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Emily Snow, from East Bridgewater, is a senior majoring in psychology. This project began as an honors thesis in the spring of 2006, under Dr. Michael Murtagh's direction, and continued in the summer of 2006 as an Adrian Tinsley Program Summer Research Project, also under Dr. Murtagh's direction. Emily plans a career as a Licensed Mental Health Counselor.

Abstract

This study examined differences in intimacy (operationally defined as the degree of emotional intensity) between face-to-face interactions, computer interactions with emoticons, and computer interactions without emoticons. Subjects conversed with a confederate for 25 minutes either face-to-face, over AOL instant messenger while the confederate spoke in plain text only, or over AOL instant messenger while the confederate spoke with emoticons in addition to plain text; in both instant messenger conditions, the subject did not see the confederate. Findings were mixed, with some support for the main hypothesis, that there would be greater intensity in computer than in face-to-face interaction. The findings of this study and the need for future research are discussed.

Intimacy is a term which is often used, but difficult to define. One person's idea of the concept of "intimacy" may be quite different than that of another person. A recent study concluded that intimacy contained four main components: self-disclosure, love and affection, personal validation, and trust (Hook, Gerstein, Detterich & Gridley, 2003). In an earlier study subjects reported that positive feelings toward their partner, talking (especially about topics of an intimate nature) and sharing activities are associated with intimacy (Helgeson, Shaver & Dyer, 1987).

However, intimacy is not always viewed in the same way between the sexes. In one study, men directly associated sex and physical contact with intimacy, whereas women rarely mentioned sex and mentioned physical contact simply as a way of expressing other components of intimacy (Helgeson et al., 1987). In this study, it was found that for both men and women physical contact was rarely mentioned in same-sex intimate experiences, however, appreciation, happiness, talking, problem sharing and/or solving, experience sharing and activity sharing were all mentioned. Additionally, distant, non-intimate experiences were characterized with feeling awkward, feeling hurt, having arguments, a lack of communication, and disapproval.

While there are many factors which may influence the level of intimacy experienced in an interaction, such as self-disclosure, body language, and expressiveness, it is unclear how the type of interaction between the individuals, whether face-to-face or on a computer, may effect this experience.

The Internet

Online interactions have increased dramatically throughout the past few decades. The internet is now used in such diverse areas as education, psychological support, and social relationships.

Education

Both advantages and disadvantages exist in using the internet in education. In a chat room, students may reply at the same time as one another, and do not have to feel singled out by the teacher (Hudson & Bruckman, 2002). Students may edit their responses before sending them out, thus relieving some pressure to give a perfect answer in a perfectly synchronous manner (Ware, 2004). For students typing in a language other than their first language, or taking a course in a country other than their own, an online format also removes concerns about accents or unknown social customs (Ware, 2004). One disadvantage in using the internet in education is that students may not take online classrooms as seriously as traditionally classrooms (Hudson & Bruckman, 2002; Kirkpatrick, 2005). Interestingly, is has been found that the more graduate students experienced technology problems which impeded their learning, the higher they evaluated the course and the instructor (Tallent-Runnels, Lan, Fryer, Thomas, Cooper & Wang, 2005).

Psychological Support

In a study which looked at 136 web counseling sites, using similar search methods as would likely be used by someone seeking out a web counseling site, web counseling sites were found to be largely unsatisfactory (Heinlen, Welfel, Reynolds, Richmond & Rak, 2003). Some of the sites surveyed were free, some asked for fees, some were professionally made, some had errors in their layouts; but not one of the sites was in compliance with ethical standards for web counseling set out by the National Board for Certified Counselors (Heinlen et al., 2003).

Chat rooms and web sites can be used as a form of support. In a study on emotional support and honesty in chat rooms, it was found that 63% of first-year social psychology students surveyed had received emotional support in chat rooms (Whitty, 2002). An earlier study had found that several of the most common types of support given online were emotional, informational, and esteem; while tangible assistance was least often given (Braithwaite, Waldron & Finn, 1999).

Interestingly, while one study found no significant correlation between technical internet use (bulletin board use, created web pages, chat room use, and visitation of multi-user dungeons) or information exchange (accessing information online or emailing) on perceived social support, there was a correlation between leisure use (playing online games or instant messaging) and perceived social support (Swickert, Hittner, Harris & Herring, 2002).

Studies have found chatting on the internet to be emotionally beneficial (Green, Hilken, Friedman, Grossman, Gasiewski, Alder & Sabini, 2005; Shaw, Gant & Schouten, 2002). Depression and loneliness scores have been found to decrease with multiple chat sessions, while perceived social support and self-esteem increased (Shaw et al., 2002). It has also been found that after either Instant Messenger interaction or face-to-face interaction, participants were significantly happier, less tense, and less angry (Green et al., 2005). This increase in happiness was significant greater with Instant Messenger than face-to-face interactions, and this effect was stronger in women than in men. Interestingly, however, this study found that time spent on Instant Messenger was negatively correlated with life satisfaction.

Social Relationships

Perhaps one of the most common forms of internet use is that of using the internet to meet and communicate with people. The main forms of online social interaction on the internet of those surveyed were email, chat, and instant messaging (Baym, Zhang & Lin, 2004). In this study, most social interactions were reported to be face-to-face, with internet and phone interaction almost equal to each other. In regard to online activities, adolescents have reported spending the most time with Instant Messenger, using web sites (especially for downloading music) and email (Gross, 2004).

