Online communication, interpersonal attraction, and friendship formation

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The Quality of Online, Offline, and Mixed-mode Friendships Among Users of a Social Network Site

Abstract

The first aim of this study was to compare the quality of online, offline, and mixed-mode friendships (i.e., friendships that originate online and extend to offline settings) among users of a social network site. The second aim was to investigate the relative contribution of proximity, perceived similarity, and social attraction to the quality of each of the three types of friendships. We surveyed 2,188 members of a Dutch social network site. Results showed that the quality of all three types of friendships increased over time. The differences in quality between online and offline friendships remained significant over time, but those between mixed-mode and offline friendships disappeared. Proximity did not affect the quality of any of the three types of friendships. Perceived similarity was the most important predictor of online friendships, whereas social attraction was the most important predictor of mixed-mode and offline friendships. Our results are discussed in the light of both interpersonal and computer-mediated communication theories.

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Introduction

Social network sites, such as MySpace and Facebook, have become tremendously popular in the past few years. In 2008, about 67% of US Americans between 18 and 30 years of age were a member of a social network site, along with 22% of those between 30 and 40 years of age and 9% of those age 40+ (Kohut, 2008). From 2006 to 2007, MySpace grew from about 66 million to 114 million unique visitors worldwide, and Facebook grew from 14 million to 52 million unique visitors during the same period (Comscore.com, 2007). Social network sites are usually open or semi-open systems: New members have to register, but everyone is welcome to join. The sites typically allow members to create a personal profile, observe and communicate with other members, and develop and/or maintain friendships with these members (Ellison, Steinfield, & Lampe, 2006).

Social network sites are typically used both to keep in touch with existing friends and to develop new friendships (boyd, 2004; Dwyer, Hiltz, & Passerini, 2007; Ellison et al., 2006). Social network sites, therefore, distinguish themselves from other interpersonal CMC applications, such as MUD’s (Utz, 2000), e-mail, or Instant Messaging, which are either predominantly used to communicate with unknown people or to maintain relationships with one’s existing friends (e.g., Gross, 2004). Thus, social network sites provide a good opportunity to investigate and compare the frequency and nature of different types of friendships. On social network sites, three types of friendships can be distinguished: (a) online friendships, which are developed online and remain solely online; (b) mixed-mode friendships (Walther & Parks, 2002), which are developed online but have extended to other, offline settings; and (c) offline friendships, which are developed offline and have extended to online settings.

One of the key features of friendships is their quality. The quality of friendships refers to the experienced closeness, trust, and understanding between friends (Marsden & Campbell, 1984). Several studies have investigated and compared the quality of online versus offline friendships (Chan & Cheng, 2004; Mesch & Talmud, 2006, 2007; Parks & Roberts, 1998). These studies have consistently demonstrated that online friendships
are perceived as lower in quality than offline friendships (Mesch & Talmud, 2006, 2007; Parks & Roberts, 1998). Chan and Cheng (2004) have also found that although the quality of both online and offline friendships increased over time, the quality of online friendships improved significantly more than offline relationships. Specifically, when the online friendships lasted for more than a year, their quality became comparable to offline friendships.

Although these earlier studies have yielded rather consistent results, an important limitation is that their definitions of online and offline friendships have been unclear. The studies usually referred to online friendships as originating online (Mesch & Talmud, 2006, 2007; Parks & Roberts, 1998), and to offline friendships as originating offline. However, in our view, this binary distinction does not reflect the reality of contemporary friendship formation and maintenance. After all, it has been demonstrated that a considerable part of online friendships migrate to offline settings in the course of their development and, as a result, develop into mixed-mode friendships (Parks & Floyd, 1996; Parks & Roberts, 1998; Wolak, Mitchell, & Finkelhor, 2003). Because earlier studies did not take this possible confound into account, they may not have compared differences between online and offline friendships, but rather differences between mixed-mode and offline friendships.

