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NON-DIRECTED SELF-DISCLOSURE IN THE BLOGOSPHERE

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Exploring the persistence of interpersonal communication norms

Social exchange via personal blogs challenges traditional norms regarding interpersonal communication due to the typically non-directed nature of self-disclosure inherent in blogging. This study investigates the relationship between bloggers' individual differences in terms of gender, their intended audiences, tendencies towards self-disclosure, and expectations for familiar communication norms such as equitable reciprocity. The results from a survey of 145 bloggers from 32 countries suggest that bloggers' self-disclosure tendencies and their inclination to target their content towards strong-tie networks are positively associated with the adoption of traditional self-disclosure norms when using blogs. Additionally, results indicate that while female bloggers expect others to acknowledge posts to their blogs, they do not feel obligated to acknowledge others' posts.

Introduction

Blogs are often used to maintain existing relationships, including those with close friends and family (Herring *et al.* 2005). However, the asynchronous and broadcast nature of this technology may impact traditional interpersonal communication norms. Prior to the diffusion of Internet-based communication tools, people's capacity to extend their social spheres was restricted geographically and limited in principle to one-to-one communication. Today, however, the

span of people's social networks is potentially global in scope and is prompting a collective renegotiation of interpersonal rules that guide communication practices such as 'letting people know … keeping in touch … and getting the word out' (Ryan 2006, p. 228).

Obviously, norms and rules are important guides for the establishment and development of relationships ranging from informal encounters (Harre & Secord 1972) to intimate friendships (Argyle & Henderson 1984). More recently, Walther and Bunz (2005) explored the role that rules play in distributed groups who depend on computer-mediated communication (CMC), suggesting that following rules *generally* facilitates uncertainty reduction and perceived trust among members. Clearly, rules are important tools that guide interpersonal interaction and need to be systematically explored in the context of new communication technologies – such as blogs – that challenge traditional communication norms.

In this paper, posting personal information to publicly accessible blogs is operationalized as *non-directed self-disclosure* (NDSD), a novel form of computer-mediated interpersonal communication for the purpose of maintaining relationships. Given the personal and often intimate nature of blog posts and the non-directed 'broadcast' nature of these disclosures, questions arise regarding the persistence of norms associated with acknowledging and responding to NDSDs. These questions are compounded by the dual roles bloggers assume as they both write blog posts and read other people's blogs. The goal of the current research is to explore bloggers' expectations, as both senders and receivers, regarding interpersonal communication norms in light of NDSD.

Literature review

Previous studies have documented the use of various information and communication technologies for developing and sustaining social relationships (Miller & Slater 2000; Boneva et al. 2001; Rabby & Walther 2002; Johnson et al. 2008). In particular, research suggests that people with large support networks of strong ties use blogs as a tool to maintain their close relationships (Stefanone & Jang 2007). Blogs afford users the ability to disclose personal information to large audiences with little time and energy, and thus reduce the costs associated with maintaining these relationships. In social network analysis, the most frequently measured aspect of relationships is tie strength, an indication of how close the respondents report that they are to each network member (McCarty et al. 1997). Strong-tie contacts are characterized by frequent, reciprocal communication and usually a long, stable history of interaction and constitute relationships with family and close friends. On the other hand, weak ties are characterized by infrequent communication, low reciprocity, and a lack of emotional closeness (Granovetter 1973). Together, these relationships constitute

people's social environment or social context, and the asynchronous and broadcast nature of exchange via blogs makes it easier to communicate with large strong-tie networks (STNs).

Interpersonal communication is goal directed to the extent that we choose who we talk to, what we talk to them about, and how we talk to them (Rubin & Rubin 1992). However, the dynamics of interpersonal exchange may be altered when communicating via CMC channels due to the different choices that these channels afford senders and receivers. For example, many CMC tools afford asynchronous and one-to-many message transmission. One increasingly popular mode of interpersonal communication is via weblogs (blogs).

Blogs

Because communication is a goal-oriented social activity (Rubin & Rubin 1992), intended audience plays an important role in how people choose to communicate (Ryan 2006). Prior research found that the majority of bloggers directed their posts to people they know offline (Qian & Scott 2007). Audiences were typically composed of STN contacts – close friends, classmates, and family (Ko & Kuo 2009) – with whom bloggers continue their conversations through a variety of communication channels. This was expected, given that communication with strong ties tends to be multi-modal (Haythornwaite 2002) and suggests that blogs are most often used to maintain existing relationships. However, the format of blogs is unique because functionally they facilitate broadcast transmissions of personal information to networks of densely connected friends and family *and* to unknown audiences.

