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The influence of personality traits and social networks on the self-disclosure behavior of social network site users

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Abstract

Purpose – The purpose of this paper is to determine the influence and interaction of social networks and personality traits on the self-disclosure behavior of social network site (SNS) users. According to social capital theory and the Big Five personality model, the authors hypothesized that social capital factors would affect the accuracy and amount of self-disclosure behavior and that personality traits would moderate this effect.

Design/methodology/approach – A survey was conducted to collect data from 207 SNS users. The questionnaire was administered in university classrooms and libraries and via e-mail. The measurement model and structural model were examined by using LISREL 8.8 and SmartPLS 2.0.

Findings – Based on the path analysis, the authors identified several interesting patterns to explain self-disclosure behavior on SNSs. First, the centrality of SNS users has a positive effect on their amount of self-disclosure. Moreover, people who are more extroverted disclose personal information that is more accurate with the level of the cognitive dimension held constant and disclose a greater amount of personal information with the level of the structural dimension held constant. From a practical perspective, the results may provide useful insight for companies operating SNSs.

Originality/value – This study analyzed the influence of social capital factors on SNS users' self-disclosure, as well as the interactions between personality and social capital factors. Specifically, the authors examined six important variables of social capital divided into three dimensions. This research complements current research on SNSs by focusing on SNS users' motivation to disclose self-related information in addition to information sharing.

Keywords Social capital, Self-disclosure, Big five, Social network site

Paper type Research paper

1. Introduction

Recently, social network sites (SNSs), such as Facebook, Renren, and Twitter, have attracted millions of users worldwide, many of whom have incorporated visits to these sites into their daily lives. In December 2012, Vincenzo Cosenza, an Italian social media research institution, found that Facebook had more than ten billion users worldwide and was the largest SNS, serving 127 countries. According to the China Internet Network Information Center, the number of Chinese SNS users increased to 2.75 billion at the end of 2012, and 56.4 percent of them were also microblogging users. In 2013, the usage rate of SNSs in China decreased; however, the number of users remained large, at 2.78 billion users.

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Behavior in which people talk about themselves or their lives is usually referred to as "self-disclosure", or the act of voluntarily revealing personal information to others (Derlaga and Berg, 1987; Wheeless and Grotz, 1976). Participation in an online community is related to social influences (Zhou, 2011). Competition between different SNS platform is currently very strong, and self-disclosure behavior constitutes a good for these platforms. As relationships develop, participants are expected to disclose more information at more intimate levels (Altman and Taylor, 1973). However, self-disclosure on SNSs is accompanied by potential threats to privacy, such as the risk of reconstructing users' social security numbers by using information found in their profiles (Gross and Acquisti, 2005). Self-disclosure behavior is an individual process and is affected by social factors. How do social and individual factors influence self-disclosure behavior? Some research has studied different types of self-disclosure behavior, such as information disclosure between companies (Chou *et al.*, 2009). This study seeks to identify the factors that influence self-disclosure behavior on SNSs. Previous studies have classified factors affecting self-disclosure behavior into two categories: psychological factors and societal factors. However, these studies have not addressed how these two types of factors interact. Therefore, we use social capital theory to explain the social influence on self-disclosure and employ a personality model to explain individual influencing factors.

Our findings are expected to expand existing self-disclosure research in the SNS context and to contribute to elucidating why users disclose intimate information about themselves in an environment that is highly prone to privacy invasion. We build our theoretical foundation based on the literature in Section 2 and develop our research model in Section 3. The methodology of the empirical study is then provided in Section 4, and the results of the data analysis are presented in Section 5. We discuss our findings in Section 5.5 and conclude in Section 6.

2. Literature review and theoretical foundation

2.1 Self-disclosure

In the past decade, SNSs have shifted from being topic structured (according to topical hierarchies) to person structured (with the individual at the center of his/her own community) (Ellison, 2007), which more accurately mirrors an unmediated social structure where "the world is composed of networks, not groups". The activities on SNSs reflect the interpersonal and hedonic needs of a million users (Shen, 2013).

Jourard (1959) proposed the concept of "self-disclosure", which is defined as the process of transferring personal information and sharing thoughts and emotions among social individuals. Since then, researchers have recognized the multidimensionality of self-disclosure behavior and have expanded their focus to first, the amount of self-disclosure, second, the intentionality of the person in self-disclosing information, third, the honesty or accuracy of the message being self-disclosed, fourth, the depth or intimacy of the message being self-disclosed, and fifth, the positiveness or valence of the message being self-disclosed (Tardy *et al.*, 1981; Wheeless, 1978; Wheeless and Grotz, 1976). This multidimensionality of self-disclosure has been used in self-disclosure studies as well as in related fields. Hence, this study attempts to investigate why people self-disclose on SNSs. The amount of individuals' self-disclosure can quantifiably represent individuals' level of intentionality in engaging in such behavior, and the accuracy of self-disclosure can represent individuals' level of honesty. With these two aspects, we can describe self-disclosure behavior both quantitatively and qualitatively. Thus, to simplify the model, we focus on the amount and accuracy of self-disclosure.

2.2 Self-disclosure on SNSs

Many scholars have focused on the relationship between self-disclosure and intimacy. Ledbetter *et al.* (2011) found that the interaction effect between self-disclosure and social connection directly predicted Facebook communication and indirectly predicted relational closeness. However, the various dimensions of self-disclosure have different effects. Amount and positivity are positively associated with intimacy, whereas the honesty and intent of self-disclosure are not associated with intimacy (Park *et al.*, 2011).

Self-disclosure behavior on SNSs satisfies the psychological needs of users. Kim and Lee (2011) underlined the important role played by self-disclosure on SNSs in signaling the need for social support. Lee *et al.* (2011) argued that the amount of self-disclosure on SNSs was positively related to subjective well-being from a positive psychological perspective. Levels of self-disclosure have been associated with greater levels of satisfaction with Facebook to meet certain motivational goals, such as relationship maintenance, passing time, and entertainment (Li-Barber, 2012).

