Teenage Communication in the Instant Messaging Era

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Abstract

In this chapter, we investigate how instant messaging (IM) satisfies two major needs for adolescents: maintaining individual friendships and belonging to peer groups. In order to better understand these processes, we compare adolescent IM communication patterns to in-person and phone communication patterns. We place our findings in the context of media richness and social presence approaches to understanding media effects and the psychological needs of adolescents. We argue that IM boosts adolescent's group identity and is so popular because it simulates spending time with an offline group of friends, without the rigidity of the acceptance rules of adolescent offline peer groups. Our findings are based on both quantitative surveys (N= 41) and qualitative interviews (N= 26).

This chapter examines how adolescents in the United States use instant messaging (IM) to communicate with peers. Adolescents can be described as the ultimate communicators, because this developmental period is defined by a strong need for numerous friendships and peer-group affiliations. IM seems to be one new communication modality that adolescents have appropriated to satisfy this need.

Instant messaging (IM) software allows people to have real-time private text-based conversations on the Internet. While synchronous networked communication has a long history, IM use expanded with the introduction of the ICQ ("I Seek You") service in November 1996 by a company called Mirabilis, which made ICQ freely available to anyone with Internet access. Since that time America Online's Instant Messenger service, Microsoft's MSN Messenger, Yahoo! Messenger and others were introduced and adopted by the public (History of Instant Messaging, 2004). All modern instant messaging services allow users to see if a defined group of others (often called "buddies") are logged in on their network and send them messages in real time (Alvestrand, 2002, p. 1). In the United States, instant messaging has proved one of the most popular applications of the Internet, inducing people to want to stay connected to the Internet for extended amounts of time to be available for conversation (Pew Internet Project Report, 2001a).

Teenagers have been especially attracted to instant messaging services. In June 2001, a national study of teenage online behavior (The Pew Internet Project Report, 2001a) reported that 74% of adolescents in the United States who had Internet access used IM and 35% used it every day; IM was the primary way to communicate with others for 19% of U.S. adolescents. Only 8% of the adolescents considered electronic mail (e-mail) a primary way to communicate with others. In contrast, e-mail was the communication medium of choice for adults—ninety-three percent of adults with Internet access used e-mail and only 47% used IM (See also Pew Internet Project Report, 2003).

Why do teens flock to IM? The Pew Internet Project Report (2001a) underlined that adolescents have adapted IM technologies to their own needs and purposes—"the majority of teenagers have embraced instant messaging in a way that adults have not" (p. 10). In later studies, Grinter and Eldridge (2001) and Schianno, Chen, Ginsburg, Gretarsdottir, Huddleston, and Isaacs (2002) emphasized again that the popularity of IM among teens is a result of their need to socialize while confined to their homes. But what *specific* adolescence needs IM satisfies is still unclear. In order to answer this major question, we place teens' IM use it in the larger context of adolescent culture and social interactions.

Types of adolescent peer connectedness

Peer-based connectedness is especially important for adolescents (Hellenga, 2002). In the transition from childhood to adolescence, teen are engaged in

defining who they are and finding a place in the wide world creates insecurity. Peer communication is highly desirable to provide a context in which the rules of the larger world can be learned, practiced and reinforced (cf. Samter, 2003). Communication with peers is a complementary process to private reflection for the adolescent; the social and the personal processes support one another in adolescent's making sense of life experience and constructing viable relationships between self and society (McCall, 1987; Youniss & Yates, 2000). This heightened need to communicate among adolescents has rarely been acknowledged and has not been well understood when studying their communicative behavior.

There are two distinct modes in which an adolescent communicates with peers: one-to-one and one-to-many. These modes are associated with two different types of relationships: forming and maintaining *individual friendships* and *belonging to peer groups*. It is important to analytically distinguish between these two types of connectedness, because they fulfill different functions in adolescents' development; and because each is supported by different type of communication technology. Person-to-person communication with another peer provides vital information for the adolescent to compare to similar others and to receive verification for his or her own feelings, thoughts and actions, and is crucial to *self identity* formation. One-to-many communication—adolescent's connectedness to a group that creates a feeling of group belonging, is crucial to one's *social identity* formation. The focus of our study is how IM use is associated with these two ways of adolescent connectivity: through maintaining individual friendships (that

helps them 'decipher' the self), and through belonging to peer groups (that helps them map the self onto the social categories of the larger world).

