Computer-Mediated Communication in Relationship Maintenance:
An Examination of Self-Disclosure in Long-Distance Friendships

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Abstract

This study focused on computer-mediated communication (CMC) in relationship maintenance between geographically separated friends who established their friendships in previous face-to-face (FtF) interactions. A central relational maintenance strategy – self-disclosure was examined in comparison between FtF and CMC contexts. Data from a heterogeneous sample of 353 individuals via a web survey elucidated associations among media consumption, communication contexts, sex factors, cultural values, geographic distance, and relationship quality. CMC was found popular among far-flung friends, although telephone was used most frequently among close friends. People’s media use changed over time and across different relational stages. CMC disclosure complemented FtF self-disclosure in achieving relational satisfaction. Participants reported more self-disclosure in FtF settings than in CMC, and women are slightly more disclosive than men in both contexts. Culture and geographic distance did not have significant influence on long-distance friendships.
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It is an undeniable fact that “the Internet is rapidly becoming part of the fabric of our lives, not only in advanced societies but in the core activities and dominant social groups in most of the world” (Castells, 2002, p. xxix). Understanding this phenomenon requires the right questions to be answered. A group of elite scholars have pointed out that instead of asking whether this new information and communication technology will induce changes in contemporary societies and human interactions, the key inquires revolve around “under what circumstances, in what ways, and to what extent” (Herring, 2004, p. 27; see also Matei & Ball-Rokeach, 2002). The social organization, practices, and consequences of the Internet vary across individual users and communities as well as social conditions and communication contexts (Lievrouw & Livingstone, 2002; Wellman & Haythornthwaite, 2002). Therefore, rather than analyzing the impact of computer-mediated communication (CMC) on interpersonal relationship maintenance in general, we focused in this study on the role of CMC in long-distance friendships previously established in face-to-face (FtF) interactions and examined the dynamics of media consumption, communication contexts, sex factors, cultural values, geographic distance, and relationship quality by comparing self-disclosure in both FtF and CMC settings.

The world continues to experience increased contact between people from different backgrounds due to mounting geographical mobility and new communication technologies. Educational pursuits, a global economy, military deployment, the entrance of more women into the workforce, and immigration are several factors that amplify long-distance relationships (Stafford, 2005; Wellman, 1999) and challenge traditional
assumptions about FtF interaction and geographic proximity for close relationships (Aylor, 2003; Stafford, 2005). Not coincidentally, the penetration of the Internet has refocused relationships research to CMC. Scholars today explain relational communication online from perspectives such as social information processing (SIP) theory and the hyperpersonal model (for a review, see Walther & Parks, 2002). As Baym (2006) stated, “Although computer-mediated communication was not invented with interpersonal interaction in mind, the rise of the Internet has clarified that this technology is fundamentally social” (p. 35) (also see Baym, 2002; Parks & Roberts, 1998; Sproull & Faraj, 1997).

However, substantial schisms exist between literature on CMC and interpersonal relationships. First, in CMC research “most of the attention … has explored the formation of new relationships” (Baym, 2006, p. 43). Research shows that CMC is important in relationship initiation and development, yet how CMC works in maintenance of relationships is poorly understood (Aylor, 2003; Baym, 2006; Rabby & Walther, 2003; Stafford, 2005; Walther & Parks, 2002). Second, our understanding of the general effects of CMC on human relationships is still in its infancy. “Significant weaknesses exist in the dominant theories that describe CMC relationships, especially insofar as relationship maintenance is concerned” (Rabby & Walther, 2002, p. 158). Current CMC theories are often biased toward traditional interpersonal communication assumptions situated in FtF settings, and theoretical adaptations are needed to study relationships involving a mix of traditional communication channels and new media (Baym, 2002, 2006; Lea and Spears, 1995; Rabby & Walther, 2003; Stafford, 2005). Third, research on computer-mediated relationships lacks contextual sensitivity. CMC in preexisting relationships is rarely
discussed, and when it is, the relationship type (i.e. family, friend, romantic partner, geographically close or long-distance, etc.) is either not specified or treated as a molar category of interpersonal relationships. Finally, CMC in traditional long-distance friendships can be relegated to an understudied area within another understudied area. Rohlfing (1995) identified long-distance relationships as a significant communicative phenomenon that received minimal attention. Although the situation has improved, little research has examined computer-mediated, traditional long-distance friendships which constitute a substantial part of daily Internet traffic. In this article, we attempted to redress some of these theoretical and empirical deficiencies through an examination of self-disclosure behaviors between long-distance friendships that have gone online.

