

Privacy Paradox in Social Network Sites: Effects of Psychological Need, Privacy Concern, and Privacy Setting on Self-disclosure

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ABSTRACT— *The purpose of this paper is to address the privacy paradox by attempting to better understand the predictors of users' disclosure behavior and evaluates their relation to disclosure, and social capital on social network sites. Using a survey questionnaire, empirical data were collected from 473 members of Facebook in Taiwan. Partial least square (PLS) technique was performed to test the validity of the proposed research model. The results suggest that bridging and bonding social capital are determined by self-disclosure, which in turn is jointly determined by psychological need for privacy and privacy setting. The relationship between privacy concern and self-disclosure is mediated by privacy setting. The findings of this study can help social network sites operators design effective and relevant privacy controls to reduce a user's privacy concern and enhance self-disclosure on social network sites. Our contributions center on a comprehensive understanding of the impact of antecedents of self-disclosure on users' disclosure behavior and social capital on SNSs may provide valuable insights for SNS operators and marketers to offer more effective services to SNS users.*

Keywords--Privacy, Self-disclosure, Social capital, Social network sites

1. INTRODUCTION

A Social network site (SNS) is a website where users can set up an online profile, describing personal information, and add links to other peoples' profiles. SNS use is important in gaining social capital [1, 2]. Prior studies have identified as a relationship that users' attitudes toward privacy may affect the amount of content shared on SNSs [3, 4]. Researchers have found, however, that users place privacy high on their list of concerns, yet they take few voluntary steps to protect it [5, 6]. This discrepancy between privacy concern and privacy behavior is often called the "privacy paradox" [5, 6]. Researchers who refer to this paradox argued that either user's behavior reflects low privacy concerns or other factors mitigate privacy concerns, which is what research would suggest [7]. The objective of this research is to address this paradox by attempting to better understand the predictors of users' disclosure behavior and to evaluate their relation to disclosure as well as to have a better understanding of social capital in SNSs.

Despite the growing research interest with respect to privacy and privacy concern on SNSs, only a limited number of studies have been done to evaluate the factors that mitigate privacy concern on SNSs. The main contribution of this study is in providing a comprehensive understanding of the impact of antecedents of self-disclosure on users' disclosure behavior and their social capital on SNSs. This may help SNS operators and marketers to better address the challenge of supporting the confidence of those who seek to obtain information in SNSs, and thus offer more effective services to SNSs users.

2. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Social Capital

Social capital can be conceptualized as a set of resources that is derived from the social network in which social actors are located [8]. Coleman [9] argued that social capital refers to the resources accumulated through the relationships among people. Social capital binds the members of human networks and communities and makes cooperative action

possible [10]. Balatti and Falk [11] argued that the networks of relationships can facilitate access to other resources of value to individuals or groups for a specific purpose.

Social capital is a theoretical framework that is often employed to study the outcomes of SNSs use. Putnam [12] and Williams [13] distinguish two major types of social capital: bridging social capital and bonding social capital. Bridging social capital is associated with weak social ties that may provide interesting new insights and perspectives across networks, whereas bonding social capital refers to meaningful social relationships that provide physical aid and emotional support. Bonding social capital refers to connections that are emotionally close such as friends or family [14]. Resnick [15] has emphasized the importance of Internet-based linkages for the formation of weak ties, which serve as the foundation of bridging social capital.

Self-disclosure in SNSs

Self-disclosure refers to revealing personal information to another person [16]. Self-disclosure is a process where an individual acquires acquaintance or even develops intimate relationships with others [17]. Donath and Boyd [18] further propose that SNSs could significantly enhance the weak ties because the technology is suitable to maintaining such ties at very low cost. Although many factors can affect the social capital in SNSs, disclosure is a very important element for accruing social capital [2]. Limiting disclosures to one's SNS may negatively impact the extent to which a user may access social capital resources. Literature found that there exist positive relationships between Facebook use and social capital [19]. Steinfield et al.'s longitudinal study [19] found that the intensity of Facebook use in year one strongly predicted bridging social capital outcomes in year two, even after controlling for measures of self-esteem and satisfaction with life. Based on literature review, the following hypotheses are proposed:

H1. Self-disclosure is positively related to bridging social capital.

H2. Self-disclosure is positively related to bonding social capital.

Antecedents of Self-disclosure

In the SNSs context, the privacy setting allowed people to choose who can see their profile. It also gave users the ability to fine-tune the privacy aspects of their account. Stutzman et al. [4] suggest that by personalizing or customizing privacy settings, people will feel more comfortable sharing information because they have greater control over who can access it. Fogel and Nehmad [20] found that greater risk-taking attitudes exist among men than women and those who perceive risks as being higher would be less likely to engage in self-disclosure in SNS.