Maintaining individual friendships

Pre-adolescence is dominated by parent-based identity and inconsistency of friendships (Hellenga, 2002). Although by age 4 children already begin to use the word "friend", during childhood friends are defined as those one plays with; thus, who are one's 'friends' change frequently (Hartup, 1983). During the transition to adolescence, in the process of switching from parent-defined to peer-defined identity, the definition of friends and their value begin to change. Adolescents start to form and maintain as many friendships as possible and these friendships tend to last longer than do those of childhood. This shift in the nature of friendship is associated with the formation of the self through social interaction (Erikson, 1968). Thus the core of adolescents' self-formation is the communication with familiar peers: with others whom they *know* (a basis of security) and who are *similar* to them (a basis of comparison) (cf. Erikson, 1968; Harre, 1983).

Adolescents maintain a higher number of friends than adults and interact with friends more than do adults (e.g., Hallinan, 1980; Berndt, Hawkins, & Hoyle, 1986). For teens, a friend is still mostly defined by spending time and doing things together, but friends also provide emotional support—opportunities to discuss problems, receive and give advice, and share interests (e.g., Berndt, 1989;

Hartup, 1996). For adolescents, friends, not parents, are their ‘therapists’ (Blos, 1979; Hanna, 1998). In other words, adolescence is defined by the need for intense person-to-person communication with a friend—spending a lot of time together (e.g., sharing common hobbies and spending leisure time) and self-disclosing (e.g., talking about problems and receiving emotional support).

Peer group belonging

A parallel process to friendship formation and maintenance is group belonging and peer-acceptance, associated with adolescent’s social identity formation (see e.g., Tajfel, 1982; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). While earlier research has focused on close friendships as providing social support for adolescents, some recent studies emphasize the importance of group belonging to groups has for adolescents’ social adjustment. Teens strive to belong to one or more peer groups—that are often reputation-based social categories known as “cliques” or “crowds” (e.g., Brown, 1989; Hanna, 1998; Pansini, 1997; Stone & Brown, 1999). Adolescent cliques have a clear central core and peripheral members, and acceptance rules are quite rigid, while crowds have more loose structure and function as reference groups for adolescents. In the group, individual relationships are somewhat blurred and there is little, if any, self-disclosure. What matters mostly is the very fact of belonging to a peer group. Social communication can be reduced to ‘hanging out’ with the group (see e.g., Brown, 1989).

According to Brown and colleagues (1994), the importance of belonging to a peer group is especially pronounced in junior-high school, when adolescents' school is likely to be bigger than in was in elementary school and the student body much larger and more diverse. These changes can be threatening to adolescents' developing identities. Adolescents must negotiate their identity and structure their new social world in this new context. Labeling self and others as belonging to one or another group lends structure to social interactions and boosts identity formation (Eckert, 1989).

IM in the lives of adolescents

We have thus far argued that as children move into adolescence and away from the sheltering presence of adults in their lives, there is a fundamental need for them to talk and share with close friends as well as to hang out with peer groups (cf. Berndt, 1996). Yet, adolescents have limited time to interact with friends or hang out with in-groups at school; and, especially at earlier age, may not be independent enough to move around and meet with peers after-school (e.g., Grinter & Eldridge, 2001; Schianno et al., 2002). Thus, face-to-face communication that supports both individual friendships maintenance and group interaction is limited at a developmental period when communication needs are highest.

If face-to-face communication is limited, then we'd expect that adolescents would take advantage of communication technologies to connect to their peers (see

Fischer, 1992, for a discussion how teens adopted the family telephone at the turn of the 20th century for this purpose.). The phone, however, primarily supports only one-to-one communication and second, as Ito and Okabe (this volume) note, using the landline phone at home is often restricted for teens and, in the U.S., many teens do not owe a wireless phone. With over 73% of those between ages 12 and 17 having Internet access (Pew Internet Project Report, 2001b), many teens can use IM at home to communicate with others.