Our study focuses on the question of why and how users disclose intimate information about themselves in an environment that is highly prone to privacy invasion. Existing research has focused on several aspects of this question. Jia *et al.* (2010) related users' self-disclosure intentions and self-disclosure behaviors to certain characteristics of SNSs based on Technology Acceptance Model and found that users' perceived usefulness and perceived ease of use of SNSs were closely associated with their self-disclosure intentions. Trusting beliefs play a key role in the self-disclosure behavior of users from individualistic cultures (Krasnova *et al.*, 2012). When people extract more benefits from their social networking activities, they have more trust in the service provider and legal assurance. In summary, antecedent factors of self-disclosure on SNSs have been studied in the context of different types of concerns, and we can classify these factors into two categories: psychological factors and societal factors (Trepte and Reinecke, 2013). Nevertheless, previous studies have not answered the question of how these two types of factors interact with each other. In this paper, we use social capital to represent societal factors of self-disclosure and employ personality traits to represent psychological factors of self-disclosure.

Social capital has become a key concept in analyzing personal interactions and relationships, and it can be used to explain a variety of pro-social behavior (Chow and Chan, 2008). Self-disclosure plays an important role on SNSs in signaling one's need for social support (Kim and Lee, 2011). It also can be explained as a societal factor by social capital theory. Trepte and Reinecke (2013) proposed that the use of SNSs and the psychological disposition toward self-disclosure interact reciprocally and that social capital within the SNS environment could reinforce self-disclosing behaviors.

Therefore, when we study self-disclosure behavior on SNSs, both psychological and societal factors are worth investigating. Thus, we create a new self-disclosure model by integrating these two factors. To capture psychological factors of self-disclosure, we use the Big Five theory, which best explains personality traits (Funders, 2000), to summarize individual personality, whereas we use social capital theory, which is popular in SNS research, to explain societal factors of self-disclosure.

2.3 Key elements of social capital

Social capital theory has been presented as an explanation for various pro-social behaviors, including community involvement (Wasko and Faraj, 2005). In the context of computer-mediated technologies and services, increasing numbers of users form and maintain social capital through SNSs because SNSs provide diverse social network

applications, such as distribution lists, photo directories, and search capabilities, support online linkages with others (Ellison, 2007). Social capital is a factor that affects the interaction between humans and computers (Chewar *et al.*, 2005). Social capital has multiple dimensions, namely, structural, relational, and cognitive (Chow and Chan, 2008).

The structural dimension describes the pattern, density, connectivity, and hierarchy of networks (Tichy *et al.*, 1979). These relationships are created when community members interact with each other (Wang and Chiang, 2009). Individuals who are centrally embedded in a collective environment have a relatively higher proportion of direct ties to other members and are likely to have developed the habit of cooperation. Burt (1992) found that participants who are central to a network and connected to a large number of others are more likely to continue to contribute to collective activities. Particularly in electronic network practices, individuals with higher levels of network centrality offer self-disclosures that are more helpful to network members (Wasko and Faraj, 2005). This study thus considers "centrality" part of the structural dimension.

The relational dimension measures the level of trust between people developed during interactions and raises people's awareness of collective goals (Huysman and De Wit, 2004). Trust can reduce perceived privacy risks (Dwyer *et al.*, 2007), thereby encouraging SNS users to engage in more disclosure behaviors and in the sharing of personal information with trusted people. In self-disclosure research, reciprocity refers to the tendency of recipients to match their responding level of disclosure to what they receive. There is substantial evidence that people will exhibit self-disclosure behavior if they first become recipients of such disclosures from their conversational partners (Lee *et al.*, 2008). Therefore, this study considers "trust" and "reciprocity" key elements in the relational dimension of social capital.

The cognitive dimension refers to resources that increase understanding of the commonalities between parties, such as shared goals, values, attitudes, beliefs, and perceptions of support (Chow and Chan, 2008). Tsai and Ghoshal (1998) found that shared vision is a key element in the cognitive dimension of social capital because it significantly affects community cohesion and shapes community types. Royal and Rossi (1996) noted that a shared vision reflects "the influence a group may have over its members by encouraging commitment to a common set of ideas" and "may lead group members to feel that they share a common future". Given the sense of community that is produced by shared vision, SNS users are likely to find more things that are related to communal beliefs or that are attractive for community members to disclose. This study thus considers "shared vision" a key element in the cognitive dimension of social capital.

Social norms are defined as "the degree to which an individual perceives that important others believe he/she should comply with the behaviors of other members" (Lascu and Zinkhan, 1999). The compliance process influences users' intention to use SNSs (Li, 2011). In a virtual community, individual action, such as self-disclosure, is guided by common self-guides for meeting idealized goals, values, beliefs, and conventions shared with other group members (Dholakia *et al.*, 2004). This type of guide, known as a "social norm", can also be understood as pressures among community members that can influence collective and interactive behaviors, such as self-disclosure. Chiu *et al.* (2006) combined the concept of reciprocity and norms into the "norm of reciprocity". From this perspective, social norms are considered an element of the structure dimension (Hutchings and Michailova, 2004), but we can also understand the reciprocity concept as increasing understanding of commonalities and therefore having some relationship with the cognitive dimension. The "norm of reciprocity" differs in meaning from the concept of social norms. Dholakia *et al.* (2004) described the

internalization of group norms as the adoption of common self-guides for meeting idealized goals shared with others because of the perception that they coincide with one's own goals. From this perspective, we believe that social norms should be classified into the cognitive dimension because they may increase understanding of the commonalities between parties, in line with the definition of the cognitive dimension, rather than representing the trust between people in the relational dimension. We conduct an empirical test to define the dimension conflict in this research.