This unique characteristic of NDSD leads to two critical differences compared with traditional interpersonal exchange. First, NDSD lacks the personal focus of directed messages. This is related to non-personalistic self-disclosure (SD) in which information is revealed to multiple targets (Dindia 2001). In this case, while the content of SD is still intimate and emotional, the perception of exclusivity fostered by directed SD is mitigated (Collins & Miller 1994). Second, NDSD via public blogs may produce barriers for readers to assume the role of intended audience. Offline, verbal and non-verbal cues are generated that allow receivers to easily tell whether or not the message is intended for them. However, the asynchronous nature of blogs does not afford an immediate confirmation of the intended audience status. Without the exchange of understanding regarding for whom the blog post is for, readers may or may not oblige themselves to the role of intended receivers. Especially in the case of publicly accessible personal blogs, they are open for all to read, but, at the same time, are often addressed to no one in particular. As a result, it is not clear whether or not readers will perceive themselves as the target audience or just bystanders.

Together, NDSD raises questions about collective understanding and expectations towards interpersonal communication norms. For example, Ryan's

(2006) work on the sociology of information suggests that NDSD may result in conflicts because there are specific rules in place that guide the selective targeting and timing of SD. Imagine how upset the parents of a woman would be if they heard from friends that their daughter was recently engaged to be married, instead of receiving this notification directly from their daughter. Similarly, simultaneous group-level notification (typified by posting to personal-journal-style blogs) increases the likelihood of violating norms regarding the timing of SD.

Self-disclosure and blogs

Self-disclosure is defined as the process by which people provide personal information about their thoughts, feelings, and/or needs to others (Archer 1980; Johnson 1981), and it functions as a boundary maintenance tool (Derlega & Chaikin 1977). As relationships mature, the boundaries around what information is held private tend to relax. Furthermore, intimacy levels of SD tend to be equal (Kleinke 1979), viewed as pleasing (Sermat & Smyth 1973), and lead to higher levels of trust over time (Johnson & Noonan 1972). SD is elemental to relationship development and maintenance (Altman & Taylor 1973). Of particular interest to this study are Kleinke's (1979) results suggesting that the intimacy of disclosures between people should be equivalent, consistent with equity theory. Equity theory has its roots in social exchange theory, and suggests that people strive for some sense of 'fairness' in relationships (Carrell & Dittrich 1978). People who perceive inequity in a relationship will attempt to eliminate their distress by restoring equity.

The notion of reciprocity has broad research interest ranging from social psychology to evolutionary economics (Gurvin 2006). Homans' (1950) exchange theory explicitly suggests the obligation to reciprocate in an interaction, and that reciprocity leads to equitable exchange (Jones & Archer 1976). In scenarios such as these, communication is directed at specific others and both parties have a clear understanding that they are engaging in a social exchange and what is expected from their counterparts. Directed communication also conveys a sense of personalness. Personalness reflects the notion that personal disclosures lead to liking, because recipients feel that they have been selected as trustworthy candidates for intimate relationships (Taylor *et al.* 1981). Due to the lack of exclusivity discussed above, NDSD may circumvent the perception of personalness.

There are positive outcomes associated with directed, personal communication, because when I choose to tell *only* you something, this is actually a signal indicating that I trust you and value our relationship (Taylor *et al.* 1981). With traditional communication channels (e.g. face to face (F2F) and telephone), it is clear who the intended receivers are. However, this is not the case when SD is mediated via blogs. As a result of this role uncertainty, it is unclear how blog readers should respond to content available via online personal journals.

Note that bloggers are also Internet users and may read other people's blogs. On the one hand, when bloggers post content, they may expect their audience to acknowledge receipt of the said information (even if the audience comprises many people). On the other hand, if traditional norms persist online, the same bloggers who expect acknowledgement should also feel obligated to provide the same feedback *to other bloggers* upon reading their posts. This pressure to acknowledge likely increases as the tie strength between bloggers and their audience increases.

In this study, bloggers are operationalized as both senders and receivers in the blogosphere. They alternate between the role of senders posting original and personally relevant content and receivers as they read others' online blog content. Note that bloggers may also occupy a receiver role when reading comments posted on *their* blogs. However, these comments are usually responses to the blog posts and, therefore, should not be characterized as non-directed communication. In maintaining our focus on non-directed SD, our survey questions ask specifically for participants' responses regarding reading other people's blogs. Overall, by explicating both the sender and receiver roles, it is possible to investigate the range of expectations for rule adherence. Although people are accustomed to following interpersonal rules in F2F interaction, the nuances associated with message delivery, acknowledgement, and receipt may be substantially different in communication mediated by blogs.