Although IM was designed to support one-to-one synchronous communication, it also supports one-to-many communication through a variety of features, such as, multiple chat windows, chat room support and directories of contacts (Buddy Lists). In other words, IM could be valuable both for engaging in one-to-one conversation with a friend and for creating a sense of connectedness to a group of friends.

An emerging picture of adolescent IM use

Recent empirical studies of adolescent IM use (e.g., Grinte & Palen, 2002.; Gross, Juvonen & Gable, 2001; Pew Internet Project Report, 2001a; Schianno et al., 2002) have emphasized that adolescents most often communicate on IM with people they frequently see at school. It is not clear yet, though, whether IM is also used to sustain friendships at a distance, as e-mail is. Schianno and colleagues (2002) argue that, at least for junior-high and high school teens, IM is not frequently used to chat with faraway friends, but the Pew Internet Project Report

(2001a) shows that they do. In their sample, 90% of the teens said that they used IM to stay in touch with friends and relatives who lived outside of their communities. If IM is used mostly to communicate with friends, we would expect daily communication to be focused on local friends. Because teens' friendships are based primarily on spending time together; majority of their friends are local. We could cast light on these ambiguities by examining in more detail the types of relationships sustained by IM, for example, who they communicate with via IM and where they first met their IM communication partners.

Previous empirical studies have shown that the age and gender of communication partners affect IM use. Both the Pew Internet Project Report (2001a), and Schianno and colleagues (2002) argue that IM use decreases with age—because older teens have less free time, the latter authors argue. But more than free time may be at issue. It is important to further explore the effect of age on IM use in the context of adolescent psychosocial development. From pre-adolescence through adolescence and into adulthood, the need for intensive communication decreases—because over time, identities become more stable and the need for constant peer comparison decreases. Older teens, for example, report fewer friends than younger teens. The decrease in IM use with age may be associated with such overall decrease in peer communication.

In both the Pew Project Report (2001a), and Schianno et al. study (2002), teens said that IM was especially useful when communicating with someone of the

other gender. Similarly, Wolak, Mitchell and Finkelhor (2002) found, in a national sample of adolescent Internet users, that 71% of the peer relationships maintained online were mixed-sex. In contrast, studies based on face-to-face interactions (e.g., Duck, 1973; Hartup, 1993; Kon & Losenkov, 1978) have emphasized that teens' friendships, and especially close friendships are mostly same-sex. Throughout high school, mixed-sex friendships are rare among adolescents. Why IM facilitates mixed-sex communication among teens is not well understood.

The contents of IM chat could suggest some possible explanations. The female gender role is associated with more sharing, self-disclosure and social support than the male gender role (e.g., Deaux & Major, 1987; Eagle & Steffen, 1984). As a result, both men and women tend to prefer female friends for substantial conversations, for example, sharing and emotional support. It could be, then, that male adolescents use IM for more self-disclosure with female communication partners. Male adolescents may need to share their emotions and concerns, and to receive social support as much as female adolescents, despite being socialized not to, at least in face-to-face or phone communication. However, previous research (e.g., Pew Internet Project Report, 2001a; Schianno et al., 2002) indicates that IM talk is unsubstantial—chatting about "anything; nothing", as one teen in Schianno and colleagues' study noted. In Grinter and Palen's study (2002), teens reported using IM mostly for planning events of the future, collaborating on schoolwork and chatting about events of the day. Similarly, Pew Internet Project (2001a)

reported that 82% of online teens use IM for making plans with their friends. These findings suggest that IM is rarely used for substantial talk, for sharing and emotional support. It is not clear, then, why mixed-sex dyadic conversations are so prevalent on IM. It is necessary to further examine what teens talk about via IM and with whom—in the context of their culture and psychosocial development.