CMC and Long-Distance Friendship Maintenance

Stafford (2005) categorized computer-mediated long-distance relationships into three groups: (1) pure virtual relationships; (2) migratory relationships from the Internet to FtF, also called mixed-mode relationship (Walther & Parks 2002); and (3) traditional long-distance relationships established through FtF encounters. Many empirical studies emphasize the potential that the Internet provides for establishing new relationships, but we intentionally focused on preexisting long-distance relationships in the present study.

Friendships are one of the most important types of long-distance relationships. The warm feelings of friendship are a cornerstone of our happiness and emotional well-being (Andersen & Guerrero, 1998; Samter, 2003). The voluntary and reciprocal qualities of friendship are a unique and indispensable part of social life (Fehr, 1996; Hays, 1988; Rawlins, 1992). Long-distance friendships are common. Before the Internet became a popular communication conduit, close to 90% of people reported having at least one

CMC is generally understood as both task- and relationship-oriented communication conducted via computers, which include (1) asynchronous communication such as email, newsgroups, and BBS; (2) synchronous communication such as instant messenger (IM), chat rooms, and MUDs; and (3) information retrieval, storage and manipulation through computers and electronic databases (Ferris, 1997). Among the various types of CMC, email and IM are considered especially interpersonally oriented (Baym, 2002; Stafford, Kline, and Dimmick, 1999). Email and IM are predominantly used for communicating with friends (Pew, 2002, 2006). They enhance the communication between friends by increasing the ease and frequency of social contacts, especially with the ones at a distance (Chen, Boase, & Wellman, 2002; Pew, 2000, 2001; Quan-Haase & Wellman, 2002). Therefore, email and IM were used as the prominent CMC channels for examinations in this study.

Self-disclosure is vital for relationship maintenance and a crucial predictor of friendship quality (Derlega, Metts, Petronio, & Margulis, 1993; Johnson, 2001; Rosenfeld & Kendrick, 1984). CMC, a cue-limited communicative channel, employs more language use and textual expressions than FtF (Herring, 2004; Walther & Parks, 2002) suggesting verbal self-disclosure may be an important relational communication behavior between friends on the Internet. Self-disclosure has been conventionally defined
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as verbal messages that people reveal about themselves in FtF settings (e.g., Archer, 1980; Cozby, 1973; Derlega, et al., 1993). But we agreed with some scholars (e.g., Dindia, 2000; Goodstein & Reinecher, 1974; Pearce & Sharp, 1973) that this information should be hard to obtain unless disclosed by oneself, and therefore defined self-disclosure as any information that reveals private, intimate, and/or risky personal facts, experiences, thoughts, feelings, and emotions via either FtF verbal expressions (FtF self-disclosure) or CMC text-based messages (CMC disclosure).

The Dynamics of Media Consumption in Long-Distance Communication

People choose different media to satisfy their particular relational communication needs. In long-distance communication, the Internet competes with telephone. Dimmick, Kline, and Stafford (2000) found that nearly half of their respondents reported a decline in long-distance phone calls since the advent of the Internet. Likewise, Chen et al. (2002) reported that email was more frequently used than telephone in communicating with far-away friends in many countries around the world. However, Baym (2004) argued that though the general impression is that CMC is more likely to be long-distance and telephoning is more likely to be local, comparisons of media use in geographically close and distant social circles indicated that telephone overrides Internet for both long-distance and geographically close relationships.

Some scholars have investigated the associations between the uses of different media. Some found a displacement effect (Dimmick et al., 2000) while others suggested that CMC covaries with the use of other communication channels (Chen et al., 2002). A recent report from Pew (2006) suggested that a large portion of CMC occurs within the same social circles people communicate with in person and by phone. Within core social
ties, FtF contact was most widely employed, followed by landline telephone, cell phone, email, and IM; the more close friends were seen in person, the more they were communicated with via email (Pew, 2006). Dainton and Aylor (2001) found positive relationships between the use of oral channels such as FtF contact and telephone conversations, positive relationships between the use of written channels such as text-based CMC and traditional letters, but negative relationships between oral and written channels. We thought additional research should examine the maintenance of long-distance friendships, such as how media use varies across time and different relational stages. This discussion led to our first research question:

RQ1: Compared to other communication channels, what is the role of CMC in maintaining long-distance friendships?

