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The Effects of Social Structure Overlap and Profile Extensiveness on Online Social Connectivity Regulation

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ABSTRACT

In online social networks, new social connectivity is established when a requestee accepts a friend request from an unfamiliar requestor. While users are generally willing to establish online social connectivity, they are at times reluctant in constructing profile connections with unfamiliar others. Drawing on the interpersonal cognition literature and the privacy calculus perspective, this paper examines the effects of social structure overlap and profile extensiveness on privacy risks as well as social capital gains and how the requestee responds to a friend request (i.e., intention to accept). The results of a quasi-experiment involving 101 respondents provide strong evidence that social structure overlap and profile extensiveness influence privacy risks and social capital gains. In addition, while privacy risks reduce intention to accept, social capital gains increase intention to accept online social connectivity.

Keywords

Online Social Network, Online Social Connectivity, Impression Formation, Privacy Calculus, Intention to Accept.

INTRODUCTION

Social network sites have gained increasing popularity over the past few years. A survey of 2,277 Internet users in the U.S. has revealed that over 40% of users identified the opportunity to establish new online social connectivity as an important motivation for using online social networks [1]. Online social connectivity is highly important to online service providers. A new online social connectivity is initiated when an unfamiliar requestor sends a friend request to a requestee [2]. The requestee's response to the friend request is often influenced by his or her impression of the requestor, which is formed based on the requestor's personal profile on online social networks. Personal profiles typically contain a variety of information about the requestor, such as photographs, personal interests, and social circles.

Past studies reveal that developing online social connectivity with an unfamiliar requestor can be beneficial to the requestee. Furthermore, the establishment of online social connectivity enables the requestee to develop additional relationships based on the social networks of the requestor. As a key function of online social networks is to facilitate the development and maintenance of online social connectivity, we contend that gain in social resources is an important benefit in developing new online social connectivity.

It has, however, been observed that while online social connectivity enables increase in social resources, its establishment might subject the requestee to risks. Research in the interpersonal communication domain provides insights into this phenomenon. For example, Stern and Taylor [3] examined students' Facebook usage behavior and reported that while students did accept friend requests from unfamiliar others, those who were concerned about their privacy information denied friend requests. In essence, the requestee might deny profile connections in response to privacy risks on online social networks.

In this paper, we propose and empirically test a research model that integrates the interpersonal cognition literature and the privacy calculus perspective. In sum, the model maintains that the effects of category-based information and attribute-based information are summarized into privacy risks and social capital gains, which in turn, drive the requestee's response to online social connectivity (i.e., intention to accept).

LITERATURE REVIEW

Impression Formation

The literature on interpersonal cognition suggests that individuals form impression of others by considering two types of social information, namely category-based information and attribute-based information. Category-based information triggers social categorization, which invokes relational frames stored in memory [4]. Researchers suggest that category-based information facilitates sense-making by providing mechanisms for comprehending relational communications [5]. Attribute-based information activates individualization in social information processing. By considering others' specific attributes systematically, individuals are likely to develop deep understanding of others.

Privacy Calculus

The privacy calculus perspective posits that individuals' decision in allowing boundary accessibility is the outcome of a tradeoff, in which individuals consider the risks associated with boundary accessibility against certain social gains [6]. While past research has considered a variety of risks and gains, privacy risks and social capital gains are suggested to be particularly relevant to individuals' behavior when their personal information is concerned. This study defines privacy risks as the threats to personal information associated with the establishment of profile connections. This type of privacy risks is particularly important in online social networks because establishment of online social connectivity exposes individuals' privacy space to unforeseen danger. Social capital gains is defined as the estimated increase in resources accumulated through relationship development [7]. Past research has regarded gains in social capital as the main enticement for individuals to engage in social interactions.

While privacy risks is known to be a prime inhibitor to online social networking, the requestee's social capital gains is found to be a major driver of social connection development. Overall, privacy risks and social capital gains, which represent the two components in the requestee's privacy calculus, are particularly important in influencing his or her response to online social connectivity.

RESEARCH MODEL AND HYPOTHESES

The full research model is presented in Figure 1.