To our knowledge, no earlier research has compared the perceived quality of mixed-mode friendship with that of online and offline friendships. Therefore, the first aim of this study is to fill this lacuna in the literature:

RQ1a: Is there a difference in friendship quality between online, mixed-mode, and offline friendships?

Duration of the Friendship as a Moderator

Earlier research suggests that potential differences in the quality between online, mixed-mode, and offline friendships may depend on the duration of the relationship. For example, in his social information processing theory, Walther (1992) assumes that relationship formation in
CMC occurs at a slower rate than in face-to-face settings. According to Walther (1995), CMC does not prevent the development of close relationships but, due to the reduced nonverbal cues, CMC only slows down the process. Thus, social information processing theory implies that the quality of online and mixed-mode friendships may be particularly affected by the duration of the friendship.

Based on the results of Chan and Cheng (2004), we assume that the quality of online and mixed-mode friendships will initially be lower than that of offline friendships, but that these differences decrease when online and mixed-mode relationships develop over time. However, to date this assumption has not been examined for online, mixed-mode, and offline friendships. Therefore, our next research question reads:

RQ1b: Will potential differences in the quality between online, mixed-mode, and offline friendships become smaller as the friendships develop over time?

Determinants of the Quality of Online, Mixed-mode, and Offline Friendships

A second aim of our study is to investigate and compare the factors that predict the quality of online, mixed-mode, and offline friendships. Theories of offline friendships have yielded several factors that determine the quality of offline friendships. Three determinants have received particular attention in the literature: (a) proximity (e.g., Hays, 1985; Priest & Sawyer, 1967), (b) similarity (e.g., Duck, 1975; Kandel, 1978; Reagans, 2005; Wellman & Gulia, 1997), and (c) social attraction (e.g., Berndt, Hawkins, & Hoyle, 1986; Reagans, 2005). Proximity refers to the geographic closeness between friends (Burgoon et al., 2002). Similarity, in this study, refers to perceived attitudinal similarity, that is, the extent to which friends feel similar to each other with respect to their attitudes. Social attraction is the socio-emotional part of interpersonal attraction and is sometimes also called ‘liking.’ Social attraction implies that a target person is pleasant to be with, could become a friend, and would fit in the existing circle of friends (McCroskey & McCain, 1974).
In our study, we first investigate whether the level of proximity, perceived similarity, and social attraction differs among online, mixed-mode, and offline friendships. Subsequently, we compare the relative contribution of each of these three determinants in the prediction of the quality of the three types of friendships. To our knowledge, no earlier research has compared the relative importance of these three determinants for the quality of online, mixed-mode, and offline friendships. We, therefore, abstain from formulating hypotheses and investigate research questions instead.

**Proximity.** Research on offline friendships has shown that the closer the physical distance between subjects and their target friends, the more likely the friendship will be a success (Hays, 1985; Mesch & Talmud, 2006, 2007; Priest & Sawyer, 1967). Geographically close people become friends more easily not only because they can interact more easily (Berscheid & Walster, 1969; Schutte & Light, 1978), but also because they have more opportunity to exchange information between one another. As a result, they are more likely to become close to each other (Festinger, Schachter, & Back, 1950; Newcomb, 1961).

Based on the global-village metaphor (e.g., McLuhan & Power, 1989), which means that the internet globalizes communication by allowing users from around the world to connect with each other, it is plausible to assume that proximity is less important in online and mixed-mode friendships than in offline friendships (e.g., McKenna & Bargh, 2000). Through the internet, one can meet people from all over the world. Consequently, the chances of meeting someone who lives nearby may be smaller on the Internet than in offline settings.

However, it has also been suggested that CMC may stimulate feelings of proximity between interaction partners, regardless of their actual geographic distance (Cooper & Sportolari, 1997). These virtual feelings of proximity have been explained with Zajonc’s (1968) mere exposure effect (e.g., McKenna & Bargh, 2000). The mere exposure effect implies that repeated exposure to an object elicits positive feelings toward this object. Based on the mere exposure effect, it can be predicted that, even without being geographically close, frequent contact with online communication partners lead to feelings of closeness between these partners. As a result,
actual geographical proximity may be less important for the quality of online friendships, and perhaps also for the quality of mixed-mode friendships.