Privacy concern is the belief about who has access to information that is disclosed when using the Internet and how it is used [7]. Prior studies have identified that user attitudes toward privacy may have an impact on whether users disclose with their network [3, 4]. In the SNSs context, privacy concerns may have a direct impact on whether users exchange information with their network. People who perceive higher concerns with respect to privacy are less disposed to disclosing information about the self [21, 22]. In addition, people who have greater concern about privacy will be more likely to personalize or customize privacy settings [4].

According to Yao et al. [23], psychological need for privacy refers to an individual's disposition to desire more or less privacy in various social situations. A person who has a greater dispositional desire for privacy will be more likely to be concerned about submitting information on the SNSs than would someone who has less need for individual privacy. This psychological need for privacy also may directly influence a person's disclosure on SNSs. Yao and Zhang [24] investigated the predictors of online privacy concerns. They found that people's belief in the right to privacy was the most important predictor. They also found that online privacy concerns significantly mediated the relationship between people's psychological need for privacy and their concerns with privacy violations online. Summing up from the above literature, the following hypotheses are therefore proposed:

H3. Privacy setting is positively related to self-disclosure.

H4. Privacy concern is negatively related to self-disclosure.

H5. Privacy concern is positively related to privacy setting.

H6. Psychological need for privacy is negatively related to self-disclosure.

H7. Psychological need for privacy is positively related to privacy concern.

Based on the privacy attitude, behavior and the social capital theory, this study proposes a theoretical model that includes important antecedents related to disclosure behavior and users' perceptions of social capital in SNSs. The proposed theoretical model is shown in Figure 1.

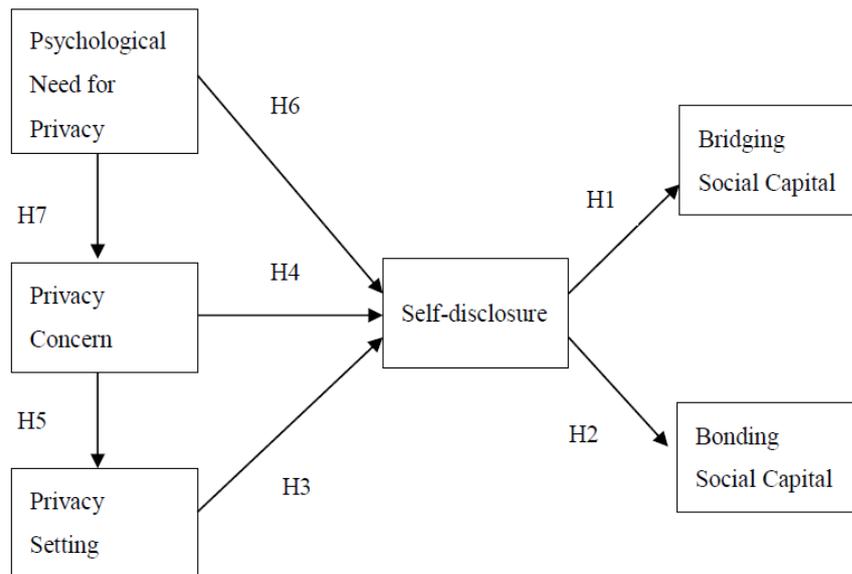


Figure 1. The proposed research model and research hypotheses

3. RESEARCH METHODOLOGY

Participants and Procedures

A cross-sectional web survey was administrated to collect data. The research model was tested with data from members of Facebook in Taiwan. An invitation banner with a hyperlink connected to the web survey was posted on the PTT Bulletin Board System (BBS), which was chosen because it is a popular online BBS in Taiwan. Members of Facebook were cordially invited to support this survey. Thirty randomly selected respondents were offered an incentive in the form of cash of NT\$100 (about US\$3). The questionnaire collected information about demographic and other descriptive variables, including gender, age, time spent using Facebook, and whether respondents were Facebook members or not.

Although a total of 486 questionnaires were collected, the exclusion of 13 invalid questionnaires resulted in a total of 473 (218 from males, 255 from females) complete and valid ones for data analysis. A total of 239(50%) respondents were 23-30 years old, followed by: 174(37%) who were 18-22 years old; 29(6%) 31-35 years old; 13(3%) 36-40 years old; 12(3%) >40 years old; and 6(1%) who were <18 years old. With regard to daily hours spent on Facebook, a total of 154 (33%) of respondents were on for 1-2 hours, followed by: 107 (22%) for 2-3 hours; 81 (17%) for <1 hour; 58 (12%) for >5 hours; 50 (11%) for 3-4 hours; and 23 (5%) for 4-5 hours.

Measures

The measures used in this article were mainly adapted from relevant prior studies. These are each described in more detail in the following sections.