The internet can also be used as a way of meeting people. Chat rooms were listed in one study as the most popular method of meeting others over the internet, above web sites and email (McCown, Fischer, Page, & Homant, 2001). In this study, participants were found to have always had a telephone conversation with the other person before having a face-to-face meeting with someone they had met over the internet. Additionally, the relationships that were initially formed online were more casual than intimate or romantic. However, a more recent study found that the internet is becoming an increasingly popular way to find romantic or sexual partners (Hollander, 2002).

Internet interactions can be synchronous (an interaction with responses timed similarly to that of face-to-face conversation) or asynchronous (an interaction with delays between each response which are significantly longer than would occur in a face-to-face conversation). Instant messenger is an example of a commonly used form of synchronous interpersonal communication on the internet. Most students surveyed reported using instant messenger to talk to friends (Kindred & Roper 2004). The reasons given for their use of instant messenger included laziness, the ability to have privacy when others were in the room, ease of use, the ability to have other instant messenger conversations, watch the television or multi-task in other ways, or as a substitute

for interaction when a face-to-face meeting was not possible. Another study found that adolescents most often instant message people that they already know offline (Gross, 2004).

Findings are mixed on whether or not online interactions are viewed as equal to face-to-face interaction. Some studies found that internet interactions were viewed as being inferior overall to face-to-face interactions (Baym et. al., 2004; Green et al., 2005). One study found that while people viewed email as less effective than face-to-face or telephone interactions for both maintaining relationships and working, students found email to be as effective as telephone and face-to-face communication for completing schoolwork, and as more effective for exchanging information (Cummings, Butler & Kraut, 2002). Another study found that while students working on a project preferred to use face-to-face interaction on the whole, of the online interactions available, they preferred asynchronous interaction to synchronous for task completion, while synchronous conversation was best for brainstorming (Thomas & Macgregor, 2005). In terms of relationships, those from online conversations can feel just as real, intense, and rich as face-to-face relationships (Peris, Gimeno, Pinazo, Ortet, Carrero. Sanchiz, & Ibáñez, 2002). In this study, over 70% of those surveyed found platonic internet relationships to be just as important as face-to-face friendships, and over 55% of those surveyed found romantic internet relationships to be just as important as face-to-face romances.

Verbal and Nonverbal Cues in Intimacy

Verbal cues consist entirely of the words that are spoken or typed. This includes the information contained in those words, as well as the level of self-disclosure they contained. Higher levels of self-disclosure are associated with higher intimacy (Guerrero, Jones & Burgoon, 2000; Town & Harvey, 1981). Greater conversational fluency, with fewer pauses, has also been found to be associated with greater perceived intimacy (Burgoon & LePoire, 1999) and with greater conversational involvement, a concept associated with intimacy (Coker & Burgoon, 1987). Although not directly labeled as being associated with intimacy, back-channel responses (such as saying: "uh-huh"), have been positively correlated with rapport (Bernieri, Gillis, Davis & Grahe, 1996).

Nonverbal cues, such as tone of voice or body language, provide information beyond the actual words used in an interaction. Touching has been found to be associated with greater intimacy (Burgoon, 1991; Burgoon, Buller, Hale, & DeTurck, 1984; Guerrero et al., 2000). Eye contact, gazing, or looking at the face of a conversational partner has been found to be associated with greater intimacy (Breed, 1972; Burgoon et al., 1984; Burgoon & LePoire, 1999; Guerrero et al., 2000; Wada, 1990). Expressiveness, or animation, has been found to be correlated with greater rapport (Bernieri et al., 1996), and intimacy (Burgoon & LePoire, 1999).

In a study with opposite-sex dyads, gesturing with hands by the female was the nonverbal behavior most strongly correlated with self-reported rapport (Bernieri et al., 1996). Increased proximity has been found to be correlated with greater rapport (Bernieri et al., 1996), greater intimacy (Burgoon et al., 1984; Guerrero et al., 2000), and greater conversational involvement (Coker & Burgoon,1987).

There are other aspects of body language (a type of nonverbal cues) which relate to intimacy. Fewer posture shifts is correlated with greater rapport (Bernieri et al., 1996), forward lean is associated with higher intimacy (Breed, 1972; Burgoon et al., 1984; Burgoon & LePoire, 1999), and a more direct-facing orientation is associated with greater involvement (Coker & Burgoon, 1987) and intimacy (Burgoon & LePoire, 1999). A relaxed posture is also associated with higher intimacy (Burgoon & LePoire, 1999), mirroring (or similarity and coordination of behavior) has been found to be correlated with greater rapport (Bernieri et al., 1996), and body coordination has been shown to be associated with greater conversational involvement (Coker & Burgoon, 1987). Smiling has produced mixed results as it relates to intimacy. Although one study found that smiling was not related to rapport (Bernieri et al., 1996), smiling has been found in some studies to be related to greater intimacy (Burgoon et al., 1984; Guerrero et al., 2000) and to increased liking (Kleinke & Taylor, 1991).

The sex of the people communicating is also nonverbal information which may affect intimacy. One study found that interactions with female confederates were rated as more intimate than interactions with male confederates although the confederates did not vary in behavior (Burgoon et al., 1984). This finding is consistent with an earlier study which found that female confederates were rated as acting more interested than a male confederate acting in the same manner (Breed, 1972). Subjects made more eye contact with male confederates than female confederates, shifted body position more often with female confederates than male confederates, and interactions with a confederate of the same sex was viewed as more comfortable by both sexes (Breed, 1972). Pairs of males made less eye contact and had more confronting head orientation than pairs of females; and males smiled less in more intimate same-sex pairings, while females smiled more in more intimate same-sex pairings (Wada, 1990). An earlier study, however, found no significant differences in the intimacy-indicating behaviors between male and female participants when interacting with a female confederate (Town & Harvey, 1981).

