activities. Hence, we hypothesize that:

H6: Social overload is positively associated with SNS engagement.

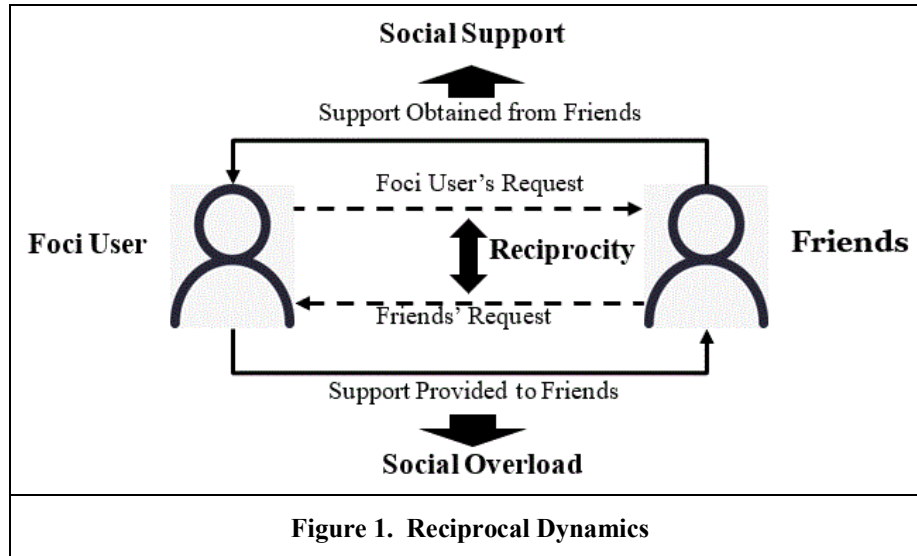
Reciprocal Dynamics Connecting Social Support and Social Overload

The norm of reciprocity refers to a sense of mutual indebtedness which suggests that a benefit granted now should be repaid in the future (Gouldner 1960). In other words, individuals should reciprocate the favorable treatment they receive from others. This social norm is the underlying principle of an implicit psychological contract widely present in a social exchange process (Kuem et al. 2017).

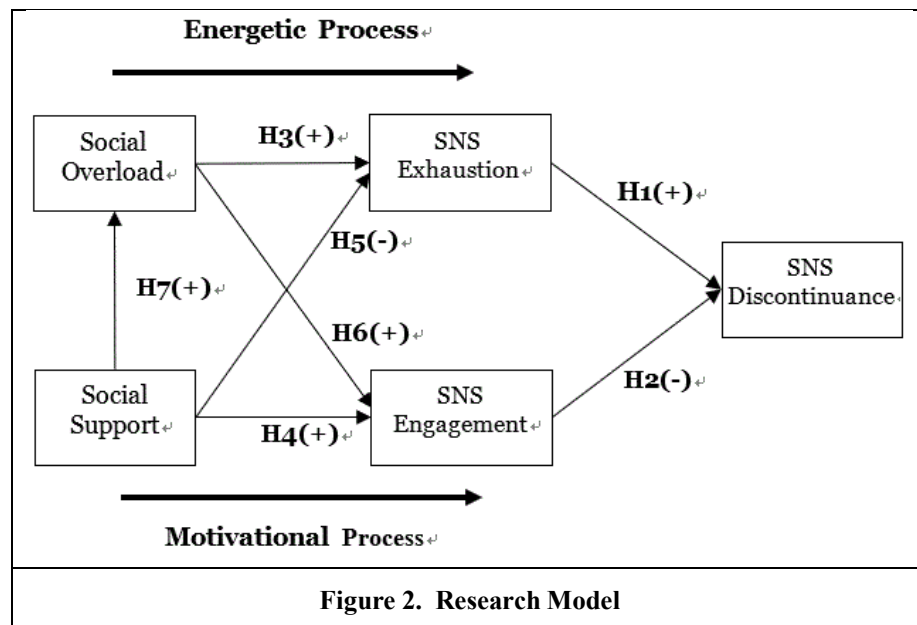
Based on the principle of reciprocity and the social exchange nature of enacted social support — a process of giving and receiving social support, the reciprocal dynamics is proposed, as shown in Figure 1. The foci user can send requests for social support to his/her friends and obtain social support from them. Sending