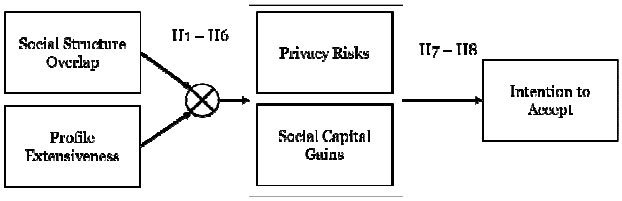

Figure 1. Research Model

Privacy Risks

Social structure overlap refers to the degree to which the requestee and the requestor share common interpersonal affiliations. According to the principle of homophily, similarity in interpersonal affiliations increases ease of communication, improves predictability of behavior, and fosters relationships of trust and reciprocity [8]. The requestee who shares similar social networks with the requestor tends to share a common perspective with regards to relationship development, and this commonality reduces risks in developing affiliations. The resulting social cohesion engendered by social structure overlap lessens the likelihood that the requestor will engage in exploitive behavior, and hence reducing risk to the requestee's privacy. Thus, we predict

H1: Compared to low social structure overlap, high social structure overlap leads to lower privacy risks.

In addition to social structure overlap, we expect privacy risks to be influenced by requestor's profile extensiveness, which refers to the extent to which the personal profile contains detailed personal information. By establishing profile connectivity, the requestee initiates, develops, and maintains interpersonal relationships with the requestor [9]. Researchers have noted the importance of personal profiles in the initial stage of relationship development. In sum, when requestor's profile extensiveness is high, the requestee may develop rich understanding of the requestor, and hence reducing privacy risks with regards to establishing online social connectivity. Therefore, we posit

H2: Compared to low profile extensiveness, high profile extensiveness leads to lower privacy risks.

Drawing upon the relationship framing theory [10], we postulate an interaction effect of social structure overlap and profile extensiveness on privacy risks. When social structure overlap is high, a relational frame for close relationships is activated, which not only suppresses the requestee's uncertainty in interpretation but also converges his or her focus in terms of social similarity with the requestor, that is, the requestee is likely to perceive the requestor as someone who shares common social circles and interpersonal connections [11]. Hence, the effect of profile extensiveness is likely diminished when social structure overlap is high.

On the contrary, low social structure overlap suggests less commonality in interpersonal relationships, which activates a relational frame for distant relationships [10]. With the influence of this relational frame, the requestee is likely to become more prudent in forming impressions of the requestor. Such prudence motivates the requestee to adopt a careful approach in which he or she considers each of the attribute-based information available in personal profiles [12]. As a result, low social structure overlap would not be sufficient in finalizing the requestee's impression of the requestor. Compared to low profile extensiveness, high profile extensiveness connotes more informative profile content and hence reduces privacy risks with regards to establishing online social connectivity. Thus, we predict

H3: There is an interaction effect between social structure overlap and profile extensiveness on privacy risks, i.e., In the high social structure overlap condition, the effect of profile extensiveness in terms of reducing privacy risks is less prominent than that in the low social structure overlap condition.

Social Capital Gains

In online social networks, social structure overlap is a concise representation of similarity in social networks as well as commonality in interpersonal affiliations.

Research on interpersonal relationship has consistently uncovered strong links between social structure overlap and liking, which is also termed the similarity effect. Typically, individuals believe others, who shared common social affiliations, would also believe what individuals believe [13]. Past research suggests that a positive relationship between social structure overlap and individuals' expectation of social capital gains in relationship development. Thus, we hypothesize

H4: Higher social structure overlap leads to higher social capital gains.

From a social penetration perspective, when an unfamiliar requestor reveals himself or herself through self-disclosure, the requestee is better able to understand the requestor and predict his or her future behavior. In online social networks, the lack of physical presence limits attribute-based information to the requestor's self-disclosure in personal profiles. As a result, the requestee has to rely heavily on the requestor's personal profile in assessing his or her social capital gains. Accordingly, high profile extensiveness is likely to induce large social capital gains in establishing online social connectivity. Thus, we predict

H5: Higher profile extensiveness leads to higher social capital gains.