The attractiveness of a conversational partner can effect the experience in ways related to intimacy as well, including the attribution of positive characteristics such as competence,

adjustment, and overall impression (Eagly, Ashmore, Makhijani & Longo, 1991; Langlois, Kalakanis, Rubenstein, Larson, Hallam, M., & Smoot, 2000). Additionally, attractive people are treated better than unattractive people (Langloi et al., 2000). Thus attractiveness may be related to experiences of intimacy. Indeed, attractiveness of another person had been cited as an extremely important factor in falling in love, clearly an intimate experience (Sangrador, & Yela, 2000).

Intimacy and the Internet

Differences in verbal and nonverbal cues between face-to-face and internet interactions, as well as individual characteristics, may effect the level of intimacy experienced in these interactions.

Verbal Cues

While all of the verbal cues discussed earlier are present in text-only online interactions, they may be negatively affected by this medium in relation to face-to-face interactions. For example, conversational fluency may be more difficult to maintain online. Chat rooms have been stated by participants to be limiting due to the additional effort needed to convey information (Becker & Stamp, 2005). It is slower to say the same thing in chat than in face-to-face conversations, partly because of the medium itself (typing taking longer than speaking and technical difficulties) and partly because of the need for extra clarification (presumably due to the lack of non-verbal information). Indeed, participants in a chat room became very frustrated with more than several seconds of lag time between their sending a message and the message being received (Roed, 2003).

Self-disclosure is an important part of intimacy that is available online; however, it has been found that nearly half of adolescents using the internet have pretended to be someone they are not online (Gross, 2004). Even when people online do not falsify information about themselves, they may use other forms of deception, such as withholding information, to change the impression that they give to others online (Becker & Stamp, 2005). Although the internet allows for deception, its potential anonymity may also make it easier for one to self-disclose, and reveal one's true self. Indeed, the true self has been found to be more accessible after an online interaction (Bargh, Yair, McKenna & Fitzsimmons, 2002).

Nonverbal Cues

While it would appear that virtually all nonverbal cues, such as tone of voice and facial expressions (which in face-to-face interactions often clarify the meaning behind the words used) are absent in online interactions, internet users have developed ways to attempt to compensate for this lack of nonverbal information. These include the use of emoticons (arrangements of typographic symbols to indicate nonverbal signals, often facial expressions,

such as :-) for a smile), avatars (graphic representations of oneself online) and social norms.

Emoticons are widely recognized (Walther & D'Addario, 2001) and used (Braithwaite et al., 1999; Kindred & Roper, 2004) by internet users. Emoticons are used to clarify ambiguous statements (Kindred & Roper, 2004), mitigate negative messages (Roed, 2003), and to flirt (Whitty, 2004). Interestingly, women have been found to use emoticons more often than men (Baron, 2004; Witmer & Katzman, 1997); however, use may be equal in mixed-gender groups (Wolf, 2000).

Another compensation for the lack of nonverbal information available online is the use of avatars. Avatars provide social cues which would be otherwise lacking in online interaction (Kolko, 1999). For example, the perceived sex of an avatar allows others to interact with the owner of this avatar as if their sex were certain. The vast majority of preadolescents in one study used avatars which were the same gender as they were (Calvert, Mahler, Zehnder, Jenkins, & Lee, 2003). However, avatars are not a true substitute for actually being able to see someone as the nonverbal information provided by an avatar may not be accurate or complete (Kolko, 1999).

While there are fewer visible social cues which can be followed to create norms online than in face-to-face interactions, groups on the internet often have their own rules and norms (Pankoke-Babatz & Jeffrey, 2002). These norms are often either explained to those new to these internet groups, or are learned by observing before participating.

Introversion, Shyness, Social Anxiety, and Age

The findings on introversion as it relates to online behavior are mixed. One study found that extroverts tend to self-disclose and be themselves more in face-to-face interaction than in online interaction, while introverts, as well as neurotics, tend to be themselves more online (Amichai-Hamburger, Wainapel & Fox, 2002). However, a more recent study found that introversion does not lead to more self-disclosure online, rather it leads to less (Peter, Valkenburg & Schouten, 2005).

Some people who experienced shyness in face-to-face interactions have been found to feel more comfortable in online interaction due to the anonymity, and the extra time allotted to respond (Becker & Stamp, 2005). Shyness is associated with increased intimacy in internet socializing (Birnie & Horvath, 2002) and shy people have been found to have a higher tendency to become addicted to the internet (Chak & Leung, 2004). In addition, high social phobia scores have been found to correlate with the use of the internet to regulate social fears; a relationship strengthened by high anxiety or depression scores (Shepherd & Edelmann, 2005).

Another potential human factor in internet experience is age. It has been found that found that younger students in the college population have better computer skills and socialize more over the internet; however it should be noted that younger students socialize more off the internet as well (Birnie & Horvath, 2002). Having less experience and skills in the use of the internet could lead to such experiences being less enjoyable for older individuals.

Face-to-Face versus Internet

It would appear that since face-to-face interactions contain more cues as to the meaning behind the words used than online interactions, that those in face-to-face interactions would gain a more accurate understanding of what their partner was attempting to communicate. It is unclear, however, if this would lead to greater or less intimacy. Ambiguous statements and comments may well lead to greater projections on the part of those in online interactions. These projections, in turn, may well lead to stronger, more intense feelings; thus, greater perceived intimacy.