Empirical evidence on the relationship between the geographical proximity of friends and the quality of friendship is mixed. In one study, Mesch and Talmud (2006) found that proximity did not predict the quality of online friendships, whereas in another study, it did affect the quality of online friendships (Mesch & Talmud, 2007). Our next research questions read:

RQ2a: How does the level of geographical proximity differ for online, mixed-mode, and offline friendships?

RQ2b: What is the relative contribution of geographical proximity to the quality of online, mixed-mode, and offline friendships?

*Similarity.* Researchers agree that the more similar two people are, the stronger their relationship (Duck, 1983; Hallinan & Kubitschek, 1988; Kandel, 1978; Lazarsfeld & Merton, 1954; Mesch & Talmud, 2007; Reagans, 2005). People are more likely to participate in joint activities with others who share their interests. By doing so, they receive validation of their attitudes and beliefs, which they perceive as rewarding (Aboud & Mendelson, 1996). These perceived rewards, in turn, stimulate further interactions and, thereby, the formation and maintenance of friendships (Reagans, 2005). Therefore, it is no surprise that friendships between similar people are usually of a higher quality than between dissimilar people (Mesch & Talmud, 2007).

Several CMC theories have suggested that CMC partners feel more similar than offline communication partners. For example, the hyperpersonal communication framework (Walther, 1996) and social identity deindividuation theory (SIDE; Lea & Spears, 1992; Spears & Lea, 1992) imply that online communication partners have less access to nonverbal cues, such as clothing and mimicry, which often uncover interpersonal differences in face-to-face settings. Online partners are thus forced to focus on whatever minimal cues appear in an online setting. In the absence of nonverbal cues, which typically prevent feelings of similarity, this
over-reliance on available cues may lead online partners to easily feel similar to their communication partners.

The assumption that CMC increases feelings of similarity has received empirical support (Dubrovsky, Kiesler, & Sethna, 1991). However, this CMC-enhanced perceived similarity may not hold for CMC on social network sites. Social network sites provide more cues than text-based CMC. Especially the availability of non-verbal cues on social network sites, for example through photos posted, may effectively impair the development of feelings of similarity. Because the literature does not allow us to formulate hypotheses on the effects of similarity on the three types of friendships, we investigate the following two research questions:

RQ3a: How does the level of perceived similarity differ between online, mixed-mode, and offline friendships?

RQ3b: What is the relative contribution of perceived similarity to the quality of online, mixed-mode, and offline friendships?

Social attraction. Social attraction is one of the most important determinants of the quality of offline friendships (Aboud & Mendelson, 1996; Berndt et al., 1986; Reagans, 2005). The formation of offline relationships does not occur with at least a minimum level of social attraction (Brehm, 1992; Reagans, 2005; Reis & Shaver, 1988). People prefer to interact with others to whom they feel socially attracted because they are more pleasant to be with (Vittengl & Holt, 2000). As a result, socially attracted people are more likely to communicate with each other (Berscheid & Walster, 1969; McCroskey & McCain, 1974), which eventually may result in a higher level of friendship quality (Reagans, 2005).

The level of social attraction may be higher in online friendships than in offline friendships. A series of studies have reported positive effects of CMC on social attraction (Antheunis, Valkenburg, & Peter, 2007; Bargh, McKenna, & Fitzsimons, 2002; McKenna, Green, & Gleason, 2002; Ramirez & Zhang, 2007). These positive effects have been explained by the use of two related interactive uncertainty reduction strategies in CMC: self-disclosure and direct questioning (Albada, Knapp, & Theune, 2002; Bargh
et al., 2002; Collins & Miller, 1994; McKenna et al., 2002). CMC stimulates the use of both self-disclosure and direct questioning (Antheunis et al., 2007; Tidwell & Walther, 2002). CMC-enhanced self-disclosure and direct questioning, in turn, stimulate social attraction (Antheunis et al., 2007).