If adolescents need more intensive communication than other age groups, then it could be that quantity rather than quality of the communication is what makes IM valuable to teens. That is, they may need to maintain as many ties as possible rather than striving for fewer, more meaningful relationships. This hypothesis is consistent with findings about the number of contacts in teens' Buddy Lists (i.e., IM directories). Schianno and colleagues (2002) reported that teen IM users had up to 90 contacts in their Buddy List (BL). Of these, very few (about five) were frequently contacted "core friends", "several [were] infrequently contacted remote friends and acquaintances", while many others in their BLs were people "they could no longer identify" (p. 595). Ling and Yttri (this volume) found a similar phenomenon for contacts in teens' cell phones. This behavior has not yet been clearly understood

In other studies on IM use (Grinter and Palen, 2002; Gross et al, 2001) Leung, 2001; Schianno et al., 2002), teenagers have described it as a way to 'hang out' with peers. and Palen, (2002) calls it "the network effect" of IM—the sense it

creates of being part of a large community of friends. This non-communicative function of IM has not been explored yet. In addition to one-to-one real-time chat, large Buddy Lists and one-to-many connectivity ("the network effect") in IM may contribute to the value adolescents ascribe to this modality.

IM in comparison to face-to-face and phone communication

Several researchers (e.g., Burleson, Metts & Kirch, 2000; Cummings, Butler, & Kraut, 2002; Cummings & Kraut, 2002; Cummings, Lee & Kraut, this volume) have emphasized that the association between communication and the relationship is medium specific. It is important, then, to understand the complex interplay of the variety of factors influencing IM use in the context of phone use or face-to-face communication.

Some differences have already started to emerge. For example, both the Pew Internet Project Report (2001) and Grinter and Palen's work (2002) emphasized the advantage of IM over the phone in having *multiple* synchronous one-to-one conversations (conversing simultaneously in multiple individual windows). Yet, the telephone seems to be the preferred medium for teens when connecting to peers. For about 70% of online youth, the landline phone is still the way they most often get in touch with their friends. It has "much more of a human aspect, less austere and sterile than cyberspace", as a 16 year-old interviewee explained (Pew Internet Project Report, 2001a, p. 21). But it is also a fact that the majority of U.S. adolescents with Internet access use IM a lot. What makes teens choose

IM? Is this communication modality chosen mostly because it can connect them to many friends at a time—something that the phone cannot do? Comparing IM to phone-mediated communication (that supports one-to-one synchronous chat) and face-to-face communication (that supports both one-to-one as well as group synchronous interactions) could help further understand the value of IM connectivity for teens.

Our empirical study examines survey data on adolescent peer connectedness describing a communication session with a friend by instant messaging, phone and face-to-face. Our major goal is to understand how the available technological features of IM have been appropriated by adolescents to support their two distinctly different ways to connect to peers—by one-to-one communication with a close friend and by 'hanging out' with a group.

First, we examine the nature of the relationships sustained via IM, comparing them to relationships mostly by visits or phone communication: where their conversation partners live, how they first met, how close they feel to each other, and how much social support they receive from the relationships. Next, we explore an IM conversation session: the contents of the conversation and how useful and enjoyable the session was, compared to face-to-face and phone conversation sessions.

In addition, we study the use of IM in natural settings by analyzing interview data and video recordings of teens as they use IM . We study in depth the social environment of IM chat: who are the contacts in teens' Buddy Lists, how many IM buddies adolescents talk to at a time, and what other computer-related activities they engage in while using IM. Lastly, we study what adolescents talk about during an IM chat session.

METHODOLOGY

QUANTITATIVE DATA ANALYSIS

Sample

Data come from a national sample recruited by random digit dialing of residential telephone exchanges, to secure a representative sample of the United States households. (For detailed description of the national panel, see Kraut et al., this volume.) Of all respondents who completed the survey at Time 1 (N=1,106), 8.7% were adolescents (between 13 and 17 years old) (N=96); 76% of them (N=73) completed the survey again, 6 to 8 months later, at Time 2. The majority of the adolescents were Caucasian (85.4%), were attending middle or high school (97.5%) and used the Internet (91.1% reported having accessed the Internet at least once, 83.3% from home). Eighty-three percent of these teens reported using IM and 72.4% used it at least 1-2 days a week. Fifty-two percent had an online chat/instant message conversation with someone "yesterday"; 80.7% of the IM sessions were with a friend.