With regard to content, blogs targeted at friends and family are likely to present information relevant to all parties involved, because STNs are densely connected groups with a shared history. They all know each other. Given the novel communication circumstances inherent in group-level CMC via blogs and concomitant questions about whether communication rules persist, the following general research question is proposed: How influential are traditional interpersonal communication norms such as reciprocity in communication mediated by blogs?

If traditional norms such as reciprocity endure for people who write for friends and family in the blogosphere, then these bloggers should expect their audience to acknowledge receipt of messages they post. Bloggers should also feel obligated *to give* acknowledgement of receipt when they read blogs maintained by STN contacts. The intended audience element of this equation is important because people in STNs typically have a long and shared history of interaction, and thus have had time to negotiate a shared understanding of interpersonal communication rules. Perceptions regarding the acknowledgement norm should be consistent across sending and receiving roles because of the maturity of the STN relationships. Thus, the degree to which bloggers direct their blogs towards their STN, opposed to abstract, unknown audiences, should be:

H1a: positively related to bloggers' expectation of receiving acknowledgement.

H1b: positively related to bloggers' perceived obligation to give acknowledgement after reading blog posts authored by their STN.

The same normative pressure between bloggers and their STN should also apply to the reciprocity norm. Bloggers should expect equitable feedback from their STN readers when they post. At the same time, when reading blogs from STN members, bloggers should also feel obligated to comply with the normative expectation to reciprocate. Therefore, bloggers who target STNs should be more likely to:

H1c: expect equitable reciprocity from their STN readers
H1d: think that they should reciprocate equitably when reading blogs maintained by people in their STNs

Social norms such as acknowledgement and equity provide guidance in detecting feedback signalling the willingness to continue participation. As a result, people who have a higher tendency towards SD should favour these social norms and have higher expectations towards receiving acknowledgement and equitable disclosure from their audiences. These expectations should be heightened when the audience comprises family and friends. Thus, for *senders*, the tendency to SD is positively related to:

H2a: the expectation for acknowledgement
H2b: the expectation for equitable reciprocity.

However, these expectations hinge on an important precondition: readers' perceptions about the personalness of blog posts. As reviewed above, the personalness of messages is a key element in social exchange. The norms of acknowledgement and reciprocity only apply to those who feel that they are part of the exchange. The tendency to reveal information about themselves should prompt bloggers to support the normative expectation encouraging them to assume a receiver role when browsing their STN's blogs. Similarly, bloggers with higher SD tendencies should be more likely to perceive personalness when reading their STN's blogs. As a result, they will also subject themselves to the norm of acknowledgement and reciprocity. Thus, for *receivers*, the tendency to SD is positively related to:

H3a: perceived personalness in messages
H3b: perceived obligation to provide acknowledgement
H3c: perceived responsibility to engage in equitable reciprocity.

Personalness is likely to be more influential for bloggers occupying the receiver role in communication exchange. Thus, when reading STN blogs, perceived personalness is positively related to:

H4a: perceived obligation to provide acknowledgement
H4b: perceived responsibility to engage in equitable reciprocity.

Given the evidence on F2F SD cited above, questions arise regarding the impact that CMC has on SD and normative pressures. As such, the following research question is included to address the extent to which the affordances of blogs promote SD beyond F2F communication:

RQ1: What relationship does the tendency to SD *via blogs* has with expectations for traditional normative rule adherence?

Gender differences

One long-studied factor influencing people's SD behaviour is gender. Past studies suggest that women reveal about themselves more than men do (Carpenter & Freese 1979; Reisman 1990; Dindia & Allen 1992), although research on SD via computer-mediated channels has mixed findings. In a comparison between paper and computer forms, Weisband and Kiesler (1996) did not find statistically significant differences between men and women. Similarly, Barak and Gluck-Ofri's (2007) study reported no gender disparity in self-disclosure levels, although female respondents were more reciprocal than males. In the context of blogs, Lu and Hsiao (2009) reported that SD tendency was a stronger predictor of blog posting frequency for female bloggers. Herring *et al.* (2005) also found that women were more likely to create personal blogs. However, Huffaker and Calvert (2005) reported the same percentages of bloggers of both genders discussing romantic relationships in their blogs. Given the range of gender differences in communication offline and in CMC discussed above, the following research question is proposed:

RQ2: What role does gender play in traditional normative expectations regarding communication and exchange mediated via blogs?