CMC, Self-Disclosure, and Relationship Quality

In their overview of computer-mediated relational communication, Walther and Parks (2002) stated that “Internet access makes it possible for people to connect more readily to preestablished partners” (p. 546) and “CMC may be a more satisfying choice than more traditional channels such as letters or the telephone” (p. 545) in the maintenance of long-distance social ties. Pew (2001) reported 37% of online teens used IM to write something they would not have said in person. Sandlund and Geist-Martin (2001) showed the power of CMC in disclosing strong emotions through ethnographic stories about reconnecting with former lovers via email. However, only a few studies to date have examined CMC disclosure and most have focused on self-disclosure behaviors between strangers. These studies generally found that the anonymity feature of the Internet tends to encourage self-disclosure in CMC environments; people use more direct and intimate approaches and display more depth and breadth of questions in the initial
stage of relational communication (e.g., Joinson, 2001; McKenna, Green, & Gleason, 2002; Rumbough, 2001; Tidwell & Walther, 2002; Whitty, 2002). Although current findings indicate greater self-disclosure via the Internet than in person, how CMC affects disclosure between socially-close relational partners such as friends at a distance remains a puzzle.

Relationship quality has been extensively investigated in long-distance romantic relationships (e.g., Guldner & Swensen, 1995) and friendships (e.g., Nicotera, 1993; Parker & Asher, 1993; Rose & Roades, 1987), but not in the context of long-distance friendships or directly tested in relation to self-disclosure in FtF and CMC environment. To determine if new communication technologies really make a difference in self-disclosure between long-distance friends, it is important to evaluate the overall relationship quality perceived by people who are involved in both FtF and CMC contexts. Therefore, our second set of research questions dealt with the association between self-disclosure, communication contexts, and relationship quality.

RQ2a: Among preexisting long-distance friends, are there differences in self-disclosure between FtF and CMC contexts?

RQ2b: What combination of FtF and CMC contexts mediates the relationship between self-disclosure and relationship quality in long-distance friendships?

Sex Effect, Friendship, and Self-Disclosure

Some scholars suggest that women engage in more intimacy behaviors including self-disclosure, emotional expressiveness, and mere talk, whereas men’s friendships tend to be less expressive and activity-centered (e.g., Brehm, 1992; Fehr, 1996). Some use similar descriptions of this dichotomy, such as talking versus doing (Caldwell & Peplau, 1982), face-to-face versus side-by-side (Wright, 1988), and communal versus agentic
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(Duck & Wright, 1993). However, scholars have also been debating for years about the extent to which men and women are similar or different in displaying intimacy and maintaining friendships. Considerable evidence indicated that they share fundamental similarities with small differences and the differences are even smaller in close relationships (Hays, 1985; Monsour, 1992; Wright, 1998). Likewise, most scholars claim that females self-disclose somewhat more than males do (e.g., Dindia, 2000b; Dindia & Allen, 1992; Reis, 1998). A meta-analysis of sex differences in self-disclosure found that females tend to disclose more than males, though the difference is smaller than self-disclosure theorists have suggested (Dindia & Allen, 1992).

Sex of the disclosure recipient or target person is one of the key factors that help explain sex differences in self-disclosure (Cozby, 1973; Hill & Stull, 1987; Rosenfeld, Civikly & Herron, 1979). Reis’ (1998) meta-analysis found that men’s same-sex interaction is substantially less intimate than women’s same-sex interaction, whereas opposite-sex interaction yields no consistent trend. Given these conflicting results, the third set of our research questions were proposed as follows.

RQ3: How does the sex of both the subject and the target person in long-distance friendships affect their self-disclosure in both FtF and CMC contexts?

Cultural Values, Friendship, and Self-Disclosure

The meaning of self-disclosure in friendships may vary in cultures possessing different value orientations (Nakanishi & Johnson, 1993). With globalization, studies today should take a worldwide view, but most communication studies have been conducted in North American culture. Hall (1976) suggests that cultures could be divided into two groups, low-context cultures where messages are conveyed mainly through
explicit codes such as language and high-context cultures where people utilize mostly physical context or nonverbal cues that imply their messages. Given the more explicit nature of CMC communication compared to the more implicit medium of FtF with its rich nonverbal cues, people in low-context cultures would rely on verbal expression in their relational communication and would be more likely to disclose in CMC settings than those in high-context cultures.