2.4 Personality factors

Previous researchers have investigated factors that influence the self-disclosure behavior of people in the context of traditional communication. Jourard and Lasakow (1958) designed an instrument to investigate self-disclosure behavior and listed personality as one of the six content areas. Subsequently, many researchers have found that the tendency to disclose is a stable personality characteristic (Jourard, 1959). McCrae and Costa (1997) conceptualized five stable personality factors, or the so-called "Big Five": neuroticism or emotional stability, extraversion, openness to experience, agreeableness, and conscientiousness. These factors have commonly been used to investigate personality. Neuroticism refers to the degree of emotional stability, impulse control, and anxiety. Extraversion is reflected in a high degree of sociability, assertiveness, and talkativeness. Openness reflects strong intellectual curiosity and a preference for novelty and variety. Conscientiousness refers to a desire to do a task well. Finally, agreeableness refers to being helpful, cooperative, and sympathetic toward others.

In research on personality as a potential predictor of SNS use and disclosure behavior, two of the "Big Five" – extraversion and neuroticism – are worth considering (Schrammel *et al.*, 2009; Zywica and Danowski, 2008). In the current study, we use these two factors to examine the relationship between personality and self-disclosure.

3. Model and hypotheses

Figure 1 presents the research model examined in this study. It displays the hypothesized relationships among key elements of social capital and self-disclosure via SNSs.

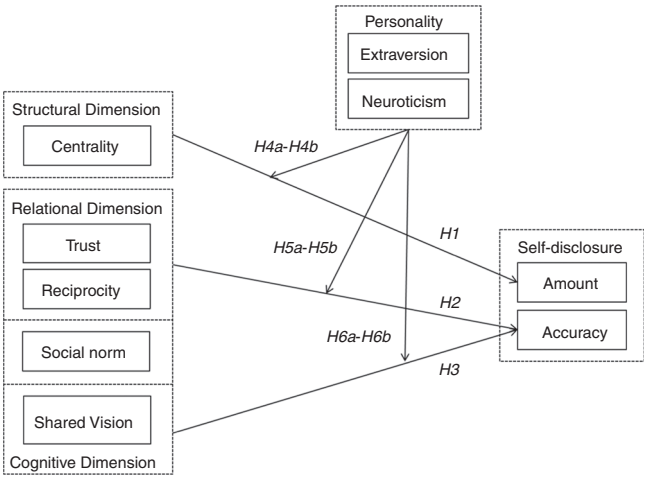

Figure 1.
Research model

3.1 Structural dimension and self-disclosure behavior

Social capital theory proposes that connections between individuals, or structural links built through social interactions in networks, are important factors that influence collective action (Putnam, 1995b).

The structural dimension describes the pattern, density, connectivity, and hierarchy of networks (Tichy *et al.*, 1979). Although many researchers consider self-disclosure an interactive action (Lee *et al.*, 2008), it nevertheless occurs in collective communities where structural capital critically affects self-disclosure behaviors. Individuals who remain central in a collective have a relatively high proportion of direct ties to others, and they contact others frequently. To maintain their central positions, individuals disclose a larger amount of useful information about themselves. In SNSs, one common approach to create social ties is to update one's status through SNSs. Thus, participants disclose their recent activities, emotions, thoughts, and other actions to people who are related to themselves through SNSs. The number of ties an individual has determines his/her centrality in a given network. Centrality relates only to the number of ties, not the quality of ties; therefore, it will influence the amount but not the accuracy of self-disclosure behavior. We thus propose the following hypothesis:

H1. SNS users with higher levels of network centrality in the structural dimension disclose higher amounts of personal information.

3.2 Relational dimension and self-disclosure behavior

The relational dimension measures the level of trust between people developed during interactions. Many researchers suggest that trust is a key aspect of relational capital and a facilitator of collective action. Trust is essential in creating friendly online transactional environments (Gefen and Straub, 2003). When there is strong trust, individuals tend to liberally disclose more accurate personal information. In the context of traditional communication, people are reluctant to divulge information about themselves (Cialdini, 2001). One of the rules that limits self-disclosure behavior is the norm of reciprocity. People who receive others' self-disclosed information have the obligation to respond with a personal disclosure of equal intimacy to maintain equity (Derlaga and Berg, 1987). Wasko and Faraj (2005) suggested that people who share knowledge in online communities believe in reciprocity. Both trust and reciprocity are related to relationship intimacy, and they focus on the content but not the number of relationships. Hence, trust and reciprocity will influence the accuracy but not the amount of self-disclosure behavior. Therefore, the following research hypothesis is proposed:

H2. SNS users who trust others more and who experience higher reciprocity disclose personal information of higher accuracy.

3.3 Cognitive dimension and self-disclosure behavior

The cognitive dimension refers to resources that increase understanding of the commonalities between parties, such as shared goals, values, attitudes, beliefs, and perceptions of support (Chow and Chan, 2008).

Engaging in information sharing requires at least some level of shared understanding between parties, such as a shared language and vocabulary, shared culture and goals (Wasko and Faraj, 2005), or a shared vision (Tsai and Ghoshal, 1998). A shared vision embodies the collective goals and aspirations of the members of an

organization or a community (Tsai and Ghoshal, 1998). Acting as a force, a shared vision brings people together and encourages them to disclose more about what their interests are and what they know. In a network with a shared vision, when members disclose their deep thoughts (e.g. feelings, pressure, and moods) through writing, they can acquire social support from others within the same community (Pennebaker, 1997). As a result, SNS members who share a vision are more likely to become partners who disclose more accurate information about themselves to other network members. According to Putnam (1995a), relational capital exists when members recognize and abide by their cooperative norms. There appears to be a social norm (Altman and Taylor, 1973) that governs the extent to which self-disclosure is appropriate in a given context. As a form of guidance and pressure, that social norm motivates participants to modify their own actions and catch up with their network members to disclose more accurate information through SNSs. Hence, we hypothesize the following:

H3. SNS users with higher levels in the cognitive dimension disclose personal information with higher accuracy.