In addition, a reduction or elimination of social boundaries of appropriateness in internet interactions may lead to higher levels of self-disclosure than would normally be present in more advanced face-to-face interactions, resulting in heightened intimacy (Ross, 2005). The use of deception, or even different online persona, may also indirectly heighten perceived intimacy, as there is not a way, within the interaction, to confirm or disconfirm a romanticized and overly intimate view of the individual one is interacting with online (Ross, 2005). However, as Ross points out, the internet can be used to avoid intimacy as well, by dodging or ignoring personal questions.

Research in this area has been limited and conflicting. The amount of time spent communicating in email, telephone or in face-to-face interactions has been found to be related to perceived closeness with another (Cummings et al., 2002). In addition, those surveyed in this study felt closer overall to those they communicated with face-to-face or on the telephone than those they communicated with over the internet. However, it has been found that the more often college students communicated with each other via instant messenger, the higher their perceived level of intimacy with the other person (Hu, Wood, Smith & Westbrook, 2004).

The Present Study

The present study investigates differences in intimacy for those engaging in interactions which provide different degrees of non-verbal information. Subjects will engage in one of three types of interactions, face-to-face (highest nonverbal cues), online without emoticons (lowest nonverbal cues), and online with emoticons (some nonverbal cues). The following five hypotheses are made:

1) Lower amounts of non-verbal information will result in greater intensity of emotions. Non-verbal information increases clarity in the communication, an absence of this information results in less clear information. When information is not clear, the recipient does more inference to try to understand and interpret the information, allowing for greater projection. These interpretations will likely be more extreme than the intent of the communication. Thus, emotional responses to the same information, with fewer nonverbal cues, will be more extreme.

2) Those who are shyer will have a higher level of positive feeling towards those they communicate with online versus face-to-face, and those who are shyer will feel more comfortable in online interactions than face-to-face.

3) Perceived attractiveness of the other will significantly correlate with enjoyment, positive feelings towards the other, and desire to spend additional time with the other. Additionally, self-reports of the ease with which their opinion of the other could change will be negatively correlated with perceived attractiveness.

4) Comfort with online communication will be positively correlated with enjoyment ratings of doing the task online.

5) There will be a negative correlation between age and comfort with communicating with others online.

Method

Participants

Participants consisted of 35 individuals (28 women and 6 men), taking summer courses in a southeastern Massachusetts state college. The ages of participants ranged from 18 to 47 years of age (M = 25.76, SD = 8.78). The ethnic makeup of the participants was 74% white, 9% Hispanic, 6% Asian, 3% African American, and 6% other. One participant provided no ethnographic information.

Materials

Subjects completed a short questionnaire following their interaction (online or face-to-face) with the confederate whom they thought was another subject. Items consisted of ratings on a seven-point Likert scale of their feelings about the confederate, the interaction, and themselves, as well as a number of demographic items (please see the Appendix for a copy of the survey).

AOL Instant Messenger was used as the sole method of communication and interaction in the computer groups in this study.

Procedure

Participants were told that the study was examining college students' attitudes about summer courses, and were asked to speak with a partner for 25 minutes about their views on summer courses. Each dyad consisted of one participant and a confederate (a female college student who turned 19 during the course of the study). Subjects were randomly assigned in a counterbalanced manner to one of three groups. In group one (face-to-face), the confederate spoke face-to-face with the participants. In group two (computer interaction with emoticons) the confederate spoke over the internet with the participant using AOL instant messenger, but the confederate used emoticons in addition to plain text messaged. In group three (computer interaction without emoticons) the confederate spoke in text-only messages without emoticons. The participants were not instructed to use or not use emoticons. The same confederate was used with each subject, and the confederate was instructed to mirror the participants' attitudes toward the topic. The confederate was given a list of positive and negative aspects of the topic to aid in this task.

After the session was complete, the participant was asked to complete the survey. In the face-to-face condition, this was done after the confederate left the room (supposedly to complete an identical survey). Once the survey was completed, the participants were partially debriefed, and offered the opportunity to have the full details of the study, as well as results, once the study was completed.

Results

In order to test the first and main hypothesis, that lower amounts of non-verbal information will result in greater intensity of emotions, two sets of analyses were conducted. The first consisted of three, one-factor between-subject ANOVAs, with the dependent measures being ratings of the following items: "How easily do you think your opinion of your partner in the study could be changed?," "How well do you feel that you now know your partner in this study?," "How well do you feel that your partner in this study now knows you?," respectively. (Please see Table 1.)

In the first one-factor between-subjects ANOVA, concerning the reported ease with which subjects felt that their opinion about the confederate could be changed, a significant difference between groups was found, $F_{(2, 32)} = 4.26$, $p = .023$. This effect was probed using a Tukey HSD post-hoc test. Subjects in the face-to-face condition ($M = 5.34$, $SD = 1.12$) believed that their opinion of the confederate could be more easily changed than did those in the computer interaction without emoticons group ($M = 4.09$, $SD = 1.22$), $p = .02$. There was no significant difference between the face-to-face group and computer interaction

with emoticons ($M = 4.46$, $SD = 1.04$), $p = .13$, or between the computer interaction with emoticons group and the computer interaction without emoticons group ($p = .73$).

The second one-factor between-subjects ANOVA, concerning how well the subjects felt they knew their partner, revealed no significant main effect between groups, $F_{(2, 32)} = 1.32$, $p = .28$. The third one-factor between-subjects ANOVA, concerning how well the subjects felt their partner knew them, also revealed no significant main effect between groups, $F_{(2, 32)} = .63$, $p = .54$.