Hofstede (1983, 1986; 2001) proposed among others the crucial cultural dimension of individualism/collectivism. Individualistic cultures are more self-oriented whereas collectivistic cultures are more group-oriented. This suggests that the cultural norm for self-disclosure in individualistic cultures are expressiveness and assertiveness while people in collectivistic cultures tend to be inexpressive, inscrutable, and impassive, (Nakanishi & Johnson, 1993; Rubin, Yang, & Porte, 2000; Yum, 1991).

Several cross-cultural studies have explored contrasting norms for self-disclosure. In studies of self-disclosure in relationship maintenance, Ting-Toomey (1991) found that the Japanese, a high context, collectivistic culture, exhibited less self-disclosure than North Americans and French. Similarly, self-reported disclosure among Taiwanese was lower than North Americans (Chen, 1995; Wolfson & Pearce, 1983). However, the roles that cultural values play in CMC disclosure and long-distance friendship maintenance are still unknown. This discussion led to our fourth research question.

RQ4: Are people’s cultural values associated with self-disclosure in both FtF and CMC contexts?

CMC, Geographic Distance, and Self-Disclosure

In her book, Cairncross (2001) proposed the concept of the “death of distance” which suggests that the influence of geographic distance on relational communication is
diminishing with the development of new communication technologies. In other words, once two people are separate, it really doesn’t matter how far apart they are from each other. Jackson (2002) explained that people tend to create an image of their communication partner when engaged in CMC and “talk” to their friend regardless where they are physically located. Ylinen and Valo (2004) studied the concept of copresence in maintaining close interpersonal relationships and emphasized the significance of expressions of intimacy such as self-disclosure via CMC in long-distance friendships.

Other studies suggest that a distance still matters and more communication occurs in geographically close relational partners than those who are far apart (Chen et al., 2002; Hampton & Wellman, 2001; Quan-Haase & Wellman, 2002). Quan-Haase and Wellman (2002) also claimed that despite the unique features of CMC, geographic distance still constrains communication. Based on this debate, our fifth set of research questions investigated the association between CMC, geographic distance, and self-disclosure.

RQ5a: Does geographic distance affect self-disclosure in long-distance friendships in both FtF and CMC contexts?

RQ5b: Is the amount of CMC disclosure more important to relational quality in long-distance friendships of greater geographic distance?

Methods

Participants

Participants included 353 volunteer respondents at a large southwestern university who were assured anonymity. About 68% of the respondents came from an introductory undergraduate communication course with extra credit incentives and 32% were recruited via the listserv of the International Student Center on campus. To qualify respondents had to be 18 years of age or older, be currently enrolled in college, have at least one friend
living in another city, state, or country, have established their long-distance friendships in
FtF settings, and have communicated with their far-flung friends through the Internet.

Among the 353 participants, there were 69.9% females and 30.1% males. Age
ranged from 18 to 42 ($M = 20.4$, mode = 18). College students represent the group of a
generation growing up with the Internet as part of their mundane daily routines. In fact,
participants in this study were all virtually competent in CMC, as the relationship
between self-disclosure and friendship quality before controlling for CMC competence
measured on Spitzberg’s (2006) scales was not significantly different from after
controlling for CMC competence ($r = .53$, $r_p = .48$, $p < .001$).

Participants were also from diverse cultural backgrounds as they were raised in 38
countries and regions. The number of close, long-distance friends they reported ranged
from 1 to 57 ($M= 10.29$; mode = 5). Among the long-distance friends who were the
disclosure targets in this research, 66.5% were female and 33.5% were male. Age of
friends ranged from 16 to 63, ($M = 21.3$, mode = 18), and they were raised in 40
countries and regions. Although 71.0% were in the United States, 29.0% of the long-
distance friends were located in 33 countries and regions around the world at the time of
the study.

Procedures

Subjects participated in the study through a web survey. Questions were randomly
rotated to avoid response bias. Students could easily access the questionnaire via a link
sent in an email. The survey would skip to a designated question based on the
respondent’s answer to previous question. Respondents were told they could not change
their answers once they passed a screen, but could exit the survey at any point.
Respondents receiving class extra credit were asked to send a message to an email address independent of the survey so they would remain anonymous.