For this study, we selected Caucasian adolescent respondents who reported on an IM conversation session with a friend "yesterday" at home (N=41). The reason for placing such restraints is that we did not have enough non-Caucasian adolescents or IM sessions with relatives to be able to control for race and type of relationship in IM use. The mean age for this sub-sample is 14.8, with 56.6% female teens. These adolescents come from households with an average income of $40,000. On average, they have two computers at home and have been using the Internet for two years. At the time of the first survey, 38.7% were in junior high school and 61.3% were in high school.

Method

The respondents were asked to report on one online (either IM or e-mail) and one offline (either visit, or telephone) communication session that they had "yesterday". Items were alternated for the offline sessions. For the online sessions, respondents reported on an IM session, if one occurred "yesterday"; otherwise, respondents reported on an e-mail session. Since the majority of the teen respondents had an IM session "yesterday", only 9% of the online sessions were e-mail—too few to include in further analyses. For each session, respondents answered questions that described both the communication session and their communication partner. Thus we can distinguish the effects of modality and the effects of the relationship.

We examine here a total of 106 communication sessions "yesterday" (visit, phone or chat/IM conversation with a friend). The 65 communication sessions reported at Time 1 and 41 sessions at Time 2 were combined into a single sample, after preliminary analyses showed no significant effects of time the survey was administered on the major dependent variables.

Measures

Communication modality is the major independent variable for this study. Respondents described communication sessions with a friend conducted through IM, during a visit and by phone.

<u>Variables describing respondent and partner</u>

For this study, respondents reported on conversations with a "friend", defined very broadly ("close friend", "friend", "acquaintance", "coworker" and "classmate").Respondent's *age*, ranging from 13 to 17 was dummy coded as 0=younger teens (13-14 years old) and 1=older teens (15-17 years old). We use these two categories based on previous findings that IM use differs between junior-high school and high school adolescents. *Gender* of respondent was dummy coded as 0=female and 1=male; and *household income* was coded in 3 categories (1=less than $30,000; 2=$30,000-70,000; 3=over $70,000). In addition, ag*e* and *gender of communication partner* were recorded. By measuring gender of both respondent and partner, same- versus mixed-sex communication dyads could be differentiated into 4 categories: respondent male—partner male; respondent

male—partner female; respondent female—partner male; and respondent female—partner female.

A dichotomous variable of *physical proximity* to communication partner was computed (1=near-by, including “same building”, “same neighborhood” and “same town”; 0=far away, including “same state”, “different state” and “further away”). Where *partner was first met* was measured by five categories (“through a friend”, “at school/work”, “in the neighborhood”, “at church/club/hobby” or “online”). *Length of the relationship* (“How long have you known this person?”) was measured on a 6-point scale (1=less than a month; 2=1 month to less than 6 months; 3=6 months to less than an year; 4=1 year to less than 2 years; 5= 2 years to less than 3 years; 6=3 years or more).

Variables describing the relationship

For each communication session partner, the respondents reported on *how frequently they communicate* via IM, or in person, or by phone (“How frequently do you communicate with this person using each of these modes of communication: in-person, telephone and chat/instant messaging?”). A 7-point scale was used (1=never; 2=less often; 3= every few weeks; 4=1-2 days a week; 5=3-5 days a week; 6= about once a day; 7=several times a day). These measures defined a pattern of medium preferences for each relationship. In addition, *an overall frequency of communication* score was computed for each session

partner—as a mean of the communication scores across all three modalities—that measured respondent's communication intensity, independent of modality.

We measured level of *psychological closeness* to communication partner with one item ("How close do you feel to this person?") on a 5-point scale (1= not at all close; 2= not too close; 3=neutral; 4= somewhat close; 5= very close). Frequency of receiving *social support* from partner ("How frequently do you do the following with this person?") was measured with a 5-item scale ("Participate in leisure activities together"; "Discuss hobbies or spare time interests"; "Receive practical favors or help"; "Receive emotional support"; and "Receive useful advice or information") (Cronbach's alpha=.91). The frequency of each activity was measured on the 7-point scale described above.

Variables describing the communication session

Two types of *attitudes about the communication session* were measured: how *useful* the communication session was (using 3 items: "for getting work done", "for the relationship" and "for exchanging information"), and how *enjoyable* the conversation was. All items were measured on a 5-point scale (1=not at all useful/enjoyable; 5=very useful/enjoyable).