Psychological Need for Privacy

Five items measuring psychological need for privacy were adapted from Buss [25]. Items are measured on a Likert-style scale ranging from 1=strongly disagree to 5=strongly agree. For example, one item from the scale is, “it is hard for me to talk about myself.”

Privacy Concern

The privacy concern scale [7] contains four items. Items are measured on a Likert-style scale ranging from 1=strongly disagree to 5=strongly agree. Higher scores indicate more concern with information provided over the Internet. For example, one item from the scale is, “I am concerned that the information I submit on the Internet could be misused.”

Privacy Setting

Four items measuring privacy setting were adapted from Stutzman et al. [4]. Items are measured on a Likert-style scale ranging from 1=never to 5=always. Respondents were asked about their current privacy settings on Facebook. Higher scores indicate greater levels of privacy setting behaviors. For example, one item from the scale is, “I have changed the privacy settings from the default.”

Self-disclosure

The self-disclosure scale contains seven items. This instrument is based on a rating scale developed by Chelune [26] and Barak and Gluck-Ofri [27]. Items are measured on a Likert-style scale ranging from 1=never to 5=always. Level of self-disclosure was defined as the degree to which a person revealed something about herself or himself to another person in three categories: information, thoughts, and feelings [27]. Sample item is “I had posted something about myself to Facebook, such as age, birthday, interests, and hobbies.”

Bridging Social Capital

Five items measuring bridging social capital were adapted from Ellison et al. [1]. This instrument is based on a rating scale developed by Ellison et al. [1] and Williams [13]. Items are measured on a Likert-style scale ranging from 1=strongly disagree to 5=strongly agree. This measure assessed the extent to which a person experienced bridging social capital, which is believed to be better-suited for linking to external assets and for information diffusion [12, 1]. Sample item is “Interacting with people at Facebook makes me want to try new things.”

Bonding Social Capital

The bonding social capital scale contains five items. This instrument is based on a rating scale developed by Ellison et al. [1] and Williams [13]. Items are measured on a Likert-style scale ranging from 1=strongly disagree to 5=strongly agree. This measure assessed emotional closeness, the availability of someone to provide tangible assistance, and whether an individual had social network members to turn to for advice. Sample item is “There are several people on Facebook I trust to solve my problems.”

All items were translated into Chinese with modification by one MIS Professor and three MIS master students. A pretest of the questionnaire was conducted using 6 experts in the area of SNSs research to assess logical consistencies, task relevance, and the ease of understanding of all constructs.

4. RESULTS

To test the measurement model and structural model, partial least square (PLS) technique was performed using SmartPLS version 2.0 M3 [28]. PLS technique is appropriate for testing theories that are in an early stage of their development, and places minimal restrictions on sample size and residual distribution [29].

The constructs in our research model were evaluated in terms of reliability, convergent validity, and discriminant validity. Reliability was examined using composite reliability values and Cronbach’s alpha. As listed in Table 1, all of these values were well above the commonly accepted level of 0.70 [30, 31]. For satisfactory convergent validity, average variance extracted (AVE) by each construct should exceed 0.50 [32]. As shown in Table 1, AVE ranged from 0.52 to 0.78, signifying the desirable convergent validity of the measurement.

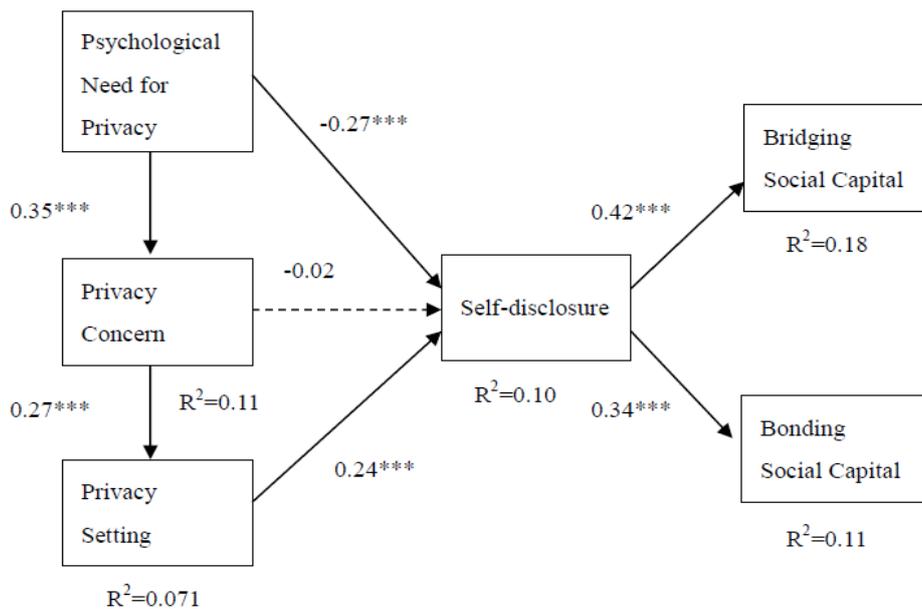
Table 1: Reliability, Correlations, and Average Variance Extracted