more requests to friends and receiving more social support implies that the foci user will have more duties to respond to his/her friends' requests for social support according to the principle of reciprocity (Choi and Lim 2016; Maier et al. 2015a), and thus the foci user is likely to receive more social requests from his/her social network, which threatens to exceed the foci user's ability to handle and will transform into his/her social overload. Such theorizing leads to the following hypothesis:

H7: Social support is positively associated with social overload.



The research model is shown as Figure 2 which illustrates two parallel processes of social support and social overload, the buffering effect of social support and the coping effect of social overload existing in the cross-links, and the reciprocal dynamics between social support and social overload.



Research Method

Research Setting

To examine our research model, we conducted an online survey in the context of WeChat, a social communication platform developed by Tencent. Launched in 2011, WeChat has become China's most popular online social network. As of the first quarter of 2018, it has more than one billion monthly active users including 63 million people (about 6.3%) aged 55 years and above, indicating a relatively balanced user structure (CAICT 2018). Moreover, WeChat has become an indispensable part of life in China. It contributed 34% to the mobile data traffic in China, which exceeded Facebook's contribution in North America (14.4%) (CAICT 2018). Thus, WeChat is suitable for our study.

Measures

The measurement items were adapted from well-established and reliable research instruments and were designed using seven-point Likert scales ranging from 1 (= strongly disagree) to 7 (= strongly agree). Social support and SNS engagement were modeled as superordinate reflective second-order constructs with their respective dimensions. The dimensions of social support (informational social support and emotional social support), the dimensions of SNS engagement (vigor, dedication, and absorption), social overload, SNS exhaustion, and SNS discontinuance were all measured using reflective indicators. The measurement items for the dimensions of social support were adapted from Liang et al. (2011) and SNS engagement from Cheung et al. (2015). The instrument for social overload, SNS exhaustion, and SNS discontinuance was adopted from Maier et al. (2015a). Since the items were translated from English into Chinese, we invited four Ph.D. students to verify the translation and based on their feedbacks the questionnaire was modified to be clearer. The measurement items are listed in Table 2.

Table 2. Constructs and Items		
Constructs	Items	References
Social support	ISS1: On WeChat, some people would offer suggestions when I needed help. ISS2: When I encountered a problem, some people on WeChat would give me information to help me overcome the problem. ISS3: When faced with difficulties, some people on WeChat would help me discover the cause and provide me with suggestions. ESS1: When faced with difficulties, some people on WeChat would be on my side with me. ESS2: When faced with difficulties, some people on WeChat comforted and encouraged me. ESS3: When faced with difficulties, some people on WeChat listened to me talk about my private feelings. ESS4: When faced with difficulties, some people on WeChat expressed interest and concern in my well-being.	(Liang et al. 2011)
SNS engagement	DEV1: I feel strong and vigorous when I am using WeChat. DEV2: I devote a lot of energy to WeChat. DED1: I am enthusiastic in WeChat. DED2: I am excited while using WeChat. DEA1: Time flies when I am using WeChat. DEA2: Using WeChat is so absorbing that I forget about everything else.	(Cheung et al. 2015)
Social overload	SO1: I take too much care of my friends' well-being on WeChat. SO2: I deal too much with my friends' problems on WeChat. SO3: My sense of being responsible for how much fun my friends	(Maier et al. 2015a)

	have on WeChat is too strong. SO4: I am too often caring for my friends on WeChat. SO5: I pay too much attention to the posts of my friends on WeChat. SO6: I congratulate WeChat friends as a consequence of the birthday reminder, although I would not congratulate them in real life.	
SNS exhaustion	EXH1: I feel drained from activities that require me to use WeChat. EXH2: I feel tired of my WeChat activities. EXH3: Using WeChat is a strain for me. EXH4: I feel burned out from my WeChat activities.	(Maier et al. 2015a)
SNS discontinuance	SNSD1: I will unregister in WeChat. SNSD2: In the future, I will use another social network site. SNSD3: In the future, I will use WeChat far less than today.	(Maier et al. 2015a)