The general topic of the conversation was measured with three categories: social, school/work-related or other. Respondent also reported on what *specific topics* were involved during the conversation (dichotomous "yes/no" answers). For the

purposes of this study, two scales are used: *social support talk* (including 4 topics: "getting/giving support", "getting/giving advice", "asking favors" and "talking about problems") (Cronbach's alpha=.77) and *small talk* (including 2 topics: "small talk" and "killing time") (r=.71). The items of the scales were selected based on factor analysis of a total of 20 items and in accordance with our theoretical model. Specific conversation topic can vary with both the relationship and the communication modality. For example, IM has been previously associated with unsubstantial, small talk, while social support talk has been associated with phone and in-person conversations. Closer (best) friends may include in their conversations more social support talk than less close friends, independent of modality. Also, social support talk (hence, self-disclosure) is more often associated with a female communication partner.

QUALITATIVE DATA ANALYSES

Sample

The HomeNet Project has been conducting interviews with families in the Pittsburgh, PA area since 1996. Between 1996 and 1999, 40 families were interviewed—with a total of 36 adolescent children. Twenty additional families were interviewed in a four-month period from December 2001 to March 2002. These 20 families were selected from the national HomeNet survey sample (see details above), if they met the following criteria: lived in the Pittsburgh

metropolitan area, had access to the Internet at home and had at least one adolescent live-in child.

We draw some conclusions from data analyses of the 1996-1999 interviews with adolescents (N=33), but our qualitative data analyses focuses on the 2001-2002 interviews (N=26). For the 2001-2002 sample, fourteen (54%) of the interviewees were male; four (15%) were in junior high school (13-14 years old), while the rest were in high school (15 to 18 age range).

Method

Interviews were semi-structured. Each interview lasted about 3 hours and consisted of two parts: a family interview where all members of the family discussed their use of the home computer and the Internet, and individual interviews in front of the computer. The individual interviewee showed how she or he typically used the computer. All teen interviewees were asked to log in their IM account and demonstrate an IM session.

All interviews were tape-recorded and the individual interviews were also videotaped. All interviews were transcribed and analyzed, following standard guidelines for structured thematic analysis (see e.g., Silverman, 2000). Interviews were systematically analyzed using NVivo, qualitative data coding software package produced by QSR (2001). To ensure reliability, two people conducted coding of interviews, with over 90% inter-coder reliability.

We analyzed one-to-one IM sessions as well as the online social environment while using IM. This included, for example, how the interviewees chose their IM partners, who was included in the Buddy List (BL) and how the contacts (screen names) in the BL were organized. We tried to place IM use in the context of overall computer use. For example, we examined the sequence of opening computer applications and the number of windows opened during one IM session. The qualitative analyses were done to supplement the survey data analyses on one-to-one IM conversations and to develop insights about possible group processes supported by IM.

Results

IM chat in the context of other online activities

We placed IM use in the context of other major teen computer-based activities—e-mail use and browsing the Web. Comparing frequencies of use of these three applications by cohorts, we found different patterns of IM, e-mail and Web use of adolescents and adults. For example, adolescents are the highest users of IM, and its use dropped quickly with age. In contrast respondents in their twenties are the highest users of e-mail. The decline in e-mail and Web use with age was much less steep than the decline in IM use (See Figure 1.)

[figure 1 here]

In addition, analysis of trends in our 1996-2002 interview data indicates a tendency in adolescent online behavior of switching from chat rooms to IM: 26% of adolescents interviewed in the 1996 to 1998 time period used chat rooms, whereas only 12% of adolescents in the 1999 to 2002 time period used chat. (See Table 1.) This decline in the percentage using Chat was marginally significant (ChiSq=2,3m o_.12). In the years from 1996 to 1998, IM was just starting to emerge and, for the most part, teenagers were not using IM as a communication medium. However, all adolescents used some synchronous Internet communication in the 1999-2002 time period, with all using IM and a smaller proportion also frequenting chat rooms.