Method

The sample of bloggers used in this study was produced by first examining several major blog-hosting service sites, including blogger.com and livejournal.com. At the time of this study, only blogger.com offered a working random blog selection feature. Using the random blog pointer on blogger.com, a list of 1,000 unique blogs was generated. The target sample consisted of adults who wrote personal-journal-style blogs. Blogs created for commercial purposes and blogs containing pictures only were excluded. In addition, to ensure that only active bloggers were invited, blogs with less than three posts on two different dates in the three-month period prior to the sampling were excluded, as were

multi-author blogs. Because this study was interested in the effects of target audience, these restrictions were implemented to ensure that participants were solely responsible for the audience drawn to their blogs. Finally, blogs with authors aged less than 18 years were eliminated.

Upon visual inspection by the authors, 700 qualified blogs remained. The authors then delivered a survey invitation to 622 of the 700 selected bloggers via emails or comments posted on their blogs. The other 78 bloggers did not provide their email addresses or the comment option on their blogs and did not receive the invitation. Six weeks after the invitations were sent out, 145 completed surveys were received, which yielded a 23.3 per cent response rate. Among the respondents, 53.4 per cent were male. The education-level distribution of the respondents was as follows: about 10 per cent had finished high school, 20 per cent had taken some college classes, about 39 per cent held a bachelor's degree, and 31 per cent held a graduate-level degree. The respondents were from 32 countries. About one-third came from the USA, about 30 per cent came from Europe, 25 per cent came from Asia and Australia, and the rest (about 12 per cent) came from a variety of other regions.

Intended audience

Participants were asked whether they agreed or disagreed with the following statements using seven-point Likert scales which ranged from strongly disagree (1) to strongly agree (7): 'My blog is directed at an audience of my close friends' and 'My blog is directed at an audience of my family members'. These two items were combined to form the 'targeting STN audience' variable ($M = 3.57$, SD = 1.85) to measure the two primary dimensions of STN audiences, which typically comprise both friends and family members (Cronbach's $\alpha = 0.76$).

Communication rules

An additional set of questions were created to measure attitudes towards the norm of equitable reciprocity. As noted above, the persistence of these norms is questionable due to the lack of personalness inherent in NDSD via blogs; so items were also developed to measure perceptions of personalness when reading content posted on blogs.

Respondents were asked to rate the degree to which they agreed with the following statement measuring expectation for acknowledgement as senders: 'If I disclose highly intimate information on my blog, I expect my close friends and/or family will mention it in conversation (i.e. offline)' ($M = 3.96$, SD = 2.08). Respondents were also asked to provide their perception on expectations of equitable exchange (reciprocity as sender) by rating this statement: 'If I reveal highly intimate information on my blog, I expect I will hear highly intimate information from my readers in our conversations' ($M = 3.7$, SD = 1.8).

Two items were created to measure the expectation to *give* acknowledgement to others upon receiving content posted (participant as a *reader* or receiver). These items consisted of 'If I read intimate information on a close friend's blog, I feel that I should mention it to him or her in conversation' and 'If I read intimate information on my family member's blog, I feel I should mention it in conversation with him or her'. Together, these items demonstrated a reliability of 0.87 ($M = 3.99$, SD $= 1.86$).

Two items were used to measure pressure to engage in equitable reciprocity when receiving messages: 'When I read intimate information on a close friend's blog, I feel I should tell him or her highly intimate information about myself' and 'When I read intimate information on a family member's blog, I feel I should tell him or her highly intimate information about myself'. These items had a reliability of 0.92 ($M = 2.33$, SD $= 1.40$).

The following items were used to measure if bloggers perceive personalness when occupying receiver roles: 'If I read intimate information on a close friend's blog, I would feel it is directed at me' and 'If I read intimate information on a family member's blog, I would feel it is directed at me', which had a reliability of 0.90 ($M = 2.92$, SD $= 1.65$).

In all, these items reflect three critical elements of the disclosure process: acknowledgement of message receipt, the perception of personalness, and the expectation for equitable reciprocation. These items were further delineated by the alternating roles that bloggers find themselves occupying.

Self-disclosure

Five items were used to measure the depth of F2F disclosure (Wheeless & Grotz 1976). The reliability for this scale was 0.81 ($M = 3.15$, SD $= 1.55$). These items were adapted to measure the extent to which people engage in SD via blogs and demonstrated a reliability of 0.86 ($M = 3.01$, SD $= 1.72$).