Data Collection Procedure

An online survey was conducted to gather the data, and the targeted subjects were WeChat users. We purchased a sampling service from Sojump.com (a third-party survey provider in China). Sojump.com first drew a random sample from its own panel, which consists of 2.6 million Chinese population equally distributed across sex and aged from under 20 to above 40 and varied across occupations. For a detailed demographic description of its panel, see Sojump.com (Sojump.com 2019). Then, messages containing the link to the study's online survey were sent out to all the panelists selected to participate in our study. After the data was collected, Sojump.com sent us the data which contained participant ID numbers and demographic characteristics (gender, age, and education level). To disqualify non-users from our survey, we used the screening question and only WeChat users were eligible to fill in the survey. Each respondent was rewarded with RMB 10 (approximately \$1.5). After removing the duplicates and the low-quality responses with inadequate time duration (less than an estimated questionnaire filling time, i.e., six minutes) and/or a same score for a series of questions (i.e., ten questions), a total of 479 valid responses were used for analysis. Table 3 shows the demographic characteristics.

Table 1. Sample Demographics			
Variable	Level	Frequency (n=479)	Percentage (%)
Gender	Male	267	55.7
	Female	212	44.3
Age	Under 18	13	2.7
	18-25	169	35.3
	26-30	115	24.0
	31-40	141	29.4
	41-50	38	7.9
	Above 50	3	0.6
Education level	High school or lower	45	9.4
	Two-year college	74	15.4
	Undergraduate	327	68.3
	Postgraduate or higher	33	6.9
Usage experience	Less than 3 months	8	3.8
	3-6months	19	4.0
	6-12 months	66	13.8
	More than 1 year	376	78.5

Usage frequency per day (in hours)	Less than 1	162	33.3
	1-2	157	32.8
	2-4	112	23.4
	More than 4	48	10.0

Data Analysis

To analyze the data, the partial least squares (PLS) method, specifically SmartPLS 2.0, was used. PLS has several advantages. Compared with covariance-based (CB) SEM, PLS does not impose a restriction on the distribution of the data and thus is appropriate for relatively small samples (Hair et al. 2011). Additionally, while CB-SEM is regarded as a suitable technique to confirm theories, PLS provides a good approximation of CB-SEM regarding final estimates (Hair et al. 2011). Hence, PLS was used to estimate the measurement model and the structural model following the two-stage approach (Hair et al. 2010).

Measurement Model

To validate the measurement model, we assessed reliability, convergent validity, and discriminant validity of the first-order constructs as these first-order constructs were measured by reflective indicators. The reliability was tested by average variance extracted (AVE), composite reliability (CR), and Cronbach's α . AVE should be higher than 0.5, CR should be higher than 0.7, and Cronbach's α should be higher than 0.7 (Fornell and Larcker 1981). As shown in Table 4, these criteria are met.

Table 4. Reliabilities					
	Mean	SD	AVE	CR	Cronbach's α
ISS	5.017	1.170	0.853	0.946	0.914
ESS	5.215	1.144	0.832	0.952	0.933
DEV	4.236	1.304	0.865	0.928	0.844
DED	4.473	1.328	0.912	0.954	0.904
DEA	4.414	1.256	0.813	0.897	0.770
SO	4.125	1.216	0.775	0.945	0.927
EXH	3.116	1.258	0.805	0.943	0.919
SNSD	3.042	1.219	0.745	0.898	0.828

Note: SD = Standard deviation, ISS = Social support – informational, ESS = Social support – emotional, DEV = SNS engagement – vigor, DED = SNS engagement – dedication, DEA = SNS engagement – absorption, SO = Social overload, EXH = SNS exhaustion, SNSD = SNS discontinuance.