**Measures**

*Self-Disclosure Measures.* Modified scales based on Wheeless and Grotz (1976) and Wheeless (1978) were used to measure self-disclosure in both FtF and CMC contexts. Participants were asked to focus on a particular long-distance friend of theirs and then rated a series of statements about FtF self-disclosure and CMC disclosure. In order to avoid cross-over effects, half of the respondents answered questions about FtF self-disclosure first, and the other half answered questions about CMC disclosure first. These statements were dedicated to the breadth, depth, and reciprocity aspects of self-disclosure that are pertinent to long-distance friendships (e.g., Johnson, Becker, Wigley, Wittenberg, & Haigh, 2003) and measured on a 5-point scale, where 1 means strongly disagree and 5 means strongly agree. The statements included: “I talk about all kinds of issues with my long-distance friend,” “Our conversations usually cover a variety of topics,” “I tell my long-distance friend personal opinions about sensitive issues,” “I tell this long-distance friend about things I normally would not tell,” “My long-distance friend discloses about the same amount as I do,” “I know my intimate disclosure to this long-distance friend will be rewarded,” “My long-distance friend always lets me know about his/her feelings” ($\alpha_{\text{FtF}} = .81; \alpha_{\text{CMC}} = .81$).

*Relationship Quality Measures.* Modified scales based on the work of Fletcher, Simpson, and Thomas (2000) and Nicotera (1993) were used to measure relationship quality in long-distance friendships. Participants rated a series of statements on a 5-point scale, where 1 means strongly disagree and 5 means strongly agree. Three statements
were dedicated to each of the three aspects of relationship quality: increasing intimacy, communication effectiveness, and personal growth. These statements included: “I have warm feelings toward my long-distance friend,” “I feel close to my long-distance friend,” “I feel emotionally distant from my long-distance friend,” “Overall, the communication is effective between my long-distance friend and I,” “I am unhappy with my long-distance friendship,” “I am satisfied with my long-distance friendship,” “This long-distance friend takes more than he/she gives,” “I have developed into a better person because of this long-distance friend,” “I have learned a lot from my long-distance friend” ($\alpha = .79$).

*Cultural Dimension Measures.* To explore cultural influences participants were asked to report the country in which they were raised. Based on Hofstede’s (2001) country index, each respondent was given a cultural-level individualism score. Similarly, a cultural level score measuring high-versus low-context culture was assigned to each respondent according to relevant literature (e.g., Andersen & Wang, 2005; Hall, 1976).

*Geographic Distance Measurement.* Several scholars have argued that the self-defined approach in long-distance relationship research is more valid than definitions based on the number of miles separated or specific geographical boundaries such as state lines (Dainton & Aylor, 2002; Dellman-Jenkins, Bernard-Paolucci, & Rushing, 1993). As recommended by Aylor (2003), participants of this study were allowed to determine if their relationship with a friend of their choice was a long-distance friendship. Participants reported the location of their long-distance friend and a GIS system was used to measure the geographic distance between long-distance friends. This GIS system uses US Census data and a list of world cities to calculate latitude and longitude. If a respondent provided the name of the city, state/province, country, and zip code (if located in the United
States), the city was used to measure geographic distance. If a respondent provided a state in the United States, a city near the center of the state was used for calculations. If a respondent provided only a country or if a foreign city was not listed in the database, the capital city of the country was employed. This yielded a linear measure of distance between long distance friends in miles.

Statistical Analyses

Research questions were examined through frequency distributions, correlation coefficients, partial correlations, analysis of variance (ANOVA), and regression analysis. Statistical significance was set at .05 alpha level. Power coefficients were computed for all non-significant findings (Cohen, 1988).

Results

CMC in the Dynamics of Long-Distance Friendship Maintenance

RQ1 examined the position of CMC in maintaining long-distance friendships in comparison to other communication channels. Based on a 5-point scale where 1 means never and 5 means always, participants rated their frequency of using different media to communicate with their long-distance friends. As illustrated in Table 1, telephone, email, and IM were the three primary communication channels they used. FtF interactions were fourth. Letters and other types of CMC were used much less often. These results indicate that CMC is a popular communication conduit in preexisting long-distance friendships, but not the only or preferred channel at current time.