[table 1 here]

IM chat sustains mostly strong ties with peers

According to the survey data in which teens described a communication session "yesterday", adolescents talk primarily to friends who live near by regardless of communication modality—in their own neighborhood or town: 87.5% for IM session, 87.1% for visit and 90.6% for phone. However, 13% of the IM partners also lived further away (i.e., in another state or beyond), while only 6.3% of the phone partners and none the in-person communication partners lived in another state. Across modalities, adolescents were most likely to communicate with peers they first met at school: 77.5% in the IM session, 67.7% in the visit and 62.5% in

phone session. None of the visit or phone communication partners was first met online and only one of the IM communication partners was reported as first met online.

Across all modalities, most of the conversations were with someone known for over a year (85.4% for IM, 90% for visit and 93.8% for phone). However, they knew their partners in the IM session for less time in IM session than with the phone and visits. (χ^2=5.6; df=2; p=.06).

IM conversations were more likely to include mixed-sex partners than did phone and face-to-face communication sessions. In the IM session, 41.1% of the conversations were with someone of the other gender; in contrast, only 13% mixed-sex conversations were reported in the visit session and 12.5% in the phone session. Interestingly, the male respondents were particularly keen about talking to a girl: 29.3% of their IM sessions were with a girl, compared to 6.5% in the visit session and 9.4% in the phone session. (See Figure 2.)

[figure 2 here]

The analyses of the 2001-2002 interview data revealed similar patterns. Fifty-six percent of the interviewees said that they used IM to speak primarily to people in the same town. Eighty-four percent of the interviewees mentioned talking regularly through IM to friends from school. Very few interviewees mentioned

communicating by IM with someone they never met in person; and when they did, those were contacts ("screen names") given to them by a friend or a relative. However, our interviewees also emphasized that IM allowed them to talk to others who they did not see on a regular basis, such as friends from previous schools, friends from summer camps or friends from church. These friendships would have been more difficult to maintain, if it were not for the contact through IM.

> Edward: "…lots of them [peers met at church or a summer camp] live all over the place so that's how... [using IM]… that's really my only way of communicating with them because the phone bill, if I would call them all, would be outrageous.

In other words, IM helps enlarge one's network, adding far away friends that otherwise would have been dropped or adding new contacts that otherwise would not be approached.

Communication patterns with specific partners

In this section, we contrast communication patterns teens have with partners they communicate with primarily by IM, by phone or in person. In the analyses that follow, sample sizes and means for the respondent and communication partner are reported in Table 2. For these analyses, we used hierarchical linear (multi-level) modeling (Bryk & Raudenbush, 1992), with communication modality treated as a fixed factor, nested within respondent, a random factor. Multi-level modeling takes into account the non-independence of the data, with each respondent

describing multiple communication sessions with multiple partners. The analyses controlled for questionnaire wave, age (younger vs. older teens), household income, gender of respondent, gender of communication partner and geographic proximity to partner. For consistency in comparisons, mean scores for all continuous variables were standardized. Non-normality of distributions was accounted for by using the log transformations of the mean scores for all continuous variables. Levels of significance are based on tests of whether the conversations in each of the other two communication modalities (phone and face-to-face) differ from conversations conducted by IM. Differences of least square means between IM, visit and phone sessions are reported in Table 3.

First, we examined how frequently in general respondents communicated with their IM session partners through each of four different modalities (in person, by phone, by e-mail and by IM), compared to their visit and the phone session partners. As could be expected, they communicated most frequently via IM with their IM session partners, most frequently by phone with the phone session partner and most frequently in person with the visit session partner. (See Table 3.) In other words, among their friends, teens communicate with some mostly via IM, supplemented by face-to-face and, to a lesser extent, by phone communication; with others mostly in person, supplemented by IM and phone communication, and still with others they mostly talk by phone, supplemented by face-to-face communication and some IM chat. However, the overall frequency of communication with a friend (a mean of IM, e-mail, phone and face-to-face

frequency scores) was not significantly different for IM and visit session partners, and IM and phone session partners. (See Table 3.) These results are indicative of the complimentarity of different communication modes when maintaining a friendship. Teens seem to have friends that they mostly communicate with by IM—almost every day, but they also see them about 5 days a week and talk to them by phone about once a week.