3.4 Personality and self-disclosure behavior

The five personality traits, namely, neuroticism, extraversion, openness to experience, agreeableness and conscientiousness, have been found to be associated with certain computer-mediated communication activities. In particular, the first two factors significantly affect self-disclosure behavior on SNSs (Ross *et al.*, 2009). According to the literature, the five factors relate to computer communication in different ways. Openness is associated with the use of SNSs to gain new experiences (Butt and Phillips, 2008) but not to express oneself. The measurement of agreeableness includes trust, which is similar to the relational dimension of social capital theory. Further, people who are high in conscientiousness tend to avoid using computer communication tools that distract them from their work (Butt and Phillips, 2008). Nevertheless, in today's environment, SNS research is very limited (Ross *et al.*, 2009). Studies indicate that neuroticism and extraversion are positively associated with the tendency to express one's actual self (Seidman, 2013). In particular, neuroticism is positively associated with the expression of ideal and hidden self-aspects. Hence, to study self-disclosure on SNSs, we selected the two factors most associated with self-disclosure on SNSs, extraversion and neuroticism, as research items.

Extroverted individuals have many connections with others on SNSs and in the "real world" (Zywica and Danowski, 2008), while introverted individuals are more likely to reveal their true selves online (Amichai-Hamburger *et al.*, 2002). Further, extroverts focus on the social value of the SNSs, whereas introverts consider the emotional and financial value (Lu and Hsiao, 2010). In a path analysis, Peter *et al.* (2005) showed that extroverted adolescents self-disclose personal information online more frequently than do introverted adolescents, which, in turn, facilitates the establishment of online friendships. This finding is also consistent with the notion that disclosure and extraversion are positively related (Shapiro and Swensen, 1977).

Personality may not influence behavior directly but may function as a moderating factor. Specifically, personality may have moderating effects on the relationships between special identity and creativity (Shu and Hong, 2012) and between mood congruency and cognition (Smith and Petty, 1995). Based on the expectation that users with specific personality attributes use SNSs to help maintain their existing relationships and engage in unique self-disclosure behavior, the following hypotheses

regarding the influence of the two examined personality traits on the amount and accuracy of self-disclosure on SNSs are proposed:

H4a. Extraversion moderates the relationship between the structural dimension of SNSs and self-disclosure behavior such that SNS users who score high in extraversion disclose higher amounts of personal information to other people with the same score on the structural dimension.

H5a. Extraversion moderates the relationship between the relational dimension of SNSs and self-disclosure behavior such that SNS users who score high in extraversion disclose personal information of higher accuracy to other people with the same score on the relational dimension.

H6a. Extraversion moderates the relationship between the cognitive dimension of SNSs and self-disclosure behavior such that SNS users who score high in extraversion disclose personal information of higher accuracy to other people with the same score on the cognitive dimension.

Neuroticism reflects a person's tendency to experience negative emotional states, such as psychological distress (Ross *et al.*, 2009), anxiety, and depressed mood (Matthews and Deary, 1998). In a study of online communication, including chat rooms, discussion boards, and instant messaging, individuals who are high in neuroticism reported the lowest levels of perceived social support (Swickert *et al.*, 2002). Moreover, Amichai-Hamburger *et al.* (2002) observed that individuals high in neuroticism are more likely to post accurate personal information; therefore, individuals high in neuroticism may have a greater tendency to disclose personal information on SNSs. Specifically, neuroticism moderates the relationship between stress and adjustment in the transition to adolescence, and self-disclosure behavior on SNSs moderates this relationship as well. Different dimensions of social capital may influence the amount or accuracy of self-disclosure, but different people may react differently when encountering the same situation. Therefore, we may assume that personality moderates self-disclosure behavior on SNSs.

H4b. Neuroticism moderates the relationship between the structural dimension of SNSs and self-disclosure behavior such that SNS users who score high in neuroticism disclose personal information in higher amounts to other people with the same score on the structural dimension.

H5b. Neuroticism moderates the relationship between the relational dimension of SNSs and self-disclosure behavior such that SNS users who score high in neuroticism disclose personal information of greater accuracy to other people with the same score on the relational dimension.

H6b. Neuroticism moderates the relationship between the cognitive dimension of SNSs and self-disclosure behavior such that SNS users who score high in neuroticism disclose personal information of greater accuracy to other people with the same score on the cognitive dimension.

4. Research method

4.1 Scale development

To verify the reliability and validity of the scale, the measures used to operationalize the model constructs are primarily adapted from previous related studies. Some of the

factors are formative, and some are reflective. The reflective latent construct exists independently of the measures, and a formative construct is dependent upon a constructivist, operationalist or instrumentalist interpretation by the scholar (Borsboom *et al.*, 2003). These constructs' directions of causality are different (Coltman *et al.*, 2008). In our measurement of social capital, the structural dimension refers to individuals' location in a social network. Relationships are already created and can be measured as a whole system, so this is a reflective construct. The relationship dimension and the cognitive dimension have many constituent parts. The relational dimension measures not only the trust level but also reciprocity and norms during interactions. The three concepts relate to different aspects; therefore, the relational dimension is a formative construct. The cognitive dimension refers to resources that increase understanding of commonalities, and the resource includes factors such as shared vision or shared languages. As a result, it is a formative construct. For the relational dimension and the cognitive dimension, there is more than one variable in the model, and the construct is dependent. They are thus considered formative constructs. We also modify these constructs to ensure that they fit the purpose and target context of our research. We first translated each English item to Chinese. Next, the Chinese version was translated back to English without the use of the original scale. The back-translation of the scale helps Chinese subjects understand the measures correctly (Table I).