The second series of analyses conducted to examine hypothesis one consisted of five, one-factor between subjects ANOVAs, used the ratings on the items "How much did you enjoy interacting with your partner in this study?," "Please rate you overall feelings towards your partner in the study.," "How attractive did you find your partner in this study to be?," "How much would you like to spend time with your partner from this study in the future?," "How do you think your partner in the study would rate their overall feelings towards you?." As these analyses were to determine intensity, but not directionality, the use of actual scores could hide this effect (i.e., a rating of 1 and a rating of 7 would both be intense, but would average out to a non-intense score of 4). Thus, deviation scores were used. For each item, the absolute value of the difference between the mean score of that item from the individual subject's actual rating was used. (See Table 2)

None of these five, one-factor between-subjects ANOVAs revealed a significant effect. Specifically, how well the subjects enjoyed interacting with their partner, $F_{(2, 32)} = .30$, $p = .74$; subject's feelings toward their partner, $F_{(2, 32)} = 2.06$, $p = .15$; subjects' perceptions of the attractiveness of their partner $F_{(2, 29)} = 1.08$, $p = .35$; subjects' desire or lack of desire to spend more time with their partner confederate, $F_{(2, 32)} = .06$, $p = .94$; subjects' belief in their partner's opinion of them, $F_{(2, 32)} = .24$, $p = .79$.

The second hypothesis, that those who are shyer would have a higher level of positive feeling towards those they communicate with online versus face-to-face and those who are shyer would feel more comfortable in online interactions than face-to-face, was unable to be tested due to a relative overall lack of variance in levels of reported shyness. However, a review of the raw data indicated there may have been an unusual distribution of shy subjects in the face-to-face condition. Thus, an unplanned one factor between subjects ANOVA for shyness between conditions was conducted. Results revealed no significant main effect between groups, $F_{(2, 32)} = 2.38$, $p = .11$.

The third hypothesis, that perceived attractiveness of the other will significantly correlate with enjoyment, positive feelings towards the other, and desire to spend additional time with

the other, and that self-reports of the ease with which their opinion of the other might change will be negatively correlated with perceived attractiveness, was analyzed using four Pearson Product moment correlations. A significant positive correlation was found between the subjects' perceived attractiveness of their partner (M = 4.59, SD = 1.24), and both the subjects' enjoyment of their interaction with their partner (M = 6.23, SD = .94), r = .41, p = .02, and their desire to spend more time with their partner (M = 4.49, SD = 1.54) r = .66, p = .00. No significant correlations were found between the subjects' perceived attractiveness of their partner and either their overall feelings toward their partner (M = 6.37, SD = .73), r = .33, p = .07, nor the ease with which they felt their opinion of their partner could change (M = 4.69, SD = 1.23) r = .29, p = .10.

The fourth hypothesis, that comfort with online communication will be positively correlated with enjoyment ratings of doing the task online, was unable to be tested due to a relative overall lack of variance in levels of reported comfort in communicating online.

The fifth hypothesis, that a there will be a negative correlation between age and comfort with communicating with others online, was analyzed differently than initially planned. Although the fifth hypothesis initially called for a correlation, data revealed two clear-cut age groups of which all subjects who responded to the question regarding age were a part; 18-27 (N = 27) and 38-47 (N = 7). Thus, an Independent Groups t-test was conducted between these two groups, with comfort communicating online as the dependant variable. Results revealed no significant main effect of age t(32) = .75, p = .12. Thus, younger subjects (M = 5.85, SD = 1.43) were not significantly more comfortable communicating online than older subjects (M = 5.43, SD = .79).

Discussion

The purpose of this study was to examine differences in the level of intimacy experienced (operationally defined as intensity of emotions) in different types of interactions, specifically in face-to-face, computer with emoticons, and computer without emoticons. The primary hypothesis, that interactions with less non-verbal cues, would result in greater intimacy, received some support. In the predetermined primary analysis, the subjects rating of how easily they thought their feelings about their interaction partner could change, the predicted finding that those in face-to-face interactions would feel their feelings could be more easily changed than those who interacted online without emoticons, was found. While this supported the primary hypothesis, no significant difference was found between interaction types for subjects' ratings of how well they thought they knew their partner and how well they thought their partner knew them, nor in the deviation scores concerning enjoyment of the task, overall feelings, attractiveness, wanting to spend time with them in the future, and how they thought their partner felt about them.

It is possible that the lack of significance in some of these analyses was due to the small number of subjects used in this study, as each group consisted of 11 – 13 subjects. In addition, the topic of their interactions was rather bland; thoughts on summer school. It may be that an interaction which centered on a more arousing or intense topic could lead to greater differences between groups.

Unfortunately, this study did not have enough variation across subjects in shyness and comfort level in communicating online to test the second (that shyness enhances the quality of the online experience) and fourth (comfort with online communication would have a positive correlation with their enjoyment of doing the task online) hypotheses. It should be pointed out, however, that overall subjects in this study were quite comfortable in communicating online. This lack of variance in comfort level in online communication may be due to the study being conducted with subjects taking at least one college summer course at a technology-oriented college. Perhaps communicating online was more a matter of course for these subjects than in the general population.

Hypothesis 3, that perceived attractiveness of the confederate would correlate with more positive ratings on a number of items, received mixed support. In support of this hypothesis, perceived attractiveness of the confederate was significantly correlated with the subjects' enjoyment of the interaction, and subjects' desire to spend more time with their partner. However, perceived attractiveness was not significantly correlated with subjects' overall feelings towards their partner, nor the ease with which subjects felt their opinions about their partner could change. As there was a trend between attractiveness and overall feelings (p = .07), once again, the relatively low number of subjects used may have hidden a true difference.