Results

Correlations and descriptive statistics are presented in Table 1. Age was negatively correlated with the feeling of being obligated to reciprocate as a receiver. Directing blogs at STNs had a positive relationship with all rule elements. Not surprisingly, F2F SD had a strong positive correlation with blog disclosure, as well as all rules. The individual rule elements correlated strongly with each other, as well.

A series of ordinary least squares regression models were calculated to test the hypotheses. Distributions for all variables were checked for normality, and tests for homogeneity of variances were within acceptable limits. Tables 2 and 3 summarize the results of these models by presenting standardized beta

TABLE 1 Descriptive statistics and zero-order correlations between items (M and *SD* on diagonal).

	Age	Gender	Education	STN	F2F SD	Blog SD	Receiving acknowledgement (rcvAck)	Providing acknowledgement (prvdAck)	Personalness	Receiving equitable reciprocation (rcvRcpr)	Providing equitable reciprocation (prvdRcpr)
Age	30.4 (11.8)	−0.12	0.10	−0.05	−0.03	−0.06	0.01	−0.04	−0.21	0.00	−0.23**
Gender		−	−0.03	0.05	0.08	0.23*	0.22	0.13	0.08	0.20*	0.03
Education			−	0.05	0.00	−0.09	−0.05	0.04	−0.09	−0.07	−0.11
STN				3.7 (1.8)	0.11	0.09	0.25*	0.18*	0.26**	0.17*	0.28**
F2F SD					3.3 (1.5)	0.59**	0.21*	0.34**	0.34**	0.33**	0.42**
Blog SD						3.1 (1.7)	0.22**	0.23**	0.27	0.29**	0.34**
rcvAck							4.1 (2.1)	0.51**	0.28**	0.70**	0.25**
prvdAck								4.1 (1.8)	0.47**	0.55**	0.49**
Personalness									3.0 (1.6)	0.32**	0.71**
rcvRcpr										3.5 (1.9)	0.33**
prvdRcpr											2.4 (1.4)

*$p < 0.05$.

**$p < 0.01$.

TABLE 2   Regression analyses for norms (I).

	Expect acknowledgement from STN Model A	Expect reciprocity and equity Model B	Read STN blogs, I feel personalness Model C	Read STN blogs, I should acknowledge		Read STN blogs, I feel I should equitably reciprocate	
				Model D1	Model D2	Model E1	Model E2
Age	0.076	0.036	−0.123	0.006	0.055	−0.156*	−0.087
Gender	0.194*	0.106	0.015	0.097	0.092	−0.117	−0.125*
Education	−0.058	−0.075	−0.073	0.041	0.070	−0.095	−0.054
Blog targeting STN (STN)	0.216**	−0.009	0.216**	0.117	0.030	0.215**	0.094
F2F SD	0.164*	0.348***	0.305***	0.293***	0.170*	0.410***	0.239***
If I read STN blogs, I feel personalness					0.403***		0.560***
R^2	0.121**	0.140**	0.190***	0.120**	0.251***	0.292***	0.555***
Adjusted R^2	0.090**	0.109**	0.161***	0.088**	0.219***	0.266***	0.526***
F	3.884**	4.573**	6.555***	3.805**	7.762***	11.522***	27.847***
	5, 140	5, 140	5, 140	5, 140	6, 139	5, 140	6, 139

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.001$.

TABLE 3   Regression analyses for norms (II).

	Expect acknowledgement from STN Model A	Expect reciprocity and equity Model B	Read STN blogs, I feel personalness Model C	Read STN blogs, I should acknowledge		Read STN blogs, I should equitably reciprocate	
				Model D1	Model D2	Model E1	Model E2
Age	0.075	0.018	−0.126	−0.016	0.043	−0.154*	−0.084
Gender	0.173*	0.076	−0.026	0.080	0.088	−0.174*	−0.159**
Education	−0.048	−0.059	−0.050	0.053	0.078	−0.063	−0.034
Blog targeting STN (STN)	0.221**	0.004	0.218**	0.129	0.027	0.217**	0.090
Blog SD	0.152†	0.239**	0.260**	0.163 †	0.053	0.361***	0.210**
If I read STN blogs, I feel personalness					0.444***		0.584***
R^2	0.116**	0.075*	0.161***	0.063	0.228***	0.247***	0.533***
Adjusted R^2	0.085**	0.042*	0.131***	0.029	0.195***	0.220***	0.513***
F	3.711**	2.294*	5.357***	1.872	6.855***	9.164***	26.438***
	5, 140	5, 140	5, 140	5, 140	6, 139	5, 140	6, 139

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.001$.