After developing the first draft of the scale, we conducted a pilot test involving three stages. First, we talked with experienced professors to resolve wording, overlapping, and ambiguity problems and to add items according to their suggestions. Second, we invited 30 undergraduate students with experience using SNSs to complete our scale. Participants were asked to provide feedback regarding the length of the survey and the relevance, clarity, and wording of the questionnaire items. Finally, the pilot test was conducted with 100 students to test the reliability and validity of the scale. Cronbach's α of self-disclosure on the SNS scale was 0.883. Based on the reliability analysis, six items that factor loaded below 0.5 were deleted. Ultimately, our self-disclosure instrument on the SNS scale was reduced from 47 items to 41 items, and this scale was officially used in our later research. A seven-point Likert-type scale was used for every item on the survey.

4.2 Sampling method

University students are often used as participants in SNS studies because they represent a group of active SNS users (Ledbetter *et al.*, 2011). The study data were collected by paper questionnaires and online questionnaires. We distributed a total of 225 questionnaires, including 195 paper questionnaires at Zhejiang University and 30 to our friends on SNSs by e-mail. A total of 217 questionnaires were collected, with 207 effective responses (the effective rate was 92 percent). All participation in this research was voluntary and anonymous.

To ensure the accuracy of the data, we employed the following control measures. First, we controlled the method of sending the surveys. Some subjects were recommended by teachers and friends, and most were loyal users of SNSs. The subjects carefully answered the questionnaire and discussed it with us to ensure that they fully understood the questions, which helped to ensure the reliability of our data. Other groups of subjects included undergraduate students at Zhejiang University. These students were volunteers and had sufficient time to answer each question in the survey. They were also asked to write down the number of minutes required to complete the questionnaire. If the time taken to complete the questionnaire was too short, we did not

Measures	Items	Reference
Structural dimension	CE (centrality)	Chow and Chan (2008)
	CE1: in general, I am very close to my friends on SNSs	
	CE2: I always leave comments on my friends' SNSs	
	CE3: I frequently visit my friends' SNS	
Relational dimension (formative)	TR (trust)	Hsu and Lin (2008) and Chow and Chan (2008)
	TR1: I believe that my friends on SNSs can consider my needs	
	TR2: I feel that my friends on SNSs can be trusted	
	TR3: I know my SNSs friends will always try to help me if I get into difficulties	
	TR4: I can always rely on SNSs members to make my life easier	
	TR5: I can always trust SNSs members to lend me a hand if I need it	
	RE (reciprocity)	Hsu and Lin (2008) and Wasko and Faraj (2005)
	RE1: I think that self-disclosing and making comments on others' SNSs can be mutually beneficial	
	RE2: during my self-disclosure, I hope my friends on SNSs will do the same thing	
	RE3: if my friends self-disclose on a SNS, I will self-disclose too	
	RE4: if my friends disclose real, deep-seated, comprehensive information, I will have the same degree of self-disclosure	
	RE5: I hope my friends' self-disclosure can have the same level of authenticity, depth or comprehensiveness as mine	
Cognitive dimension (formative)	SV (shared vision)	Tsai and Ghoshal (1998)
	SV1: my SNSs friends and I always agree on what is correct to do	
	SV2: my SNSs friends and I always agree on what is important to do	
	SV3: my friends on SNSs and I have the same goals and expectations in using SNSs	
	SV4: my friends on SNSs and I have similar goals and expectations in life	
	SN (social norm)	Chow and Chan (2008)
	SN1: if my friends disclose information about themselves on SNSs, I will do it too	
	SN2: if my family members disclose information about themselves on SNSs, I will do it too	
	SN3: in my opinion, most of my friends consider self-disclosure on SNSs a good thing	
Self-disclosure under SNSs	AM (amount of self-disclosure on SNSs)	Wheeless and Grotz (1976), Tardy *et al.* (1981) and Wheeless (1978)
	AM1: I often talk about myself on my SNSs	
	AM2: I often update my status on SNSs	
	AM3: my friends and I often reply and comment on each other's self-disclosures on SNSs	

(*continued*)

Table I.
Questionnaire items

Measures	Items	Reference
	AM4: I often discuss my self-disclosure on SNSs with my friends.	
	AM5: my discussions with my friends about my self-disclosure on SNSs last for a long time	
	AC (accuracy of self-disclosure on SNSs)	
	AC1: my statements about my feelings, emotions, and experiences are always accurate self-perceptions	
	AC2: I am not always honest in my self-disclosures	
	AC3: I always feel completely sincere when I reveal my own feelings and experiences	
	AC4: I intimately disclose who I really am, openly and fully	
Extraversion	EX (extraversion)	Costa and McCrae (1992)
	EX1: I make friends easily	
	EX2: I am skilled in handling social situations	
	EX3: I am the life of the party	
	EX4: I know how to captivate people	
	EX5: I do not talk a lot	
Neuroticism	NE (neuroticism)	
	NE1: I often feel blue	
	NE2: I dislike myself	
	NE3: I am often down in the dumps	
	NE4: I have frequent mood swings	
	NE5: I panic easily	

Table I.

include the data in our sample. Second, we developed strict rules to filter our completed questionnaires to ensure the reliability and validity of our research. Specifically, we set an acceptable finished time range and deleted questionnaires that took too little or too much time to complete. Moreover, repeated items and reverse items were hidden in the questionnaire, and we used them to filter the respondents. Questionnaires with too many unanswered items were also deleted from the sample.

5. Results

5.1 Descriptive statistics

Table II shows demographic information for our sample. The average age of our subjects was 22.5 years, and the number of males was 1.2 times the number of females. More than half of the subjects were undergraduate students, whereas graduate, PhD, and MBA students accounted for approximately half of the remaining students. Overall, the majority of the subjects were students in different grades at the university who intensively used SNSs. They also constituted the main group of users who pursue new applications on websites, such as microblogging.