Construct	1	2	3	4	5	6
1. Psychological need for	0.72					
2. Privacy concern	0.34	0.89				
3. Privacy setting	0.27	0.27	0.75			
4. Self-disclosure	-0.22	-0.05	0.16	0.78		
5. Bridging social capital	-0.15	-0.03	-0.03	0.42	0.76	
6. Bonding social capital	-0.14	0.01	0.02	0.34	0.57	0.80
Cronbach’s alpha	0.77	0.74	0.91	0.90	0.82	0.86
Composite reliability	0.84	0.94	0.84	0.92	0.87	0.90
Average variance extracted (AVE)	0.52	0.78	0.56	0.61	0.58	0.63

Note: Diagonal elements (in bold) are the square root of the average variance extracted. Off-diagonal elements are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements.

Discriminant validity was evaluated using the criteria recommended by Fornell and Larcker [32], namely, that the square root of the AVE should exceed the correlation shared between the construct and other constructs in the model. Table 1 lists the correlations among constructs, with the square root of the AVE on the diagonal. All diagonal values exceed the inter-construct correlations, indicating good discriminant validity.

Tests of significance of all paths were performed using the bootstrap re-sampling procedures with 500 iterations. The standardized path coefficients for the research model are presented in Figure 2. Most of the paths were significant in the expected direction. An exception was the path connecting privacy concern with self-disclosure. Results indicated that self-disclosure was associated with bridging social capital and bonding social capital. Hypotheses 1 and 2 were supported.



Note: *p<0.05; **p<0.01; ***p<0.001

Figure 2: SEM analysis of the research model

Consistent with Hypotheses 3 and 5, self-disclosure was positively related to psychological need for privacy and privacy setting, respectively. Both psychological need for privacy and privacy setting were positively related to privacy concern. Hypotheses 6 and 7 were supported. Contrary to our predictions, Hypotheses 4 was not supported. The relation between privacy concern and self-disclosure was insignificant, even though the path coefficient was negative, as expected.

5. DISCUSSION

The purpose of this paper was to increase our understanding of the predictors of a user's willingness to disclose personal information on SNSs. This study develops and empirically tests a theoretical model that includes important antecedents related to SNS disclosure behavior and to users' perceptions of social capital in SNSs. The results suggest that bridging and bonding social capital are determined by self-disclosure, which in turn is jointly determined by psychological need for privacy and privacy setting. The relationship between privacy concern and self-disclosure is mediated by privacy setting.

From a theoretical perspective, this study contributed to research by increasing the understanding of the role of self-disclosure on SNSs. In addition, this study identified a set of predictors of self-disclosure which enables a better understanding of the formation of willingness to disclose personal information in SNSs.

Self-disclosure is a significant predictor of both bridging and bonding social capital. This result shows that self-disclosure plays an important role in the maintenance of existing social ties and the formation of new connections on SNSs. Self-disclosure has a stronger coefficient in relation to bridging social capital than to bonding social capital. This finding suggests that SNSs could greatly increase the weak ties, both in forming and in maintaining them.

This study has also confirmed that both psychological need for privacy and privacy setting are strongly related to self-disclosure. Contrary to our predictions, the relation between privacy concern and self-disclosure was insignificant. However, prior studies have found that privacy concern is related to self-disclosure [21, 22]. Future studies are needed to examine this difference in greater detail.

Psychological need for privacy is positively and significantly related to privacy concern, which in turn affects privacy setting. The results suggest that privacy setting plays an important role serving to mitigate privacy concern of people in SNSs. Thus, for improving self-disclosure, SNS web sites operators need to provide effective and relevant privacy controls on social network sites. However, more options do not necessarily mean better privacy control. Users may be defeated by the great quantity of privacy settings and have a hard time choosing the intended settings beyond the defaults. Future research should be encouraged to identify the minimum set of privacy settings that should be offered on SNSs.

For better understanding the users' disclosure behavior in SNSs, this study has provided an initial attempt to propose an antecedent-disclosure-social capital model. We have shown that privacy setting can mitigate the privacy concern and improve self-disclosure. There may be other relevant antecedent factors of self-disclosure that are not included in this study. Future research should be encouraged to identify other antecedents of self-disclosure for the empirical model to be more complete. Lastly, although the research model has been empirically supported by our study, it should be further validated in a broader geographic and cultural context.

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