The finding that CMC enhances interpersonal attraction is based on research in CMC environments with no or limited non-verbal cues. As a result, it may be conceivable that interpersonal attraction may develop differently on social network sites. As discussed above, users of social network sites have also non-verbal cues at their disposal. Consequently, they do not have to rely predominantly on self-disclosure and direct questioning to reduce their uncertainty about other communication partners. Eventually, then, the availability of a greater number of cues on social network sites may reduce the development of social attraction. To our knowledge, the effect of CMC induced social attraction on the quality of friendships has not been investigated. Our last two research questions related to social attraction read:

RQ4a: How does the level of social attraction differ for online, mixed-mode, and offline friendships?

RQ4b: What is the relative contribution of social attraction to the quality of online, mixed-mode, and offline friendships?

Social network Sites in the Netherlands and the U.S.

The data used in this survey study were collected among members of the Dutch social network site Hyves (www.hyves.nl). Hyves is currently the most popular social network site in the Netherlands. More than 30% (over 5 million people) of Dutch citizens are members of Hyves. Hyves is very similar to US-based social network sites, such as MySpace and Facebook. The average age of Hyves members is 23 years, and the majority of the members are highly educated. Similar to MySpace (Dwyer et al., 2007), Facebook (Lampe, Ellison, & Steinfield, 2006), and Friendster (boyd, 2004), the most important motivations for visiting Hyves is to keep in touch with existing friends and to find more information about persons met in the
offline world. Because there seem to be no striking differences between Hyves and non-Dutch social network sites, we believe that our findings may be used to validly generalize users of other social network sites.

**Method**

*Sample and Procedure*

In November 2006, an online survey was conducted among 2,188 active members of Hyves (30.2 % male). The participants were recruited through advertisements on the Hyves website. The age of the users ranged from 10 to 62. The average age was 22.95 ($SD = 5.96$). After a brief introduction, participants were asked some general questions about their use of Hyves. Subsequently, they were questioned about either their online or their offline friendships. If respondents were questioned about online friendships, we asked them whether they had one or more friends on Hyves who they had met through Hyves or the Internet. If they were questioned about offline friendships, we asked them whether they had one or more friends on Hyves who they already knew offline. In both situations, respondents were asked to think of the particular online or offline friend with whom they had communicated with most recently through Hyves. The participants were then asked a series of questions about this particular friend.

To classify the friendships in online, mixed-mode, and offline friendships, we asked the respondents which channels they had used to communicate with the particular friend. Response categories were: (a) Hyves, (b) Instant Messaging (IM), (c) email, (d) telephone, and (e) face-to-face. If respondents had met their friend through Hyves or the internet and had used only Hyves, IM, and/or email to communicate with this particular friend, the friend was identified as an *online friend* ($N = 357$). If respondents had also used telephone and/or face-to-face communication, the online friend was classified as a *mixed-mode friend* ($N = 347$). Finally, if respondents indicated that they already knew their friend from offline settings, the friend was identified as an *offline friend* ($N = 1,484$).
Measures

Proximity. To measure proximity, we asked the respondents to indicate how far they lived from the particular friend. The response categories were: (1) more than 100 kilometers (i.e., about 62 miles), (2) between 50 and 100 kilometers (i.e., between 31 and 62 miles), (3) between 20 and 50 kilometers (i.e., between 12 and 31 miles), (4) between 10 and 20 kilometers (i.e., between 6 and 12 miles), (5) between 5 and 10 kilometers (i.e., between 3 and 6 miles), and (6) less than 5 kilometers (i.e., about 3 miles) ($M = 3.69$, $SD = 1.83$).

Social Attraction. Our measure of social attraction was based on McCroskey and McCain’s Measurement of Interpersonal Attraction (1974). The items were: “This person is pleasant to talk with,” “This person is pleasant to be with,” “This person fits well in my circle of friends,” “We get along well together,” “It feels comfortable when he/she is around.” The response categories ranged from 1 (completely disagree) to 5 (completely agree). The five items formed a one-dimensional scale (explained variance 79%), with a Cronbach’s alpha of .93 ($M = 3.67$, $SD = 1.04$).