5.2 Exploratory factor analysis

A multiple causes (MIMIC) model was used to test the reliability and validity of formative measures in covariance-based structural equation models (Diamantopoulos, 2011). To determine whether the social norm should belong to the relational dimension or the cognitive dimension, we attempted to use MIMIC models as shown in Figures 1 and 2. The results are shown in Tables III and IV (Figure 3).

Characteristics	Distribution characteristics	Frequency	%	Cumulative %
Gender	Male	114	55.1	55.1
	Female	93	44.9	100
Age	18-22	122	58.9	58.9
	23-25	54	26.1	85.0
	26-28	16	7.7	92.8
	29-31	7	3.4	96.1
	32-35	6	2.9	99
	Above 35	2	1.0	100
Education	College	1	0.5	0.5
	Bachelor	117	68.1	68.6
	Master	37	17.9	86.5
	PhD	14	6.8	93.2
	MBA	14	6.8	100

Table II. Demographic information

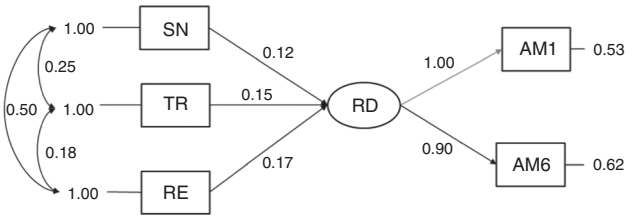

Figure 2. Baseline MIMIC model 1

Parameter	Unstandardized estimates	SE	*t*-value	Standardized estimates
SN →RD	0.121	0.0688	1.761	0.176
TR →RD	0.146	0.0615	2.380	0.212
RE →RD	0.166	0.0687	2.414	0.241
ERD	0.374	0.120	3.116	0.787
RD →AM1	1.000	–	–	0.689
RD →AM6	0.895	0.224	4.005	0.617
EAM1	0.525	0.125	4.188	0.525
EAM6	0.619	0.110	5.628	0.619

Notes: $\chi^2 = 0.09$; df = 2; p-value = 0.95664; RMSEA = 0.000; CFI = 1.00; SRMR = 0.031

Table III. Baseline MIMIC model 1 results

Parameter	Unstandardized estimate	SE	*t*-value	Standardized estimate
SN →CD	0.161	0.064	*2.541*	0.236
SV →CD	0.218	0.065	*3.342*	0.320
ECD	0.367	0.118	3.115	0.789
CD →AM1	1.000	–	–	0.682
CD →AM6	0.914	0.228	4.001	0.623
EAM1	0.535	0.124	4.317	0.535
EAM6	0.611	0.111	5.490	0.611

Notes: $\chi^2 = 0.07$; df = 1; p-value = 0.78649; RMSEA = 0.000; CFI = 1.000; SRMR = 0.00368

Table IV. Baseline MIMIC model 2 results

We used LISREL 8.80 to run the model. As shown in Table III, the path that includes social norms as a formative construct in the relational dimension has a *t*-value of 1.761 and is not significant (*t*-value > 1.96). Thus, making social norms a component of the relational dimension would be questionable. In contrast, the results in Table IV indicate that social norms are a good component of the cognitive dimension.

We also assessed an expanded MIMIC model with alternative scaling. Table V shows the results of the expanded model testing. The results suggest that social norms should be a component of the cognitive dimension.

5.3 Reliability and validity

Table VI shows the indicators for the reliability and validity of the latent variables. We deleted the indicator CE1 because low loading problem. CE2 and CE3 are both correlated to ZAM3 (significant at the 0.01 level) and their indicators' errors is correlated with the error of ZAM3. As a result, the latent variables with two indicators is acceptable (Kenny, 2011). Cronbach's α is acceptable when it is higher than 0.7, which shows that the model has good reliability. The composite reliability statistics of all variables should reach the threshold value of 0.7. Moreover, all of the AVE statistics should be higher than 0.5 for the model to have good convergent validity. As shown in Table VI, the R^2 is higher when we add moderating factors into the model.

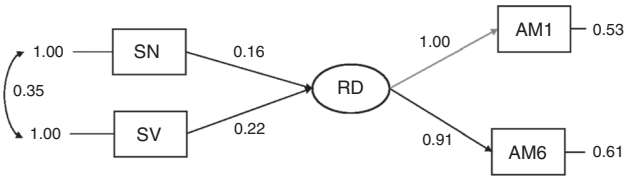

Figure 3.
Baseline MIMIC model 2

Notes: $\chi^2 = 0.07$; df = 1; p-value = 0.78649; RMSEA = 0.000

Table V.
Expanded MIMIC model with alternative scalings

	SN→CD	SV→CD	ECD	CD→AM1	CD→AM6	EAM1	EAM6
CD→AM1 = 1	0.161	0.218	0.367	1.000	0.914	0.535	0.611
	0.064	0.065	0.118	–	0.228	0.124	0.111
	2.541	3.342	3.115	–	4.001	4.317	5.490
CD→AM6 = 1	0.147	0.200	0.307	1.094	1.000	0.535	0.611
	0.059	0.0629	0.098	0.273	–	0.124	0.111
	2.464	3.174	3.115	4.001	–	4.317	5.490
SN→CD = 1	1.000	1.354	14.108	0.161	0.147	0.535	0.611
	–	0.738	11.084	0.0635	0.0598	0.124	0.111
	–	1.836	1.273	2.541	2.464	4.317	5.490
SV→CD = 1	0.738	1.000	7.690	0.218	0.200	0.535	0.611
	0.402	–	4.586	0.654	0.0629	0.124	0.111
	1.836	–	1.677	3.342	3.174	4.317	5.490
Standardization (ECD = constrained)	0.24	0.32	0.79	0.68	0.62	0.53	0.61
	0.10	0.10	0.07	0.11	0.10	0.12	0.11
	2.36	3.12	11.0	6.09	6.11	4.31	5.49
Standardization (LISREL default)	0.236	0.320	0.789	0.682	0.623	0.535	0.611
	0.0931	0.0958	0.253	–	0.156	0.124	0.111
	2.541	3.342	3.115	–	4.001	4.317	5.490