Although all the participants in this study reported that they met their long-distance friends in FtF interactions, when they were asked “How often do you communicate with your long-distance friend through the following channels (now)”,
2.8% of people responded “not at all”. Results shown in Table 2 imply that individual’s adoption and continued use of certain communication channels may vary across time. In long-distance friendships, CMC provides a convenient channel of communication when meeting in person becomes difficult or impossible. Media use may also vary among a great variety of CMC tools, as a number of respondents admitted that they weren’t using email or IM with their long-distance friends.

Three tendencies were found when the associations between relational stage and media consumption were tested (see Table 3). As the relationships unfolded, the number of communication channels increased from a single medium to multiple media. Furthermore, their media use also changed from nearly never to very frequently. Results of correlation coefficients also indicated that the more intimate the relationships were, the more number of channels were employed for long-distance communication ($r = .19, p < .001$), and the more frequently people communicated via these channels ($r = .30, p < .001$). Consistent with the findings in Baym, Zhang, and Lin’s (2004) study, telephone usage suppressed CMC in maintaining long-distance friendship as the communication needs expand.

In addition, the use of computer-mediated relational communication does not result in a decrease in the use of other channels. In fact, some CMC forms are positively related to the use of traditional media. For example, there was a moderate positive relationship between the use of email and letters ($r = .29, p < .01$). There was an even stronger positive relationship between telephone use and FtF interactions ($r = .37, p < .01$). These findings echo Dainton and Aylor’s (2001) claim about positive
correlations among oral communication channels and positive correlations among written communication channels.

*Self-Disclosure in FtF and CMC Contexts*

RQ2a asked if there are any differences in self-disclosure between FtF and CMC contexts. Results of one-way repeated-measures ANOVA indicated that people disclose significantly more in FtF settings \((M = 29.84, SD = 4.13)\) than in CMC context \((M = 28.09, SD = 4.63)\), \(F (1/346) = 64.29, p < .001, \eta^2 = .16\). These results contradict previous findings from relationships initiated on the Internet and self-disclosure behaviors in relationship formation stages rather than maintenance stages.

RQ2b examined what combination of FtF and CMC contexts mediates the relationship between self-disclosure and relationship quality. Regression analysis revealed that self-disclosure is important to relationship quality in long-distance friendships in both FtF settings \([F (1/345) = 165.69, p < .001, \text{adjusted } R^2 = .32]\) and the CMC context \([F (1/345) = 133.19, p < .001, \text{adjusted } R^2 = .28]\). Yet a combination of both FtF self-disclosure and CMC disclosure accounts for even greater variance in relationship quality \([F (2/344) = 107.24, p < .001, \text{adjusted } R^2 = .38]\).

*Sex Effects*

RQ3 examined sex differences in self-disclosure between long-distance friends. In general, females tend to disclose slightly more than males in both FtF and CMC contexts. A one-way ANOVA showed that women \((M = 30.51)\) disclose more than men \((M = 28.28)\) in FtF contexts \([F (1/344) = 22.57; p < .001; \eta^2 = .06]\) and women \((M = 28.47)\) also disclose more than men \((M = 27.22)\) in CMC contexts \([F (1/344) = 5.31; p = .02; \eta^2 = .02]\).
These sex effects were further explored by examining self-disclosure of same-sex and cross-sex dyads across both FtF and CMC contexts. As demonstrated in Table 4, participants generally shared higher self-disclosure when the target person was a female friend and this effect is more notable during CMC interactions. In addition, consistent with our previous findings, self-disclosure in FtF settings was greater than CMC disclosure across all four groups except that the mean values for opposite-sex friendships were almost identical.

*Friendship May Be Trans-Cultural*

RQ4 inquired whether cultural values are associated with self-disclosure in FtF and CMC environments. ANOVA revealed no significant difference in self-disclosure in people from low-context cultures ($M = 29.89$) than those from high-context cultures ($M = 29.87$) in FtF context [$F(1/332) = .002; p = .97$]. Nor did it indicate any difference in self-disclosure for people from low-context cultures ($M = 28.20$) and high-context cultures ($M = 28.08$) in CMC contexts [$F(1/332) = .035; p = .85$]. Power analysis revealed there was about 75% chance of detecting a small effect (Cohen, 1988). However, the chance of detecting a medium or a large effect exceeded 99%.