$^\dagger p < 0.1$.

values for independent variables in each column; F statistics, R^2, and adjusted R^2 values for each model are also presented.

The first set of hypotheses proposes that the degree to which bloggers intend that their blogs for STNs should be positively related to bloggers' normative expectations as blog authors and readers regarding receiving acknowledgement (*H1a*), providing acknowledgement (*H1b*), obtaining equitable reciprocation (*H1c*), and reciprocating equitably (*H1d*). Model A in Table 2 reports the regression analysis on bloggers' expectation of receiving acknowledgement from their close-tie readers. Targeting blogs at STNs ($\beta = 0.221$, $p < 0.01$) was a positive predictor, supporting *H1a*. The more the bloggers target their close social ties, the greater the expectation for acknowledgement. However, target audience did not explain whether or not bloggers thought that they should provide acknowledgement when *reading* blogs. As shown in Model D1, while targeting blogs at STNs was positively related to providing acknowledgement, the relationship was not statistically significant. Writing for STNs did not significantly contribute to bloggers' expectation of receiving equitable exchange from their readers, either, as evident in Model B. *H1b* and *H1c* were not supported.

Finally, to test *H1d*, bloggers' perceived responsibility to reciprocate was regressed on a set of independent variables and reported in Model E1. Targeting STNs was a significant predictor ($\beta = 0.215$, $p < 0.01$) in the model. The more the bloggers reported directing their posts at their close-tie networks, the more they thought that they should reciprocate when reading blogs authored by their strong ties. However, this relationship did not hold after perceived personalness was added into the equation. As reported in Model E2, directing blogs at family and friends was no longer a statistically significant predictor. *H1d* was not supported.

The second set of hypotheses posits positive relationships between bloggers' F2F SD tendency and their expectations of receiving acknowledgement (*H2a*) and equitable reciprocation (*H2b*). Regression results of Model A show that F2F SD tendency ($\beta = 0.164$, $p < 0.05$) positively contributed to the acknowledgement expectation. Model B in Table 2 also demonstrates that F2F SD played a statistically significant role ($\beta = 0.348$, $p < 0.001$) in predicting the reciprocation expectation. Both *H2a* and *H2b* were supported.

Recall that bloggers with higher F2F SD should perceive higher degree of personalness (*H3a*), obligations to provide acknowledgement (*H3b*), and responsibility to reciprocate equitably (*H3c*). The results for these tests are presented in Table 2. In Model C, bloggers' perceived personalness was regressed against targeting blogs at STNs and F2F SD, and explained 19 per cent of the variance of perceived personalness. F2F SD was a strong predictor ($\beta = 0.305$, $p < 0.001$) influencing perceived personalness. *H3a* was supported. In addition, targeting blogs at STNs was also a positive contributor ($\beta = 0.216$, $p < 0.01$) in this model. *H3b* was tested in regression models D1 and D2 with bloggers' perceived

acknowledgement obligation as the dependent variable. In Model D1, F2F SD was the only statistically significant predictor ($\beta = 0.293$, $p < 0.001$) among the set of independent variables. Even after adding perceived personalness as a predictor in Model D2, F2F SD still maintained significance. *H3b* was supported. Finally, in Model E1, F2F SD had the strongest effect on the perceived reciprocation responsibility. This effect was still significant after perceived personalness was added into the equation as reported in Model E2. *H3b* was supported.

The final set of hypotheses focuses on bloggers' perceived personalness when reading blogs authored by their close social ties. It was posited that the perceived personalness should be positively related to perceived obligations of providing acknowledgement (*H4a*) and equitable reciprocity (*H4b*). To test these hypotheses, perceived personalness was added to the regression analyses in Models D1 and E1, and Models D2 and E2 were generated (Table 2). The results of Model D2 show that perceived personalness ($\beta = 0.403$, $p < 0.001$) made a strong positive contribution to perceived acknowledgement obligation. *H4a* was supported. Also, comparing the R^2 values of Models D1 and D2, it is clear that D1 ($R^2 = 0.251$, $p < 0.001$) was a better model than Model D2 ($R^2 = 0.120$, $p < 0.01$). In addition, the results of Model E2 show that perceived personalness was the strongest predictor ($\beta = 0.560$, $p < 0.001$) for perceived responsibility to provide equitable return. *H4b* was supported. Again, comparing the R^2 values of Models E1 ($R^2 = 0.292$, $p < 0.001$) and E2 ($R^2 = 0.555$, $p < 0.001$), the inclusion of perceived personalness considerably increased the explanation power.