Constructs	Items	Without LCMVF Loading	Without LCMVF t	With LCMVF Loading	With LCMVF t	AVE	CR	α	R^2
AC	AC1	0.81	25.73	0.81	31.85	0.69	0.9	0.85	0.05 (model 1)
	AC2	0.88	42.40	0.89	46.76				0.22 (model 2)
	AC3	0.84	27.10	0.86	32.05				
	AC4	0.78	16.00	0.77	18.94				
AM	AM1	0.64	12.62	0.62	12.03	0.58	0.87	0.81	0.33 (model 1)
	AM2	0.71	17.16	0.67	11.84				0.39 (model 2)
	AM3	0.84	30.87	0.85	42.33				
	AM4	0.82	29.05	0.84	33.90				
	AM5	0.76	18.15	0.79	26.09				
EX	EX1	0.71	7.11	0.78	20.34	0.69	0.92	0.89	–
	EX2	0.86	12.69	0.90	58.35				
	EX3	0.87	14.15	0.88	40.33				
	EX4	0.89	14.16	0.84	34.51				
	EX5	0.82	12.45	0.79	21.54				
SD	CE2	0.92	73.90	0.89	58.25	0.78	0.87	0.72	–
	CE3	0.84	18.70	0.88	38.15				
NE	NE1	0.73	4.49	0.79	23.51	0.58	0.88	0.84	–
	NE2	0.83	4.57	0.73	18.40				
	NE3	0.74	4.46	0.83	33.36				
	NE4	0.76	4.62	0.79	23.26				
	NE5	0.77	4.84	0.75	18.75				
RD	RE	0.66	2.41	0.76	7.07	0.53	0.85	0.78	–
	TR	0.90	3.82	0.78	16.67	0.63	0.89	0.86	
CD	SN	0.72	2.57	0.82	41.07	0.64	0.84	0.72	–
	SV	0.85	4.05	0.82	43.15	0.52	0.81	0.69	

Table VI. Loadings of the measures

We used the Harman's single-factor test to test the common method bias (Podsakoff *et al.*, 2003). Specifically, we loaded all the items into an exploratory factor analysis. Component analysis both with and without rotation revealed 11 components. The first factor that emerged from the unrotated factor solution had an explanatory level of 0.1794, indicating that the common method bias in this research was acceptable. We also added a latent common method variance factor in the PLS model based on the method proposed by Liang *et al.* (2007). No substantive differences in the statistical results emerged, as the significance and the sign of the paths remained. Moreover, as shown in Table VI, the factor loadings in both models were significant.

We report the square roots of AVE and the correlation coefficients in Table VII. To indicate that the model has good discriminant validity, the AVE of each variable should be far higher than the squared correlation coefficient with other variables.
In conclusion, the results of the reliability and validity tests shown in Tables VI and VII suggest that our items are of acceptable quality.

5.4 Structural model: hypothesis and model testing

We used SmartPLS 2.0 to conduct the hypothesis testing. We ran the bootstrapping algorithm under the condition of 207 cases 500 times. The results are shown in Table VIII.

H1, *H4a* and *H6a* are supported. Thus, when people self-disclose on SNSs, people with high centrality in a group will disclose a greater amount of personal information. Moreover, individuals who are more extroverted will disclose personal information that is

more accurate to other people with the same level of shared vision and social norms. Finally, people who are high in extroversion and neuroticism will disclose personal information that is more accurate to other people at the same structural dimension level.

5.5 Discussion

We conducted an empirical study to investigate how psychological and societal factors influence self-disclosure behavior on SNSs. Several results deserve further discussion.

Structural social capital has a considerable influence on the amount of self-disclosure behavior. There is a significant relationship between the degree of involvement and the amount of disclosure information because disclosing more information brings the user more friends or closer relationships. The key to building a good relationship is the image that the user presents to his friends. Quality control of the information that is disclosed can help an individual to reveal himself and to build a good image in others' minds. These two elements are also the motivation for many people to disclose information (Lee *et al.*, 2008). As Putnam (1995a) stated, communications are the basis for generating and maintaining social capital in communities. If an individual is not interactive in a social network, his relationships will die. To build and maintain their social positions, users with higher centrality tend to disclose a higher amount of personal information.

Table VII.
Square roots of AVE and correlation coefficients

	AC	AM	CD	EX	NE	RD	SD
AC	*0.83*	0.00	0.00	0.00	0.00	0.00	0.00
AM	0.01	*0.76*	0.00	0.00	0.00	0.00	0.00
CD	0.13	0.34**	–	0.00	0.00	0.00	0.00
EX	0.11	0.20*	0.19**	*0.83*	0.00	0.00	0.00
NE	−0.13	0.07	0.09	−0.35**	*0.76*	0.00	0.00
RD	0.21**	0.25**	0.61**	0.22**	−0.02	–	0.00
SD	0.04	0.58**	0.39**	0.24**	0.05	0.34**	*0.88*

Notes: The numbers in the diagonal line are the square roots of AVE; the others are correlation coefficients. *,**Correlation significant at the 0.05 and 0.01 level, respectively

Table VIII.
Total effects result

No moderator model	Parameter estimates	Original sample (O)	*t*-statistics (|O/STERR|)	Result
	SD→AM	0.5282	9.2474	Supported
	RD→AC	0.2255	1.8242	Not supported
	CD→AC	0.0069	0.0586	Not supported
Hypothesis	Parameter estimates	Original sample (O)	*t*-statistics (|O/STERR|)	Conclusion
H1	SD→AM	*0.5201*	*9.7199*	Supported
H2	RD→AC	0.1471	1.945	Not supported
H3	CD→AC	−0.0177	0.3451	Not supported
H4a	SD×EX→AM	*0.19*	*2.6492*	Supported
H4b	SD×NE→AM	−0.119	1.8525	Not supported
H5a	RD×EX→AC	0.1176	1.3563	Not supported
H5b	RD×NE→AC	−0.1253	1.4115	Not supported
H6a	CD×EX→AC	*0.1699*	*2.2322*	Supported
H6b	CD×NE→AC	−0.1393	1.7354	Not supported