Similarity. To measure similarity, we used four items of the Perceived Homophily Measure (McCroskey, Richmond, & Daly, 1975): “This person thinks like me,” “This person behaves like me,” “This person is similar to me,” and “This person is like me.” The response categories for each of the items ranged from 1 (completely disagree) to 5 (completely agree). The items formed a one-dimensional scale (explained variance 78%), with a Cronbach’s alpha of .90 ($M = 2.71$, $SD = 1.03$).

Quality of Friendship. To measure the quality of friendship, we used the items of Marsden and Campbell’s (1984) scale to measure tie strength. The four items were: “I feel close to this person,” “This person is important for me,” “If I had a personal problem, I would ask this person for help,” and “I trust this person.” The response categories for each of the items ranged from 1 (completely disagree) to 5 (completely agree). The four items loaded on one factor (explained variance 81%), and resulted in a Cronbach’s alpha of .92 ($M = 3.20$, $SD = 1.22$).

Duration of the friendship. The duration of the friendship was measured by an open question asking the respondents to indicate how long they had known this particular friend ($M = 53.0$ months, $SD = 68.04$). To compare
the quality of friendship at different stages of the relation, we recoded the open answers, based on Chan and Cheng (2004), within five groups: 0-3 months, 4-6 months, 7-12 months, 13-24 months, and more than 24 months.

Results

Our first research question (RQ1a) asked if there is a difference in the quality of friendship between online, mixed-mode, and offline friendships. Our next research question (RQ1b) asked whether potential differences in the quality between online, mixed-mode, and offline friendships would become smaller over time. To answer these research questions, we conducted a univariate ANOVA with the quality of friendship as the dependent variable and the three types of friendship (online vs. mixed-mode vs. offline) and duration of the relationship (0-3 months vs. 4-6 months vs. 7-12 months vs. 13-24 months vs. more than 24 months) as the independent variables.

The ANOVA yielded a main effect of type of friendship on the quality of friendship, $F (2, 2173) = 169.99, p < .001, \eta^2 = .13$. Tukey and Bonferroni post-hoc tests revealed that the quality of offline friendships was significantly higher than the quality of mixed-mode friendships and online friendships. The quality of mixed-mode friendships was higher than the quality of online friendships and lower than the quality of offline friendships (means and standard deviations are listed in Table 1). We also found a main effect of relationship duration on the quality of friendship, $F (4, 2173) = 16.78, p < .001, \eta^2 = .03$. As Table 1 shows, the quality of friendship indeed improved as the friendship developed over time, regardless of the type of friendship.

The ANOVA did not yield an interaction effect between type and duration of the friendship, $F (8, 2173) = 1.51, p = .15, \eta^2 = .01$, as found by Chan and Cheng (2004). Tukey and Bonferroni post-hoc tests showed that the quality of all three types of friendships increased over time. Although the quality of offline and mixed-mode friendships differed when the overall
sample was compared (see third column of Table 1), the quality of these two types of friendship did not differ when compared over time. However, the significant differences between the quality of online friendships compared to mixed-mode and offline friendships remained, even for friendships lasting longer than two years.

Table 1. Mean Quality of Online, Mixed-Mode, and Offline Friendships Over Time

<table>
<thead>
<tr>
<th>Type of friendship</th>
<th>Overall</th>
<th>0-3 Months</th>
<th>4-6 Months</th>
<th>7-12 Months</th>
<th>13-24 Months</th>
<th>24+ Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online (n= 357)</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>1.96 (.91) a</td>
<td>100 47</td>
<td>2.04 (1.00) a</td>
<td>22</td>
<td>1.70 (.72) a</td>
<td>14</td>
</tr>
<tr>
<td>Mixed-Mode (n=347)</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>3.27 (.99) b</td>
<td>100 24</td>
<td>2.99 (1.04) b</td>
<td>21</td>
<td>3.31 (.96) b</td>
<td>19</td>
</tr>
<tr>
<td>Offline (n=1484)</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
<td>M (SD)</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>3.49 (.95) c</td>
<td>100 7</td>
<td>3.03 (1.01) b</td>
<td>5</td>
<td>3.32 (.98) b</td>
<td>7</td>
</tr>
</tbody>
</table>

Note. % represents row percentages of the occurrence of the particular type of friendship in this period. Column entries with different superscripts differ from each other at least at p < .001.