Convergent validity was assessed using the loadings of measurement items on their corresponding constructs. The factor loading of each indicator should be higher than 0.7 (Barclay et al. 1995). As shown in Table 5, all are satisfied, suggesting adequate convergent validity.

Table 5. Loadings and Cross-loadings								
	ISS	ESS	DEV	DED	DEA	SO	EXH	SNSD
ISS1	0.923	0.679	0.540	0.543	0.557	0.461	-0.204	-0.269
ISS2	0.934	0.675	0.514	0.519	0.547	0.447	-0.213	-0.253
ISS3	0.913	0.682	0.563	0.551	0.562	0.463	-0.169	-0.232
ESS1	0.649	0.922	0.491	0.526	0.497	0.378	-0.180	-0.286
ESS2	0.671	0.917	0.509	0.546	0.506	0.413	-0.217	-0.277
ESS3	0.706	0.895	0.557	0.554	0.541	0.470	-0.174	-0.266

ESS4	0.655	0.914	0.521	0.556	0.485	0.422	-0.189	-0.292
DEV1	0.575	0.572	0.933	0.785	0.727	0.580	-0.108	-0.240
DEV2	0.509	0.486	0.927	0.740	0.683	0.653	-0.027	-0.195
DED1	0.549	0.585	0.777	0.955	0.714	0.636	-0.143	-0.274
DED2	0.563	0.557	0.790	0.956	0.722	0.655	-0.090	-0.260
DEA1	0.625	0.569	0.656	0.665	0.898	0.519	-0.123	-0.248
DEA2	0.462	0.437	0.711	0.691	0.905	0.626	0.051	-0.145
SO1	0.394	0.389	0.515	0.522	0.515	0.856	0.091	-0.043
SO2	0.477	0.429	0.572	0.598	0.549	0.869	-0.001	-0.154
SO3	0.428	0.400	0.595	0.595	0.564	0.886	0.079	-0.115
SO4	0.450	0.390	0.622	0.633	0.590	0.910	0.058	-0.101
SO5	0.424	0.421	0.607	0.622	0.580	0.878	-0.011	-0.159
EXH1	-0.163	-0.149	-0.088	-0.121	-0.023	0.003	0.834	0.477
EXH2	-0.240	-0.226	-0.152	-0.194	-0.109	-0.010	0.915	0.498
EXH3	-0.165	-0.175	-0.013	-0.068	0.004	0.066	0.911	0.507
EXH4	-0.190	-0.195	-0.016	-0.059	-0.008	0.105	0.924	0.508
SNSD1	-0.244	-0.302	-0.131	-0.174	-0.144	-0.067	0.504	0.823
SNSD2	-0.256	-0.265	-0.273	-0.318	-0.247	-0.185	0.446	0.871
SNSD3	-0.206	-0.228	-0.202	-0.231	-0.170	-0.089	0.485	0.894

Note: ISS = Social support – informational, ESS = Social support – emotional, DEV = SNS engagement – vigor, DED = SNS engagement – dedication, DEA = SNS engagement – absorption, SO = Social overload, EXH = SNS exhaustion, SNSD = SNS discontinuance.

Discriminant validity was assessed by comparing the square root of AVE for each construct with the correlations between itself and the others. The former should be greater than the latter (Fornell and Larcker 1981). Table 6 shows that these square root values are higher than the corresponding construct correlations, indicating adequate discriminant validity.