RFT highlights the importance of category-based information in forming individuals' perception of benefits [10]. Within the framework of RFT, when individuals perceive commonality with others, a relational frame for close relationships is activated, which dominates their evaluation of relationship development, and hence reducing their focus on attribute-based information [14]. However, if individuals perceive distinction in social affiliations, a relational frame for distant relationships is activated, which emphasizes prudence in developing relationships. Hence, individuals are likely to pay attention to attribute-based information.

According to RFT, therefore, when social structure overlap is high, the requestee feels assured that the requestor would have common interests and share mutual understanding in developing relationships, thereby reducing the requestee's reliance on profile information in assessing social capital gains. However, when social structure overlap is low, mutual understanding and common interests cannot be guaranteed; hence, the requestee would pay more attention to information available in the requestor's personal profiles. Thus, we propose

H6: There is an interaction effect between social structure overlap and profile extensiveness on social capital gains, i.e., In the high social structure overlap condition, the effect of profile extensiveness in terms of increasing social capital gains is less prominent than that in the low social structure overlap condition.

Privacy Tradeoff and Request Acceptance

Accepting a friend request can be risky because it represents the requestee's willingness in exposing himself or herself to the requestor on online social networks. Much research suggests that in online social networking, relationship acceptance can be impeded by the requestee's privacy risk perceptions in establishing online social connectivity [15]. Thus, we posit

H7: Higher privacy risks lead to lower intention to accept.

A number of studies suggest that social capital gains significantly influence intention to accept a friend request. For example, in a study on Facebook, Lampe et al. [12] reported that individuals who had favorable impression of others were more willing to establish profile affiliations. These findings imply that the requestee's gains in social capital may induce acceptance to a friend request. Therefore, we hypothesize

H8: Higher social capital gains lead to higher intention to accept.

RESEARCH METHDOLOGY

This research employed a quasi-experimental design (i.e., 2x2 factorial design) that integrates the characteristics of field surveys and lab experiments. Facebook was chosen as the online social network platform for this study. Respondents were university students who had online social networking experience. In the experiment, respondents were presented with one of the four scenarios (i.e., varied across the two categories of social structure overlap and profile extensiveness) in which they received a friend request from an unfamiliar requestor (i.e., denoted by the name A and a unisex avatar). Social structure overlap was manipulated by the number of mutual friends the respondent has in common with the requestor. In this study, low social structure overlap was represented by 5% of the respondent's total Facebook friends, whereas high social structure overlap was represented by 50% of the respondent's total Facebook friends. Profile extensiveness was facilitated by manipulating the amount of content items in the mock-up personal profile of the requestor that mimicked actual Facebook layout and technology features (e.g., sponsored advertisements, profile pictures, and timeline elements). Low profile extensiveness was represented by 5 timeline items, while high profile extensiveness was represented by 20 timeline items. The timelines items were developed based on a pool of actual timeline items contributed by students from the same university. Respondents were told to imagine that the scenario was real and read through it carefully. Afterwards, they were instructed to complete a questionnaire that contained manipulation checks and measurement items of the research variables, as well as the relevance and realism of the friend request scenario.

The survey ran for one week, and collected 101 responses, who were not friends of the contributors, representing a complete response rate of 67.33%.

DATA ANALYSIS AND RESULTS

Respondent Demographics and Background Analysis

Among the 101 respondents participating in the study, 47 were females. The age of the respondents ranged from 20 to 25, with average Internet experience and average Facebook experience being 6.11 years and 3.6 years, respectively.

Measurement

Five items measuring privacy risks (Cronbach's alpha = 0.89) and four items measuring social capital gains (Cronbach's alpha = 0.88). Exploratory factor analysis shows that, in general, items load well on their intended factor and lightly on the other factor, thus indicating adequate construct validity.