To explore the effect of blog SD (opposed to F2F SD), a similar series of regression analyses were performed and are reported in Table 3. The results suggest that the effects of blog SD on normative expectations were similar to F2F conditions. Blog SD was statistically significant at 0.05 in predicting the expectation for equitable reciprocity, perceived personalness, and perceived obligation to reciprocate when reading STN's blogs. In the models predicting expectation of acknowledgement from readers and perceived obligation to acknowledge, blog SD was marginally significant at the 0.1 level. However, comparing corresponding models between Tables 2 and 3, the standardized coefficients of blog SD were all smaller than those of F2F SD. In addition, the models based on F2F SD explained more variance than those using blog SD. Overall, the tendency to disclose intimate personal information via blogs was positively associated with normative expectations. However, this was a weaker predictor than the tendency to engage in F2F SD.

The effects of gender were mixed. Model A in Table 2 reports that gender ($\beta = 0.194$, $p < 0.05$) positively contributed to bloggers' expectation of receiving acknowledgement. Model A in Table 3 reports a similar trend. These results indicate that, as senders, female bloggers were more likely than their male counterparts to expect acknowledgement from their close-tie readers. However, as receivers, females were less likely to feel obligated to

reciprocate when reading blogs written by their STNs. Model E2 in Table 2 reports a negative standardized coefficient for gender ($\beta = -0.125$, $p < 0.05$) in predicting the perceived obligation to reciprocate. Models E1 and E2 in Table 3 also report similar numbers. No other gender effects were found.

Discussions and conclusion

Personal-journal-style blogs present a unique channel for SD. The public and non-directed nature of SD via blogs seems to have resulted in confusion regarding the adoption of normative expectations embedded in traditional social exchange processes. Our data show that both the average scores of bloggers' expectations of receiving acknowledgement ($M = 4.1$, SD $= 2.1$) and reciprocal return ($M = 3.5$, SD $= 1.9$) were close to the middle of the seven-point scale, suggesting that bloggers were largely uncertain what they might expect after they post and somewhat optimistic that their audience would follow the established norms. As readers, bloggers' responses differed, though: for the relatively low-effort task of acknowledging receipt of intimate disclosures, bloggers scored 4.1 collectively. However, in terms of reciprocating to their fellow close-tie bloggers, our participants were somewhat reluctant, scoring an average of 2.4 on the seven-point scale. This is perhaps not surprising considering that participants tended not to perceive that personal disclosures in their family member's and friends' blogs were directed at them. Overall, these scores reflect bloggers' uncertainty about communication norms and expectations, highlighting the importance of understanding the specific factors prompting the adoption or rejection of traditional communication rules in new communication media such as blogs.

To explore this issue, we began by examining the relationships between norm adoption and a set of factors including the tendency to SD, target audience, and gender. First, our data show that the tendency to SD and writing for close friends and family members were significantly and positively related to bloggers' adoption of existing norms regarding acknowledgement and reciprocation both as senders and as receivers. These results suggest that familiar communication practices (i.e. SD) and perceived social context guide what to expect when interacting via new communication tools.

It is noteworthy that while the target audience influenced communication norms, this audience boundary is an imaginary one. Most bloggers do not set access restriction to their blogs (Madden *et al.* 2007), so content is widely accessible. This may suggest that the utility of targeting one's STNs serves not to filter out unintended readers, but rather to create a desirable social setting for the bloggers to base their SD decisions on. From this perspective, we may begin to understand the rare use of features limiting access to blogs.

Additionally, regression analyses allowed us to explore whether traits such as the tendency to SD or the social context of technology use (the extent to which

bloggers wrote for STNs) provided more explanatory power. The results show that bloggers' tendency to share information about themselves was a consistent and often stronger predictor of bloggers' norm adoption. Bloggers with higher SD tendency were more likely to expect their audience to follow conventional exchange norms, and more likely to feel obligated *themselves* to follow norms associated with traditional SD. The impact of SD tendency on perceived normative obligations persisted even after perceived personalness was added to the equation (see Models D2 and E2, Table 2), while the impact of targeting STNs was mitigated. The robust performance of the tendency to SD highlights the importance of people's prior experience, and suggests that familiar communication practices are a more persistent force online than perceived social context.