Correlations indicated no significant relationship between self-disclosure and people’s cultural background based on Hofstede’s (1983, 1986, 2001) conception of individualism versus collectivism in either FtF ($r = .02, p = .67$) or CMC context ($r = .06, p = .30$). Power analyses showed a 56% chance of detecting a small effect and a 99% chance of detecting medium or large effect (Cohen, 1988).
The Death of Distance

RQ5a was posed to determine if the amount of CMC disclosure was more important to relational quality in long-distance friendships of greater distance. The correlations showed no relationship between geographic distance and self-disclosure in either FtF ($r = -.03, p = .63$) or CMC context ($r = .01, p = .92$). Power analysis suggests there was about 56% chance of detecting a small effect, but the chance of detecting a medium or a large effect exceeded 99% (Cohen, 1988).

RQ5b questioned about whether the amount of CMC disclosure is more important to relational quality in long-distance friendships of greater geographic distance. Partial correlations were used to test the influence of geographic distance on the relationship between CMC disclosure and relationship quality. The zero-order correlation between these two variables ($r = .529, p < .001$) was virtually identical with their relationship after controlling for distance ($r_p = .532, p < .001$).

Discussion

Summary of findings

This study provides some important information regarding the use of CMC in maintaining increasingly prevalent long-distance friendships. First, computer-mediated means have certain advantages in communicating people at a distance, yet CMC primarily serves as a useful alternative in traditional long-distance friendship maintenance. Telephone is used most often although email and IM are also very popular. People’s media consumption for relational communication changes over time. Certain channels may be adopted or dropped as the relationship dynamics flow. However, the
more intimate relationships are, the more number of channels are employed and the more frequently people use them to keep their social ties.

Second, although some prior CMC studies suggest that people in general are more likely to disclose in CMC than FtF environment, this study indicates in traditional long-distance friendships, people disclose more in FtF than in CMC context. What’s more important is that although FtF self-disclosure and CMC disclosure are each associated with relationship quality individually, a combination of both works with greater power in achieving satisfactory long-distance friendships.

Third, consistent with prior research, these results suggest women disclose somewhat more than men in both FtF and CMC settings. Additionally, females share the highest disclosure with female friends, opposite-sex friendships share somewhat less disclosure, and males share the lowest disclosure with male friends. Greater FtF self-disclosure than CMC disclosure is true in three out of the four groups.

Some null findings are potentially as illuminating as the significant ones. Cultural values do not have much influence on self-disclosure behaviors in either FtF or CMC context. Contrary to the findings of many cross-cultural studies, self-disclosure trumps culture in the present study, which suggests that the intimate nature of friendship may be trans-cultural.

The data also lend support to the notion of the death of distance, suggesting that geographic distance has no significant impact on self-disclosure behaviors or relationship quality in long-distance friendships. Given the results of this study, once two people are separate, it really wouldn’t matter if one’s long-distance friend in located in a city far
away or closer, people still disclose to their friends through CMC in order to maintain their relationships.

**Conclusion**

There is no doubt that the Internet shapes human communication and changes contemporary societies, but it shapes the ways of communication and changes the practices within a society in different ways among various groups of people. This study examined how college students with diverse backgrounds used CMC to maintain their long-distance relationship with friends previously met in FtF settings. This is a population that continues to incorporate new technologies into their social and relational communication on a day-to-day basis. This is also a population that perhaps values friendship more than anything else. However, the interplay between the Internet and long-distance friendships is not as simple as keeping in touch via email or IM. Our study has demonstrated the complexity of this pervasive cultural phenomenon.

People did not have to wait till the invention of the Internet to cope with long-distance relationships, but the emergence of the Internet did make relational communication between long-distance friends more affordable and convenient. However, this study cautions us that CMC disclosure cannot substitute FtF self-disclosure. Only when CMC is used in combination with FtF self-disclosure does it truly help maintain a satisfactory long-distance friendship. Furthermore, the social use of the Internet does not take away the value and necessity of communicating through other channels. In fact, the more intimate the relationships become, the more communication channels people adopts, and the more frequently they use these tools to keep the relationship going. The existence of CMC provides them an array of options for relational communication.
People can choose based upon specific social conditions in order to fulfill their particular relational and communication goals.