Hypothesis 5, in essence that younger subjects would be more comfortable with communicating with others online than older subjects, was not supported. This may be due to age simply not being a factor in online communication comfort, a relatively small sample size, or that these subjects (those taking a summer course at a technology oriented college) are not representative of older individuals in the general population.

The field of internet communications and the emotional impact therein is becoming more and more relevant with the growth of the internet. With the internet being used for communication, initiating and maintaining relationships, education, and as a psychological support, it is important to be aware of the impact of these unique interactions.

The area of intimacy and the internet has serious implications. If the interactions on the internet lead to greater intimacy than face-to-face interactions, those seeking psychological support online might feel more helped; or they might run into a predator searching for an easy target to manipulate, resulting in the individual being taken advantage of during a time when they are vulnerable. The anonymity of being online may be freeing to some, but it could also allow for greater cruelty, where the results are not as clearly, or immediately, seen. As with face-to-face interactions, online interactions can help or hurt people who seek support from others.

Perhaps the most frightening implication of emotions intensifying over the internet is the idea of online sexual predators. The internet can be used as a way to meet people with similar interests, opinions, and worldviews. In theory, one could make great friends through web sites such as MySpace, which are designed for sharing pieces of one's life, be they thoughts, pictures, or even videos. However, it is not only adults who use these sites, but children as well. A predator can look at the information that a child gives out online and use that information to become that child's "ideal friend." If intimacy is greater in online interactions, it would be that much easier for an online predator to lure a child into a bond with them, while hiding what would have been obvious information in face-to-face interactions until it is too late. Thus, a child might know not to interact with an adult stranger in real life, but may well interact with an adult stranger online thinking they are a peer of the same age. By the time they learn the truth, they may have experienced such intense feelings that they now believe, because they feel so much for this person, that a relationship should continue. Alternately, the child may not learn the person they have been interacting with online is an adult until a meeting takes place, at which time it may be too late. Further research into this topic is important to allow us to better understand the dynamics of internet interactions, both for the sake of gaining knowledge, but more importantly for the practical need for safety.

In conclusion, results for our main hypothesis were mixed as to as to whether internet interactions lead to greater emotional intensity than face-to-face interactions. Future research on the topic needs to be conducted and should include larger sample sizes and more realistic conversations.

References

Amichai-Hamburger, Y., Wainapel, G., & Fox, S. (2002). On the Internet no one knows I'm an introvert: extroversion, neuroticism, and internet interaction. CyberPsychology & Behavior, 5(2), 125-128.

. . . .

Bargh, J., McKenna, K., & Fitzsimons, G. (2002). Can you see the real me? Activation and expression of the "true self" on the internet. Journal of Social Issues, 58(1), 33-48.

. . . .

Baron, N. S. (2004). See you online: gender issues in college student use of instant messaging. Journal of Language and Social Psychology, 23(4), 397-423.

. . . .

Baym, N. K., Zhang, V. B., & Lin, M. (2004). Social interactions across media: Interpersonal communication on the internet, telephone and face-to-face. New Media & Society, 6(3), 299-318.

. . . .

Becker, J. A. H., & Stamp, G. H. (2005). Impression management in chat rooms: a grounded theory model. Computer Communication Studies, 56(3), 243-260.

. . . .

Bernieri, F., Gillis, J., Davis, J., & Grahe, J. (1996). Dyad rapport and the accuracy of its judgment across situations: A lens model analysis. Journal of Personality and Social Psychology, 71(1), 110-129.

. . . .

Birnie, S. A., & Horvath, P. (2002). Psychological predictors of Internet social communication. Journal of Computer-Mediated Communication, 7(4).

Retrieved April 1, 2006, from http://jcmc.indiana.edu/issues.html
Braithwaite, D. O., Waldron, V. R., & Finn, J. (1999). Communication of social support in computer-mediated groups for people with disabilities. Health Communication, 11(2), 123-151.

. . . .

Breed, G. (1972). The effect of intimacy: Reciprocity or retreat? British Journal of Social & Clinical Psychology, Vol. 11(2), 135-142.

. . . .

Burgoon, J. (1991). Relational message interpretations of touch, conversational distance, and posture. Journal of Nonverbal Behavior, 15(4), 233-259.