Results on Privacy Risks

ANOVA with privacy risks as dependent variable reveals that higher social structure overlap significantly leads to lower privacy risks ($F(1, 97) = 75.04$, $p < 0.01$) (see Table 3 and 4). Further, profile extensiveness is found to have a significant main effect on privacy risks ($F(1, 97) = 20.49$, $p < 0.01$), meaning that compared to low profile extensiveness, high profile extensiveness reduces privacy risks. Hence, H1 and H2 are supported. Simple main effect analysis reveals that (1) high profile extensiveness is associated with significantly higher social capital gains than low profile extensiveness under the low social structure overlap condition ($F(1, 49) = 22.67$, $p < 0.01$), and (2) low profile extensiveness and high profile extensiveness are not different from each other in affecting social capital gains under the high social structure overlap condition ($F(1, 48) = 1.47$, $p = 0.23$). Therefore, H3 is supported.

Results on Social Capital Gains

ANOVA with social capital gains as dependent variable reveals that higher social structure overlap significantly leads to higher social capital gains ($F(1, 97) = 90.11$, $p < 0.01$) (see Table 5 and 6). Further, profile extensiveness is found to have a significant main effect on social capital gains ($F(1, 97) = 69.26$, $p < 0.01$), meaning that compared to low profile extensiveness, high profile extensiveness increases social capital gains. Hence, H4 and H5 are supported. In line with our prediction, the effect of profile extensiveness is more prominent in the low social structure overlap condition than in the high social structure overlap condition. In particular, when social structure overlap is low, high profile extensiveness significantly boosts social capital gains (i.e., 2.41 for low profile extensiveness vs. 4.29 for high profile extensiveness); when social structure overlap is high, high profile extensiveness also leads to higher social capital gains, but to a smaller extent (i.e., 4.49 for low profile extensiveness vs. 5.48 for high profile extensiveness). Therefore, H6 is supported.

Results on Request Acceptance

Partial Least Square was used to test remaining hypotheses. Results shown in Figure 2 indicate that privacy risks has a significant and negative effect on intention to accept (β=-0.352, $p<0.01$). Hence, H7 is supported. Furthermore, the results demonstrate that social capital gains have a significant and positive effect on intention to accept (β=0.525, $p<0.01$). Therefore, H8 is supported.

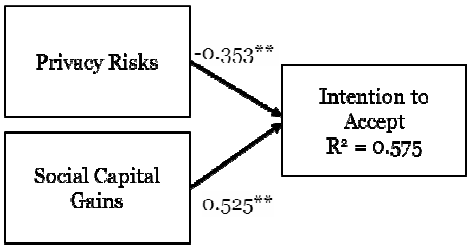

Figure 2. PLS Analysis

DISCUSSION

Theoretical Implication

This study makes important theoretical contributions. On the basis of the privacy calculus perspective, we identify privacy risks and social capital gains, as the cost and benefit elements of a privacy tradeoff, whereby individuals consider the privacy threats and social benefits in establishing online social connectivity. Our findings show that privacy risks and social capital gains are indeed important determinants of individuals' response to a request for profile connections. To the best of our knowledge, this study is the first to employ the notion of privacy boundary regulation to understand the establishment of online social connectivity.

Further, we contribute to the IS literature by providing evidence on the importance of impression formation in regulating online social connectivity. Based on the interpersonal cognition literature, this study identifies two important antecedents of privacy calculus, namely social structure overlap and profile extensiveness. Specifically, social structure overlap is a type of social category information, which invokes relational frames to facilitate social categorization. Profile extensiveness concerns the details of requestor specific information, which is essential for individualization in social information processing. Taken as a whole, we combine impression formation and privacy calculus and then show the efficacy of this integrative approach in the context of online social networking.

Practical Implication

Application designers of online social networks often provide mechanisms that address users' perception of privacy risks. While mechanisms that address privacy risks are somewhat common, little design efforts have been made on enhancing the appreciation of social capital gains. To this end, we advocate a design strategy which

improves recognition of social capital gains. As predicted by the proposed model, social capital gains are found to be enhanced by greater social structure overlap and profile extensiveness. While this result is largely consistent with conventional wisdom, a more interesting finding of this study is probably that the joint effects of social structure overlap and profile extensiveness on social capital gains is more pronounced in the low social structure overlap condition than that in the high social structure overlap condition. This finding suggests that the extensiveness of profile details is crucial for relationship development between users who do not share a high degree of social commonality. This is because an extensive profile provides comprehensive information about the requestor, thereby reducing uncertainty and enhancing interpersonal understanding. Thus, it is important that application designers consider enriching profile extensiveness, such as photo album previews and timeline abstracts on online social networks.