These findings have important implications for theoretical development as well. CMC theorists should avoid mystifying the Internet but position it in the larger context of social practices and communication activities. Acknowledging the limitations of our sample, we have no intention to generalize these findings beyond the population studied. However, future research can improve the argument by using a larger size random sample and by studying a different group of Internet users in long-distance relationships.
References


Pew Internet & American Life Project. (2000, May 10). *Tracking online life: How women use the Internet to cultivate relationships with family and friends*. Washington,


Table 1

*Frequency of Media Use in Long-Distance Friendship Maintenance*

<table>
<thead>
<tr>
<th>Type of Media</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone</td>
<td>3.53</td>
<td>1.11</td>
</tr>
<tr>
<td>Email</td>
<td>3.42</td>
<td>1.15</td>
</tr>
<tr>
<td>IM</td>
<td>3.39</td>
<td>1.48</td>
</tr>
<tr>
<td>Face to face</td>
<td>3.03</td>
<td>0.93</td>
</tr>
<tr>
<td>Letter</td>
<td>1.86</td>
<td>1.01</td>
</tr>
<tr>
<td>Chat room</td>
<td>1.40</td>
<td>0.87</td>
</tr>
<tr>
<td>Blog</td>
<td>1.24</td>
<td>0.69</td>
</tr>
<tr>
<td>Pager</td>
<td>1.10</td>
<td>0.49</td>
</tr>
</tbody>
</table>

*Note.* The mean values were computed based on a 5-point scale where 1 means never and 5 means always.
Table 2
Media Type Not Used for Long-Distance Friendship Maintenance

<table>
<thead>
<tr>
<th>Type of Media</th>
<th>N</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pager</td>
<td>334</td>
<td>94.6</td>
</tr>
<tr>
<td>Blog</td>
<td>303</td>
<td>85.8</td>
</tr>
<tr>
<td>Chat room</td>
<td>277</td>
<td>78.5</td>
</tr>
<tr>
<td>Letter</td>
<td>166</td>
<td>47.0</td>
</tr>
<tr>
<td>IM</td>
<td>66</td>
<td>18.7</td>
</tr>
<tr>
<td>Email</td>
<td>23</td>
<td>6.5</td>
</tr>
<tr>
<td>Phone</td>
<td>15</td>
<td>4.2</td>
</tr>
<tr>
<td>FtF</td>
<td>10</td>
<td>2.8</td>
</tr>
</tbody>
</table>
### Table 3
**Associations between Relational Stage and Media Consumption**

<table>
<thead>
<tr>
<th>Medium</th>
<th>Mean</th>
<th>Medium</th>
<th>Mean</th>
<th>Medium</th>
<th>Mean</th>
<th>Medium</th>
<th>Mean</th>
<th>Medium</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM</td>
<td>2.00</td>
<td>Email</td>
<td>3.31</td>
<td>IM</td>
<td>3.54</td>
<td>Email</td>
<td>3.56</td>
<td>Phone</td>
<td>3.98</td>
</tr>
<tr>
<td>Email</td>
<td>1.00</td>
<td>IM</td>
<td>3.15</td>
<td>Email</td>
<td>3.24</td>
<td>Phone</td>
<td>3.36</td>
<td>IM</td>
<td>3.44</td>
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<tr>
<td>Phone</td>
<td>1.00</td>
<td>Phone</td>
<td>2.62</td>
<td>Phone</td>
<td>3.03</td>
<td>IM</td>
<td>3.23</td>
<td>Email</td>
<td>3.41</td>
</tr>
<tr>
<td>FtF</td>
<td>1.00</td>
<td>FtF</td>
<td>2.62</td>
<td>FtF</td>
<td>2.78</td>
<td>FtF</td>
<td>2.95</td>
<td>FtF</td>
<td>3.25</td>
</tr>
</tbody>
</table>

*Note.* The mean values were computed based on a 5-point scale where 1 means never and 5 means always.
Table 4
*Sex Effects on Self-Disclosure in Long-Distance Friendships*

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>FtF Self-Disclosure</th>
<th>CMC Disclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Female – Female</td>
<td>198</td>
<td>30.86</td>
<td>3.75</td>
</tr>
<tr>
<td>Male – Female</td>
<td>32</td>
<td>28.72</td>
<td>4.55</td>
</tr>
<tr>
<td>Female – Male</td>
<td>44</td>
<td>28.93</td>
<td>4.21</td>
</tr>
<tr>
<td>Male – Male</td>
<td>72</td>
<td>28.08</td>
<td>4.13</td>
</tr>
</tbody>
</table>