Table 2. Mean Differences in Proximity, Similarity, and Social Attraction in Online, Mixed-Mode, and Offline Friendships

<table>
<thead>
<tr>
<th>Type of friendship</th>
<th>Proximity</th>
<th>Similarity</th>
<th>Social Attraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online</td>
<td>2.80 (1.61) a</td>
<td>2.06 (.89) a</td>
<td>2.55 (.99) a</td>
</tr>
<tr>
<td>Mixed-mode</td>
<td>3.51 (1.70) b</td>
<td>2.92 (.91) b</td>
<td>3.74 (.78) b</td>
</tr>
<tr>
<td>Offline</td>
<td>3.94 (1.85) c</td>
<td>2.82 (.84) b</td>
<td>3.93 (.71) c</td>
</tr>
</tbody>
</table>

Note. Column entries with different superscripts differ from each other at least at p < .001
Proximity

Our second research question (RQ2a) asked whether the level of geographical proximity between friends differ for offline, mixed-mode, and online friendships. The first column of Table 2 shows significant differences in the level of proximity between the types of friendship, \( F(1, 2185) = 61.09, p < .001 \). Tukey and Bonferroni post-hoc tests revealed that proximity was highest in offline friendships \((M = 3.94, SD = 1.85)\), followed by mixed-mode \((M = 3.51, SD = 1.70)\), and online friendships \((M = 2.80, SD = 1.61)\).

Our next research question (RQ2b) asked if the effect of proximity on quality of friendship differ in offline, mixed-mode, and online friendships. To answer this and the following research questions, we conducted a multiple regression analysis for each type of friendship (online, mixed-mode, and offline), with proximity, similarity, social attraction, duration of the relationship, age, and gender as the independent variables and the quality of friendship as the dependent variable. As the first row in Table 3 shows, proximity did not affect the quality of friendship in any of the three types of friendships.

Similarity

Our third research question (RQ3a) asked if there is a difference in perceived similarity between online, mixed-mode, and offline friendships. As the second column of Table 2 shows, there is a significant difference in perceived similarity between the online and mixed-mode friendships, and between online and offline friendships, \( F(1, 2185) = 125.58, p < .001 \). Perceived similarity was the highest in mixed-mode friendships \((M = 2.92, SD = .91)\) and offline friendships \((M = 2.82, SD = .84)\), and lowest in online friendships \((M = 2.06, SD = .89)\). Tukey and Bonferroni post-hoc tests revealed that there was no difference in perceived similarity between mixed-mode and offline friendships. However, the differences between mixed-mode and online friendships, and between offline and online friendships were significant.

Research question RQ3b asked whether there are different effects of perceived similarity on the quality of friendship in online, mixed-mode,
and offline friendships. The results of our regression analyses showed that perceived similarity affected the quality of friendship in all three types of friendship (see Table 3). The largest effect occurred for online friendships, $\beta = .51$, $p < .001$, followed by mixed-mode friendships, $\beta = .24$, $p < .001$, and offline friendships, $\beta = .19$, $p < .001$.

**Social Attraction**

Our fourth research question (RQ4a) asked whether the level of social attraction differed in online, mixed-mode, and offline friendships. As the third column of Table 2 shows, there was a difference in the level of social attraction in online, mixed-mode, and offline friendships, $F(1, 2185) = 454.14$, $p < .001$. Tukey and Bonferroni post-hoc test showed that social attraction was the highest in offline friendships ($M = 3.93$, $SD = .71$), followed by mixed-mode friendships ($M = 3.74$, $SD = .78$), and online friendships ($M = 2.55$, $SD = .99$).