Table 6. Correlation Matrix								
	ISS	ESS	DEV	DED	DEA	SO	EXH	SNSD
ISS	0.924							
ESS	0.735	0.912						
DEV	0.583	0.570	0.930					
DED	0.582	0.598	0.821	0.955				
DEA	0.601	0.556	0.758	0.752	0.902			
SO	0.495	0.462	0.662	0.676	0.636	0.880		
EXH	-0.212	-0.208	-0.074	-0.122	-0.038	0.048	0.897	
SNSD	-0.272	-0.307	-0.234	-0.279	-0.217	-0.132	0.554	0.863

Note: (1) ISS = Social support – informational, ESS = Social support – emotional, DEV = SNS engagement – vigor, DED = SNS engagement – dedication, DEA = SNS engagement – absorption, SO = Social overload, EXH = SNS exhaustion, SNSD = SNS discontinuance. (2) Boldfaced diagonal elements are the square roots of AVEs.

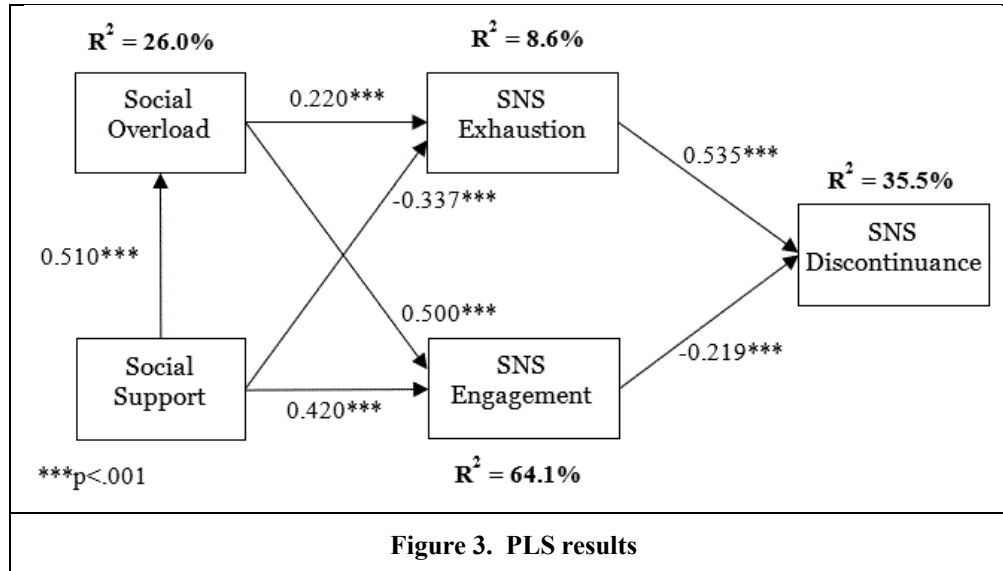
The weights for the dimensions of social support, specifically ISS ($w = 0.454$, $p < 0.01$) and ESS ($w = 0.618$, $p < 0.01$), and the dimensions of engagement, specifically DEA ($w = 0.331$, $p < 0.01$), DED ($w = 0.386$, $p < 0.01$), and DEV ($w = 0.366$, $p < 0.01$), were all significant. The Variance Inflation Factors (VIF)

values for the first-order constructs ranged from 2.162 to 3.544, below the recommended threshold 5, suggesting that multicollinearity was not a serious issue (Petter et al. 2007).

According to the method proposed by Podsakoff et al. (2003), we evaluated the common method bias by comparing the variances explained by trait factors and the method factor. The result showed that trait factors explained 81.8% of the total variance while the method factor explained only 0.3% of the total variance, indicating that common method bias was not a major concern.

Structural Model

PLS results of the structural model are shown as Figure 3. The results reveal that SNS exhaustion ($\beta = 0.535$, $t = 12.669$, $p < 0.001$) and SNS engagement ($\beta = -0.219$, $t = 4.509$, $p < 0.001$) are significantly correlated with SNS discontinuance, supporting H1 and H2. Social overload has a significant effect on SNS exhaustion ($\beta = 0.220$, $t = 4.403$, $p < 0.001$) and social support significantly affects SNS engagement ($\beta = 0.420$, $t = 12.361$, $p < 0.001$), supporting H3 and H4. Social support was found to negatively affect SNS exhaustion ($\beta = -0.337$, $t = 7.144$, $p < 0.001$), while social overload was found to positively affect SNS engagement ($\beta = 0.500$, $t = 15.801$, $p < 0.001$), confirming the buffering effect of social support (H5) and the coping effect of social overload (H6). Social support was found to positively affect social overload ($\beta = 0.510$, $t = 14.948$, $p < 0.001$), supporting H7. The model explains 26%, 8.6%, 64.1%, and 35.5% of the variances of social overload, SNS exhaustion, SNS engagement, and SNS discontinuance respectively.