In addition to F2F SD, bloggers were also asked about SD via their blogs to determine whether the affordances of these tools (i.e. broadcasting and asynchronicity) were related to normative expectations. The results show that blog SD was positively related to the traditional norms of acknowledgement and equitable reciprocity, indicating that people who post intimate information on their blogs generally held traditional normative expectations. However, after comparing the corresponding F2F and blog SD models, F2F SD was the stronger predictor. The tendency to disclose via blogs did not link as closely to traditional disclosure norms as F2F SD did.

As blog readers, participants' responses clearly demonstrated the importance of perceived personalness. As reported in Tables 2 and 3, when perceived personalness was added to the equation, the explanatory power of the models increased greatly. This supports the notion that perceived personalness occupies a pivotal role in deciding whether or not traditional norms of reciprocity apply online. When people perceived themselves as an intended audience members, they were more likely to honour the responsibilities of receivers in providing acknowledgement and equitable returns. Regression models (Tables 2 and 3) also show that perceived personalness is a more influential factor than the tendency to SD or writing for STNs when predicting perceived obligations as receivers. Particularly, the effect of targeting blogs at STNs lost its statistical significance after perceived personalness was added to the analyses (see Models E1 and E2). Considering that writing for STNs contributed positively to perceived personalness (see Model C), these results suggest that perceived personalness may play a mediating role between writing for close social ties and perceived responsibility to reciprocate equitably.

The critical role of personalness may have resulted from a decoupling effect on SD processes due to the asynchronous and non-directed nature of blogs. Recall that personalness measures the extent to which participants felt that the intimate SDs that they read on blogs were directed at them. As discussed above, it is not difficult for people to tell whether or not they are the intended receivers when using synchronous channels. During real-time communication,

receivers can immediately acknowledge their understanding of being selected as the intended audience, and senders can immediately confirm that understanding. Under normal circumstances, a F2F or telephone conversation begins after the confirmation of the intended audience status is completed via verbal or non-verbal cues. In other words, receivers' perceived personalness is established seamlessly before the beginning of a synchronous SD session. However, the asynchronicity of blogs decouples the confirmation exchange from the SD process, which allows bloggers to disclose without the presence of or feedback from any designated readers. In addition, the non-directed nature of public blogs lacks the usual confirmative cues to signal the readers that they are indeed the intended receivers. This decoupling of confidant status confirmation from SD may explain the low scores reported by the participants in terms of perceived personalness and perceived obligation of equitable reciprocation. Consequently, it also signifies the important role perceived personalness played in explaining blog readers' adoption of existing norms.

Many questions remain. For example, while perceived personalness plays a pivotal role, our models explains less than a fifth of its total variance. What are other factors that influence blog readers' perception of personalness? It would also be worthwhile for future research to investigate how interpersonal processes via blogs play out over time, and to examine what impact perceived personalness and NDSD have on the quality of relationships in the long term. Additionally, prior research has shown cultural differences in relationship maintenance (Yum & Canary 2009), self-disclosure behaviour (Chen 1995), and online tie formation (Matei & Ball-Rokeach 2002), as well as in the use of communication technology (Ess & Sudweeks 2005). Integrating cultural dimensions of communication such as these into future research will further expand our understanding about how communication norms manifest online.

The sampling procedure utilized herein addressed concerns regarding spam blogs and abandoned blogs discussed by Li and Walejko (2008). However, there are several limitations in our sampling methods. First, the sample came from a single blog host. Nevertheless, some blogging platforms are more popular in specific parts of the world. For example, just as Cyworld and Orkut (Ewers 2006; Fragoso 2006) are popular communication platforms in Korea and Brazil, respectively, it is likely that there are systematic differences in preference for blog hosts based on geography and cultural identity. However, the results of this study are limited to English-speaking blogger.com users. Furthermore, blogger.com offers a range of privacy controls that allow users to restrict access to their content. It is likely that the use of such controls would change the nature of perceptions about the interpersonal communication norms addressed in this study. As such, caution must be exercised when generalizing these results to the entire blogosphere.

In addition, blogs that restricted access or did not provide contact information for authors were not included in the sample. Due to these restrictions,

we were not able to invite the authors of such blogs to participate in this study. The results of this study are also limited in that the actual content of the blogs was not examined. Future research would benefit from incorporating a content analysis of these online exchanges.

This study applied a body of established research on interpersonal communication to explore non-directed social exchange online. Future research would benefit by focusing on the actual content of communication exchange via blogs and the applicability of other well-understood interpersonal phenomena to 'public' conversations in the blogosphere. As people's relationships are increasingly mediated by online communication tools, the need for research addressing fundamental issues regarding social exchange online grows as well.

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