Research question RQ4b asked if there are different effects of social attraction on the quality of friendship in online, mixed-mode, and offline friendships. As Table 3 shows, the effect of social attraction on friendship quality was the highest for offline friendships ($\beta = .68$, $p < .001$), followed by mixed-mode friendships ($\beta = .66$, $p < .000$), and online friendships ($\beta = .36$, $p < .001$).

Table 3. Predictors and Correlations of the Quality of Online, Mixed-Mode, and Offline Friendships

<table>
<thead>
<tr>
<th></th>
<th>Quality of friendship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Online</td>
</tr>
<tr>
<td>Proximity</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Similarity</td>
<td>.51***</td>
</tr>
<tr>
<td>Social Attraction</td>
<td>.36***</td>
</tr>
<tr>
<td>Duration of</td>
<td>.08**</td>
</tr>
<tr>
<td>relationship</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.07*</td>
</tr>
<tr>
<td>Gender (0=male)</td>
<td>.04</td>
</tr>
</tbody>
</table>

*Note. * $p < .05$; ** $p < .01$; *** $p < .001$
Discussion

The first aim of our study was to compare the quality of three types of friendships that are formed and/or maintained through the internet: online, offline, and mixed-mode friendships. Earlier studies on this topic have typically compared two types of friendships that are formed and/or maintained through the internet: online and offline friendships. In these earlier studies, online friendships were defined as friendships that originated online and offline friendships as friendships that originated offline. However, as discussed, in our view, this dichotomous classification does not sufficiently cover contemporary friendship formation and/or maintenance. By distinguishing and comparing online, mixed-mode, and offline, we were able to make some important refinements to earlier theories and results.

In agreement with earlier studies, we found that respondents perceived offline friendships of higher quality than online friendships. However, we found that mixed-mode friendships, which are also formed online but then switch to offline communication modalities (i.e., telephone, face-to-face communication), were rated similar in quality as offline friendships. Thus, it is not important whether a friendship is formed online or offline, but rather, it is more important that newly formed friendships switch to cue-richer communication modalities, such as telephone and face-to-face contact.

We also found that the quality of all three types of friendship improved as the friendship developed over time. However, in contrast to Chan and Cheng (2004), who demonstrated that the quality of online friendships reached the level of those offline friendships within one year, in our study, the quality of online friendships remained significantly lower than that of offline friendships, even after two years. However, as discussed earlier, the differences between online and offline friendships found in Chan and Cheng’s study could have been a result of their lack of distinction between online and mixed-mode relationships. Our results suggest that although the quality of purely online friendships does differ from that of offline friendships, the quality of mixed-mode friendships was of the same level as that of offline friendships.
Determinants of the Quality of Online, Mixed-Mode, and Offline Friendships

The second aim of the study was to examine how the level of proximity, similarity, and social attraction differ in online, mixed-mode, and offline friendships, and to what extent these friendship determinants predict the quality of online, mixed-mode, and offline friendships.

Proximity

We asked whether the level of proximity differ in online, mixed-mode, and offline friendships. General research on offline friendships has shown that geographically close people have more opportunities to become close friends than geographically distant people (e.g., Festinger et al., 1950; Newcomb, 1961). However, the Internet enables people to contact others regardless of their actual geographic distance. This suggests that geographic distance may be of less importance in online friendships than in offline friendships. We indeed found that offline friends lived closer to each other than mixed-mode and online friends, which suggests that in online and mixed-mode friendships, actual geographic proximity is less important to become friends. This indicates that the internet indeed globalizes friendship formation.