Regarding the two paths through which social support affects SNS engagement, both the direct path ($\beta = 0.420$) and the indirect path through social overload ($\beta = 0.255$) were positive, and the total effect was positive ($\beta = 0.675$). In contrast, the impact of social support on SNS exhaustion was twofold — a negative and direct effect ($\beta = -0.337$), plus a positive and indirect effect through social overload ($\beta = 0.112$), and the total effect was negative ($\beta = -0.225$). Therefore, social support influences SNS discontinuance not only through its effect on SNS engagement ($\beta = -0.148$) but also through its effect on SNS exhaustion ($\beta = -0.120$), and its total effect on SNS discontinuance was negative ($\beta = -0.268$). Social overload also affects SNS discontinuance through both SNS exhaustion and SNS engagement — its effect through the former was positive ($\beta = 0.118$) while through the latter was negative ($\beta = -0.110$), and the total effect of social overload on SNS discontinuance was marginally positive ($\beta = 0.008$).

Discussion of Findings

This study proposes the social demands–resources model of SNS discontinuance and the key research findings are as follows. First, comparable to the JD–R model validated in the organizational context (Bakker and Demerouti 2017), the results confirm two mechanisms of SNS environmental conditions, i.e.,

an energetic process from social overload to SNS exhaustion in parallel with a motivational process from social support to SNS engagement. These two processes in turn lead to SNS discontinuance, indicating that a SNS user's discontinuous usage intention is influenced by both the feelings of exhaustion derived from social overload in SNS, which corroborates prior SNS research on stressors and exhaustion (e.g., Cao and Sun 2018; Maier et al. 2015a), and the level of engagement with SNS as a result of social support within one's online social network, which is in line with previous studies on SNS that examined the positive impacts of social support (Chen et al. 2013; Huang 2016; Kuem et al. 2017; Lo 2019), and the role of user engagement in online communities and online games (Cheung et al. 2015; Ray et al. 2014).

Second, beyond the parallel mechanisms of social demands and social resources, this study also tests the cross-links between the dual processes. Specifically, while social support is found to negatively affect SNS exhaustion due to the buffering effect, consistent with the findings of prior work which draws on theories in the field of medicine and suggests that online social support can reduce stress (Lo 2019), social overload is found to positively affect SNS engagement due to the coping effect, corroborating Lo (2019)'s unexpected result that social overload relates to greater SNS activities. Combined the dual processes with the cross-links, the findings reveal that social overload can indirectly affect SNS discontinuance in two contrasting ways: a positive way through exhaustion and a negative way through engagement. Although social support also affects SNS discontinuance through exhaustion and engagement, both effects are negative. In other words, social support negatively affects SNS discontinuance overall, while the impact of social overload on SNS discontinuance may be neutralized due to the two opposite mechanisms.

Third, this study demonstrates the positive relationship between social support and social overload, indicating that social support may be transformed into social overload due to the reciprocal dynamics. In other words, the exposure to excessive online social requests results from the social support received from one's online social network, which supports the assumption in prior work (Choi and Lim 2016; Maier et al. 2015a). The relationship between social support and social overload further reveals not only positive impacts of social support on SNS engagement in both a direct way and an indirect way through social overload, but also two opposite impacts of social support on SNS exhaustion: one negative and direct effect, and the other positive and indirect effect through social overload.