Limitations and Future Directions

Our contributions can be limited by friend request scenario. Evidence suggests that the effects of social structure overlap and profile extensiveness may depend on the friend request scenario. In our experiment, respondents were presented with a friend request scenario in which an imaginary friend had sent them a Facebook friend request. Result has shown that respondents perceived the friend request scenario as relevant (mean=6.02) and realistic (mean=5.54), thus lending confidence that our scenario selection is appropriate.

This study opens up an exciting avenue for further research. We see the value in investigating "objective" measures of online social connectivity acceptance, as opposed to our current behavioral intention measurements. It is possible that individuals' actual behavior may not completely reflect their behavioral intentions. To this end, a further investigation of actual acceptance using a field experiment could be a future research avenue.

REFERENCES

1. Smith, A., *Why Americans Use Social Media*. 2011.

2. Boyd, d. and J. Heer, *Profiles as Conversation: Networked Identity Performance on Friendster.* HAWAII INTERNATIONAL CONFERENCE ON SYSTEM SCIENCES, 2006. **3**: pp. 59c- 59c.

3. Stern, L.A. and K. Taylor, *Social Networking on Facebook.* Journal of the Communication, Speech & Theatre Association of North Dakota, 2007. **20**: pp. 9-20.

4. Hayes, S.C. and D. Barnes-Holmes, *Relational Operants: Processes and Implications: A Response to Palmer's Review of Relational Frame Theory.* Journal of Experimental Analysis of Behavior, 2004. **82**(2): pp. 213-224.

5. Solomon, D.H., J.P. Dillard, and J.W. Andersen, *Episode Type, Attachment Orientation, and Frame Salience: Evidence for a Theory of Relational Framing.* Human Communication Research, 2002. **28**(1): pp. 136-152.

6. Laufer, R.S. and M. Wolfe, *Privacy as a concept and a social issue: A multidimensional development theory.* Journal of Social Issues, 1977. **33**(3): pp. 22-42.

7. Coleman, J.S., *Social Capital in the Creation of Human Capital.* American Journal of Sociology, 1988. **94**: pp. 95-120.

8. McPerson, M., L. Smith-Lovin, and J.M. Cook, *Birds of a Feather: Homophily in Social Networks.* Annual Review of Sociology, 2001. **27**: pp. 415-444.

9. Joinson, N.A. *Looking At, Looking Up or Keeping Up with People?: Motives and Use of Facebook*. in *Conference on Human Factors in Computing Systems*. 2008. Florence, Italy: ACM.

10. Dillard, J.P., T.A. Kinney, and M.G. Cruz, *Influence, Appraisals, and Emotions in Close Relationships.* Communication Monographs, 1996. **63**(2): pp. 105-130.

11. Chen, Y.-R., X.-P. Chen, and R. Portnoy, *To Whom Do Positive Norm and Negative Norm of Reciprocity Apply? Effects of Inequitable Offer, Relationship, and Relational-Self Orientation.* Journal of Experimental Social Psychology, 2009. **45**(1): pp. 24-34.

12. Lampe, C., N. Ellison, and C. Steinfield. *A Familiar Face(book): Profile Elements as Signals in an Online Social Network*. in *CHI 2007*. 2007. San Jose, CA, USA.

13. Ross, L., D. Greene, and P. House, *The "False Consensus Effect": An Egocentric Bias in Social Perception and Attribution Processes.* Journal of Experimental Social Psychology, 1977. **13**(3): pp. 279-301.

14. Gawronski, B., et al., *It's in the Mind of the Beholder: The Impact of Stereotypic Associations on Category-Based and Individuating Impression Formation.* Journal of Experimental Social Psychology, 2003. **39**(1): pp. 16-30.

15. Ellison, N.B., C. Steinfield, and C. Lampe, *The Benefits of Facebook "Friends:" Social Capital and College Students' Use of Online Social Network Sites.* Journal of Computer Mediated Communication, 2007. **12**(4): pp. 1143-1168.

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