We also asked whether the effect of proximity on the quality of friendship would differ for online, mixed-mode, and offline friendships. We expected that frequent contact with online friends could lead to more positive feelings about these friends so that actual geographical proximity may be less important for friendship quality in online and mixed-mode friendships than in offline friendships. In contrast to our expectations, our results showed no effect of proximity on the quality of friendship in any of the three types of friendships. In contrast to earlier research on offline friendships (Hays, 1985; Priest & Sawyer, 1967), proximity did not predict the quality of offline friendships in our study. This inconsistent result may be due to the fact that all our respondents are members of social network sites, and therefore, proximity does not matter, neither in online friendships nor in mixed-mode and offline friendships.
Similarity

CMC theories, such as the hyperpersonal communication framework (Walther, 1996) and SIDE theory (Lea & Spears, 1992; Spears & Lea, 1992), predict that due to reduced nonverbal cues, online friends may more easily feel similar to their communication partners than offline friends. However, as discussed, social network sites have more cues available compared to earlier text-based types of CMC. Contrary to these predictions, we found that the level of perceived similarity was lower in online friendships compared to mixed-mode and offline friendships. We did find, however, that the effect of similarity on the quality of friendship is higher for online friendships than for mixed-mode and offline friendships. These results indicate that although the level of similarity is low in online friendships, similarity is a more important determinant of friendship quality in online friendships than in the other two types of friendships.

An explanation for the low level of similarity in online friendships is that on social network sites, the possibility to meet someone similar is not only lower in comparison to offline settings, but also in comparison to other internet environments. After all, on social network sites, communication is primarily organized around people, not around special topics or interests as in other internet environments, such as chat sites and forums (boyd & Ellison, 2008). However, the lower level of similarity on social network sites does not imply that similarity is a less important predictor of the quality of online friendships formed on social network sites. Similarity was the most important predictor of the quality of online friendships. Our results contradict the view of some authors who claim that the internet threatens the formation and bridging of social capital because it enables people to confine their communication to people who share precisely their interests (Putnam, 2000; VanAlstyne & Brynjolfsson, 1996). Social network sites allow their users to meet a wide variety of similar and dissimilar communication partners. However, just like in offline settings, similarity is a core determinant of successful friendship formation and maintenance.
Social Attraction

Our results show that the level of social attraction was highest in offline and mixed-mode friendships and lowest in online friendships. We also found that the effect of social attraction was most important in offline and mixed-mode friendships, and significantly less important in online friendships. A possible explanation for our findings may lie in the social part of social attraction. An important aspect of social attraction is one’s recognition that a friend or potential friend may fit within one’s existing social environment (McCroskey & McCain, 1974). When the communication between potential friends is confined to the internet, it may be less important whether or not a potential friend fits within one’s existing social circle. Theoretically, purely online friendships can develop in rather isolation from real-life social circles. However, as soon as the online friendship transcends to offline settings, the question whether this friend fits within one’s existing social circle becomes more acute. This may explain why social attraction is a more important predictor of both offline and mixed-mode friendships than of online friendships.

Implications and Future Research

Our study has several implications for future theory and research. First, our study showed that mixed-mode friendships, which originated online and migrated to offline settings, are comparable to offline friendships in several respects. Mixed-mode friendships were perceived similar in quality as were offline friendships, and the effects of the three determinants on the quality of friendship were also similar for mixed-mode and offline friendships. This implies that the crucial difference in the quality of friendships is between online friendships and mixed-mode/offline friendships. Future studies should make a clear conceptual distinction between these three types of friendships because there are major differences between online and mixed-mode friendships.

Second, this study has implications for CMC theories. To date, most CMC theories are still based on reduced-cues perspectives and the assumption of dyadic communication. The results of our study indicate that some of these theories, such as hyperpersonal communication framework
(Walther, 1996) and SIDE theory (Lea & Spears, 1992; Spears & Lea, 1992), should be reconsidered in light of more cue-richer CMC, like social network sites. These theories, for example, assume that, due to a lack of auditory and visual cues, CMC partners feel more similar to each other. Our study suggests that partners in online friendships do not feel more similar compared to partners in offline and mixed-mode friendships. This suggests that an important assumption in earlier CMC theories must be reevaluated in light of CMC on social network sites. Future research should pay closer attention to the differential effects of cue-rich and cue-poor CMC environments for social interaction in general, and relationship formation and/or maintenance in particular.

References