Implications for Research

This study makes three key theoretical contributions to SNS research. First, this study contextualizes the JD–R model in the context of SNS and establishes a unified framework of SNS discontinuance by validating the dual processes (i.e., the energetic process and the motivational process). Beyond the single stress process perspective in prior studies which only emphasizes the role of social overload, this study reveals the two opposing forces that shape SNS users' discontinuous usage intentions simultaneously. Specifically, this study theorizes that SNS discontinuance is determined by not only the inclination to avoid social demands (i.e., social overload) but also the locked-in effect of social resources (i.e., social support). This integrative framework provides a more comprehensive picture of the antecedents of SNS discontinuance, which can be taken as a theoretical foundation for future research.

Second, this study theorizes and empirically tests the cross-links between the dual processes by demonstrating the buffering effect of social resources and the coping effect of social demands. Prior studies which adopted the single process perspective mainly focused on the demand factors in exhaustion but neglected resource factors that may also contribute to the formation of exhaustion. This study advances the theoretical understanding of the antecedents of exhaustion by examining the buffering effect of social support. Meanwhile, as engagement was not included in the single process model, the relationship between demand factors and engagement has not been studied either. By distinguishing challenge demands from hindrance demands, this study reveals that social overload as a challenge demand will positively influence engagement. The buffering effect of social resources and the coping effect of social demands enrich the mechanisms of the formation of exhaustion and engagement respectively.

Third, this study provides insights into the relationship between social support and social overload by proposing the mechanism of reciprocal dynamics. The traditional JD–R model views job demands and job resources as two separate sets. However, as SNS users receive others' social support and provide social support to others based on the principle of reciprocity, the social support received from others becomes a burden which may finally turn to social overload. Although prior studies assumed that social overload

might result from receiving social support, the connection between social support and social overload has never been theorized and tested. This study confirms the positive relationship between them and sheds light on the dynamics of the transition from social support to social overload.

Implications for Practice

This study also carries important implications for practice. For social networking service providers, this study offers advice that users' discontinuous usage intentions can be weakened by mobilizing social support within their social network. In practice, social network developers can use techniques to strengthen users' perception of social support, for example, design elements (e.g., game elements) that can facilitate the interactions between SNS users and their major source of social support such as family and close friends, tools (e.g., priority settings) that enable users to focus on the matters (e.g., posts, messages, and status updates) of contacts they care about most, and functions that allow users to keep an immediate record of supportive interactions (e.g., chats and comments on posts). Moreover, this study informs the design of appropriate interventions to prevent and mitigate the side effects of SNS use. Tools should be developed to help SNS users manage their online social network, for example, the control over the visibility of users' accounts in friend recommendation system (if they don't want to be found by other people), the automatic reply function (when they are busy), the storage, organization, and retrieval of messages (to facilitate information processing). In addition, this study cautions practitioners to limit the extent of user immersion in the social networking environment to prevent intrinsically rewarding social activities from becoming burdensome. For instance, the engagement-enhancing features, or more specifically, social elements, should be carefully designed, such as the extension of social networking by friend recommendation system and the default setting on SNS, which is captivating to engage newcomers quickly (e.g., automatic push notifications from every single SNS activity). For SNS users, this study advises that they face the trade-off between social support and social overload, hence the importance of keeping a balance between the enjoyment of online social support exchange and their own capacity to handle social demands when using SNS. Individuals should exert more self-control on their SNS usage, such as the control over the size of the online social network and the control of the time spent on SNS.

Limitations and Future Research

This study has several limitations. First, it was conducted based on cross-sectional data, and thus the causal relationship between social support and social overload may be untestable. Future studies should be conducted using a longitudinal research design to capture the reciprocal dynamics between social support and social overload more precisely. Second, this study was conducted in China based on a single platform — WeChat, so whether the conclusions can be applied to other research contexts should be further confirmed. Future research can replicate our study in other social networking sites or cultural contexts and consider potential moderators. Finally, the model was constructed based on the broad JD–R framework and identified influential yet limited types of demands and resources (i.e., social support and social overload). Further work should expand the range of demands and resources.

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