Notes: $t = 1.65$, $p = 0.1$; $t = 1.96$, $p = 0.05$; $t = 2.58$, $p = 0.01$

The relational dimension has no significant relationship with the accuracy of disclosing information when we add the moderate factors into the models. Our findings are similar to those of Hsu and Lin (2008) and Chow and Chan (2008), who find that trust, the main factor in the relational dimension, does not directly affect SNS use or sharing behavior; rather, trust influences only high-risk activities, such as e-commerce (Gefen and Straub, 2003; Wang and Chiang, 2009). In addition, Wasko and Faraj (2005) and Hsu and Lin (2008) argue that reciprocity is not related to information sharing, and our findings are consistent with theirs. The essential difference between self-disclosure and information sharing is that information sharing emphasizes helping others, whereas self-disclosure does not. The subconscious does not consider payback when helping others, particularly when information is shared in a non-working environment that might bring more happiness. Therefore, whether others help in return or provide benefits seems unimportant (Hsu and Lin, 2008).

Extroverted individuals have many connections with others on SNSs and in the "real world" (Zywica and Danowski, 2008). As our results show, extroverted people have a stronger influence in SNS via structural and cognitive factors and react by engaging in self-disclosure behavior. Extroverts focus on the social value of SNSs, whereas introverts consider the emotional and financial value (Lu and Hsiao, 2010). The structural dimension resembles the social dimension when people represent their position in a social network; hence, extroverts focus more on this aspect and attempt to improve their position in the network by offering a high amount of self-disclosure. Although the cognitive dimension is not directly related to self-disclosure behavior, extroversion plays a significant moderating role in the relationship between the cognitive dimension and the accuracy of self-disclosure behavior. Engaging in information sharing requires at least some level of shared understanding between parties, such as shared language, vocabulary, culture, and goals (Wasko and Faraj, 2005), and a shared understanding is an internal representation of social value. Given that extroverts focus on the social value of the SNSs (Lu and Hsiao, 2010), extroverts may disclose information that is more accurate when they receive a higher level of shared understanding.

Neuroticism did not play a role as a moderating factor in the model, however. This finding may relate to the nature of the neuroticism trait. In a previous study on online communication (Swickert *et al.*, 2002), individuals high in neuroticism reported the lowest levels of perceived social support. However, in our study, we evaluated social capital factors as the independent variables to be moderated. Because neuroticism has little relationship with socially related factors, it may have failed to function as a moderator in our model.

From a theoretical perspective, this study develops a new self-disclosure model by integrating psychological and societal factors and answers the question of why and how users disclose intimate information about themselves on SNSs. Specifically, we analyze how three dimensions of social capital and their interaction with personality tarts influence the accuracy and amount of self-disclosure. Our model thus combines psychological factors and societal factors. Social capital factors are included as the independent variables, whereas personality traits are included as moderating factors. Through the path analysis, we found several interesting patterns of self-disclosure on SNSs. First, the centrality of SNS users has a positive effect on the amount of self-disclosure. In addition, if people trust their friends and reciprocate on SNSs, they disclose information that is more accurate. Moreover, people who are more extroverted self-disclose personal information that is more accurate to other

people at the same level in the cognitive dimension and self-disclose a greater amount of personal information to other among people at the same level in the structural dimension. We thus provide a new perspective for understanding self-disclosure behavior on SNSs.

From a practical perspective, the results may provide useful insight for companies operating SNSs. Although the network determines centrality, operators can reveal users' friend structures. Users might thus better understand their own centrality and increase their amount of self-disclosure to maintain an important role in their network. Additionally, people with a high extroversion score may disclose information that is more accurate to other people at the same cognitive dimension level and may disclose a greater amount of personal information to other people at the same structural dimension level; thus, extroverted people would be good users to target in advertising. Network improvements at the cognitive and structural levels will therefore have a greater influence on people with a higher extroversion score. In addition, cognitive factors have different effects in terms of self-disclosure behavior among people with different levels of extroversion. Hence, when building the atmosphere of their SNS, operators should first consider their own market positioning. The structural and cognitive dimensions can then be varied to suit people with different purposes and personalities.

6. Conclusion

This research analyzed the influence of social capital factors on SNS users' self-disclosure and the interactions between personality and social capital factors. We specifically examined six important variables of social capital, which are divided into three dimensions. Our aim was to determine how social and personality factors and the interactions between them affect self-disclosure behavior on SNSs. According to social capital theory and the Big Five personality model, we hypothesized that social capital factors affect the accuracy and amount of self-disclosure behavior and that personality factors would moderate the effect of social capital factors on SNS users' self-disclosure behavior. The data were collected from 207 SNS users.

Based on the path analysis, we identified several interesting patterns of self-disclosure on SNSs. First, the centrality of SNS users has a positive effect on the amount of self-disclosure. Moreover, people who are more extroverted self-disclose personal information that is more accurate to other people at the same level of the cognitive dimension and self-disclose a greater amount of personal information to other people at the same level of the structural dimension.

This paper has several limitations concerning the method and analysis of the results. First, our sample was limited, mainly comprising undergraduate students. Although undergraduate students are the main users of SNSs, this sample may not represent all possible SNS users. This study tested the moderating effect of personality factors on the relationship between social capital factors and self-disclosure behavior on SNSs, but we did not test how personality factors influence self-disclosure behavior, an interaction that may deserve more exploration in the future.

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