Burgoon, J., Buller, D., Hale, J., & DeTurck, M. (1984). Relational messages associated with nonverbal behaviors. Human Communication Research, 10(3), 351-378.
. . . .
Burgoon, J., & Le Poire, B. (1999). Nonverbal cues and interpersonal judgments: Participant and observer perceptions of intimacy, dominance, composure, and
formality. Communication Monographs, 66(2), 105-124.
. . . .
Calvert, S. L., Mahler, B. A , Zehnder, S. M., Jenkins, A., & Lee, M. S. (2003). Gender
differences in preadolescent children's online interactions: symbolic modes of self-presentation and self-expression. Journal of Applied Developmental Psychology, 24(6), 627-644.
. . . .
Chak, K., & Leung, L. (2004). Shyness and locus of control as predictors of Internet addiction. CyberPsychology & Behavior, 7(5), 559-570
. . . .
Coker, D. A., & Burgoon, J. K. (1987). The nature of conversational involvement and nonverbal encoding patterns. Human Communication Research, 13(4), 463-494.
. . . .
Cummings, J. N, Butler, B., & Kraut, R. (2002). The quality of online social relationships. Communications of the ACM, 45(7), 103-108.
. . . .
Eagly, A., Ashmore, R., Makhijani, M., & Longo, L. (1991). What is beautiful is good,
but . . .: A meta-analytic review of research on the physical attractiveness stereotype. Psychological Bulletin, 110(1), 109-128.
. . . .
Green, M. C., Hilken, J, Friedman, H., Grossman, K, Gasiewski, J., Adler, R., & Sabini, J. (2005). Communication via Instant Messenger: Short- and long-term effects. Journal of Applied Social Psychology, 35(3), 487-507.
. . . .
Gross, E. F. (2004). Adolescent Internet use: What we expect, what teens report. Journal of Applied Developmental Psychology, 25(6), 633-649.
. . . .
Guerrero, L., Jones, S., & Burgoon, J. (2000). Responses to nonverbal intimacy change in romantic dyads: Effects of behavioral valence and degree of behavioral change on
nonverbal and verbal reactions. Communication Monographs, 67(4), 325-346.
. . . .
Heinlen, K. T., Welfel, E. R., Richmond, E. N., & Rak, C. F. (2003). Scope of webcounseling: a survey of services and compliance with NBCC Standards for the ethical practice of webcounseling. Journal of Counseling & Development,
81(1), 61-69.
. . . .
Helgeson, V., Shaver, P., & Dyer, M. (1987). Prototypes of intimacy and distance in same-sex and opposite-sex relationships. Journal of Social and Personal Relationships, 4(2), 195-233.
. . . .
Hollander, D. (2002). Among young adults, use of the Internet to find sexual partners is rising. Perspectives on Sexual & Reproductive Health, 34(6), 318.
. . . .
Hook, M., Gerstein, L., Detterich, L., & Gridley, B. (2003). How close Are we? Measuring intimacy and examining gender differences. Journal of Counseling & Development, 81(4), 462-472.
. . . .
Hu, Y., Wood, J. F., Smith, V., & Westbrook, N. (2004) Friendships through IM: examining the relationship between instant messaging and intimacy. Journal of Computer-Mediated Communication, 10(1). Retrieved April 1, 2006, from http://jcmc.indiana.edu/issues.html
. . . .
Hudson, J. M., & Bruckman, A. S. (2002). IRC Français: The creation of an Internet-based SLA community. Computer Assisted Language Learning, 15(2), 109-134
. . . .
Kindred, J., & Roper, S. L. (2004) Making connections via instant messenger (IM): student use of IM to maintain personal relationships. Qualitative Research Reports in Communication, 5, 48-54.

Kirkpatrick, G. (2005). Online 'chat' facilities as pedagogic tools. Active Learning in Higher Education, 6(2). 145-159.
. . . .
Kleinke, C., & Taylor, C. (1991). Evaluation of opposite-sex person as a function of gazing, smiling, and forward lean. Journal of Social Psychology, 131(3), 451-453.
. . . .
Kolko, B. E. (1999). Representing bodies in virtual space: the rhetoric of avatar design. Information Society, 15(3), 177-186.

Langlois, J., Kalakanis, L., Rubenstein, A., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. Psychological Bulletin, 126(3), 390-423.

McCown, J. A., Fischer, D., Page, R., & Homant, M. (2001). Internet relationships: people who meet people. CyberPsychology & Behavior, 4(5), 593-596

Pankoke-Babatz, U., & Jeffrey, P. (2002). Documented Norms and Conventions on the Internet. International Journal of Human-Computer Interaction, 14(2), 219-235

Peris, R., Gimeno, M.A., Pinazo, D., Ortet, G., Carrero, V., & Sanchiz, M., Ibáñez, I (2002). Online chat rooms: virtual spaces of interaction for socially oriented people. CyberPsychology & Behavior, 5(1), 43-51.

Peter, J., Valkenburg, P. M., Schouten, A. P. (2005). Developing a model of adolescent friendship formation on the Internet. CyberPsychology & Behavior, 8(5), 423-430.

Roed, J. (2003). Language learner behaviour in a virtual environment. Computer Assisted Language Learning, 16(2-3), 155-172.

Ross, M. W. (2005). Typing, doing, and being: sexuality on the internet. The Journal of Sex Research, 42(4), 342-352.

Sangrador, J., & Yela, C. (2000). 'What is beautiful is loved': Physical attractiveness in love relationships in a representative sample. Social Behavior and Personality, 28(3), 207-218.

Shaw, L. H, Gant, L. M., & Schouten, A. P. (2002). In defense of the Internet: the relationship between Internet communication and depression, loneliness, self-esteem, and perceived social support. CyberPsychology & Behavior, 5(2), 157-171.

Shepherd, R., & Edelmann, R. J.(2005). Reasons for internet use and social anxiety. Personality and Individual Differences, 39(5), 949-958.

Swickert, R. J., Hittner, J. B., Harris, J. L., & Herring, J. A. (2002). Relationships among Internet use, personality, and social support. Computers in Human Behavior, 18(2). 437-451.

Tallent-Runnels, M. K, Lan, W. Y, Fryer, W., Thomas, J. A., Cooper, S., & Wang, K. (2005). The relationship between problems with technology and graduate students' evaluations of online teaching. Internet & Higher Education, 8(2), 167-164.

Thomas, W. R., & Macgregor, S. K. (2005). Online project based learning: How collaborative strategies and problem solving processes impact performance. Journal of Interactive Learning Research, 16(1), 83-107.

Town, J., & Harvey, J. (1981). Self-disclosure, attribution, and social interaction. Social Psychology Quarterly, 44(4), 291-300.

Wada, M. (1990). The effect of interpersonal distance change on nonverbal behavior: Mediating effects of sex and intimacy levels in a dyad. Japanese Psychological Research, 32(2), 86-96.

Walther, J. B., & D'Addario, K. P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. Social Science Computer Review, 19(3), 324-347.

Ware, P. D. (2004). Confidence and competition online: ESL student perspectives on web-based discussions in the classroom. Computers & Composition, 21(4), 451-468.

Whitty, M. T. (2004). Cyber-Flirting: an examination of men's and women's flirting behaviour both offline and on the Internet. Behaviour Change, 21(2), 115-126.

Whitty, M. T. (2002). Liar, liar! An examination of how open, supportive and honest people are in chat rooms. Computers in Human Behavior, 18(4), 343-352.

Witmer, D. F., & Katzman, S. L. (1997). On-line smiles: does gender make a difference in the use of graphic accents? Journal of Computer-Mediated Communication, 2(4), Retrieved March 25, 2006, from http://jcmc.indiana.edu/vol2/issue4/witmer1.html

Wolf, A (2000). Emotional expression online: gender differences in emoticon use. Social Science Quarterly, 3(5) 827-833.

Table 1

Scores on Items x Group

Item	Face-to-Face (N=13)		AIM With Emoticons (N=11)		AIM Without Emoticons (N=11)		Total (N=35)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
How would you rate your overall feelings about summer classes?	5.54	1.13	5.18	1.26	5.54	0.93	5.42	1.17
How much did you enjoy interacting with your partner in this study?	6.69	0.63	6.00	1.00	5.90	1.04	6.23	0.94
Please rate you overall feelings towards your partner in the study:	6.62	0.77	6.46	0.52	6.00	0.77	6.37	0.73
How easily do you think your opinion of your partner in the study could be changed?	5.38	1.12	4.46	1.04	4.09	1.22	4.69	1.23
How well do you feel that you now know your partner in this study?	3.92	1.32	3.45	1.24	3.00	1.61	3.48	1.41
How attractive did you find your partner in this study to be?	4.67	1.07	4.90	1.59	4.20	1.03	4.59	1.24
How much would you like to spend time with your partner from this study in the future?	4.46	1.45	4.91	1.58	4.09	1.64	4.49	1.54
How well do you feel that your partner in this study now knows you?	4.00	1.00	3.55	1.29	3.45	1.57	3.69	1.28
How do you think your partner in the study would rate their overall feelings towards you?	5.38	0.87	5.18	0.87	4.27	0.47	4.97	0.89
How shy are you?	2.38	1.50	3.55	1.04	3.45	1.75	3.09	1.52
How comfortable are you in communicating with others online?	5.85	1.28	6.09	1.14	5.09	1.64	5.69	1.39

*One person in each of the groups in item 8 left this question blank.

Table 2

Deviation Scores for Items x Group

Item	Face-to-face (N=13)		AIM With Emoticons (N=11)		AIM Without Emoticons (N=11)		Total N (N=35)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
How much did you enjoy interacting with your partner in this study?	0.72	0.25	0.79	0.61	0.88	0.59	0.79	0.49
Please rate you overall feelings towards your partner in the study:	0.72	0.30	0.49	0.14	0.71	0.44	0.65	0.32
How attractive did you find your partner in this study to be?	0.90	.52	1.3	0.93	0.83	0.68	1.00	0.72
How much would you like to spend time with your partner from this study in the future?	1.19	0.76	1.23	1.01	1.32	0.98	1.24	0.89
How do you think your partner in the study would rate their overall feelings towards you?	0.71	0.63	0.56	0.68	0.71	0.44	0.67	0.58

*One person in each of the groups in item 8 left this question blank.

Appendix

Please answer each of the follow questions (please note that your partner in this study will not see your responses):

1) Are you taking any summer classes this summer? (Circle one)   Yes   No

2) How would you rate your overall feelings about summer classes?

1	2	3	4	5	6	7	
Very							Very
Negative					Positive		

3) Have you ever meet your partner in this study before today? (Circle one) Yes   No

4) How much did you enjoy interacting with your partner in this study?

1	2	3	4	5	6	7	
Not at							Very
All					Much		

5) Please rate you overall feelings towards your partner in the study:

1	2	3	4	5	6	7	
Very							Very
Negative					Positive		

6) How easily do you think your opinion of your partner in the study could be changed?

1	2	3	4	5	6	7	
Very							Very
Easily					Difficult		

7) How well do you feel that you now know your partner in this study?

1	2	3	4	5	6	7	
Very							Very
Little					Well		

8) How attractive did you find your partner in this study to be?

1	2	3	4	5	6	7	
Very							Very
Unattractive					Attractive		

(Appendix Continued)

9) How much would you like to spend time with your partner from this study in the future?

1	2	3	4	5	6	7	
Not at							Very
All						Much	

10) How well do you feel that your partner in this study now knows you?

1	2	3	4	5	6	7	
Very							Very
Little						Well	

11) How do you think your partner in the study would rate their overall feelings towards you?

1	2	3	4	5	6	7	
Very							Very
Negative						Positive	

12) How shy are you?

1	2	3	4	5	6	7	
Not at							Very
All						Much	

13) How comfortable are you in communicating with others online?

1	2	3	4	5	6	7	
Very							Very
Uncomfortable							Comfortable

Demographic Information

What is your gender?
(Circle one)
        Male   Female

What is your age? _____

What is your ethnic background?
(Circle one)
        White   African American   Asian

        Native American   Hispanic   Other _____

Do you have any comments about this study?