[tables 2 and 3 here]

Psychological characteristics of teens' friendships: Supportive, but not closest friends in IM conversations

Are the relationships reported in the IM session different from the relationships reported in the visit and phone sessions? First, we examined whether the IM session partners differ in levels of psychological closeness from phone and visit session partners. Teens judged the IM session friends as less psychologically close than the visit session and the phone session friends. Controlling for age, income, gender of respondent, gender of communication partner and geographic proximity to partner, IM communication partners were rated as much less psychologically close than the visit session partners ($\beta=.05$; $df=47$; $p=.009$) and the phone session partners ($\beta=.05$; $df=47$; $p=.007$). (See Table 3.)

Next, we tested for the frequency of received social support from the relationship. As indicated in Tables 3, there was no significant difference between levels of

reported social support from friends in the IM, visit or phone sessions. Teens reported receiving emotional support, advice, favors, sharing common interests/hobbies and spending time together as frequently with their IM session partners as with their phone partnersand visit partners —several times a week, on average. (See Table 3.)

IM chat not enjoyable, even when with best friends

Teens judged the IM communication session as substantially less enjoyable than the phone (β=0.64; df=47; p<.001) or the visit communication sessions (β=0.76; df=47; p<.001). They enjoyed in-person communication most. (See Table 3.) Since they rated their IM partner as least psychologically close, one would expect that talking to less close peers would result in enjoying the conversation less. In order to test this hypothesis, next we analyzed how much teens enjoyed their conversations via different modalities with their best friends (partners with a score of 5 on psychological closeness). Even with a best friend, teens rated the IM communication session as substantially less enjoyable than the phone (β=1.00; df=18; p<.001) or the visit communication session (β=0.89; df=18; p<.001), and enjoyed the in-person communication most.

IM conversations were rated as less useful for getting school work done, for exchanging information and for the relationship itself than visit conversations (β=0.06; df=47; p=.06) However, IM conversations were not rated as significantly

different from phone conversations for these purposes. Both IM conversations and phone conversations were considered “somewhat useful” for these three purposes.

Self-disclosure and small talk on IM

In the analyses of the 2001-2002 interviews, we found that IM conversations were usually short and had a conventional beginning, middle part (the actual conversation), and a conventional end. The conversations started with non-specific openers, such as “hey” and “whats up”, to establish the connection. The middle portion of the conversation consisted of a variety of topics. Then conversations were consistently ended by conventional phrases such as “g2g” (“got to go”) or “cya” (“see you.”). A sample of typical short IM conversations follows, with translations in square brackets.

abc123: hey

pgh1: hey

abc123: what r u doin today? [What are you doing today?]

pgh1: nothin u [Nothing. You?]

abc123: u wanna come over to watch the game […]

pgh1: ya probably

abc123: alrite, see ya round 6 then [Alright. See you around 6 then.]

pgh1: k [Okay.]

abc123: cya [See you.]

When asked what they usually talk about on IM, 68% of the teens we interviewed said that they used IM mostly to pass the time, without important content. One interviewee summarized a typical conversation in IM this way:

"Mostly just... kind of like... just kind of BS and... just talk about, you know, what you been up to - just kind of silly stuff like... you know, just to pass the time. Asking... like, I said, ask them what they're up to - just kind of chitchat - nothing real important."

However, further analysis of the videotaped chat sessions suggested that teens often spontaneously shared personal information with their IM partner, offered or received emotional support or advice during the IM session. Even though the initial motivation to log in to chat on IM may not be self-disclosure, IM conversations evolve to include emotional support and self-disclosure. Here is an example of such a conversation, where a friend discloses to another friend breaking up with a boyfriend.

friend123: hey

friend123: sup [What's up?]

girl1: nm u [Nothing much. You?]

friend123: n2m chillin [Not too much. Chilling.]

girl1: kewl [Cool.]

girl1: how r things with u and jimmy r u ok? [How are things with you and Jimmy? Are you okay?]

friend123: were friends but he was up his camp this weeekend so haven't talked to him since late friday night

girl1: oo ic [Oh, I see.]

girl1: well do u think things r gonna be ok?

friend123: like were ok... but he said he waats to try being friends but he dont think its gonna work

In order to better understand what teens talk about via IM, we conducted Chi-square tests of the survey data, comparing the topics most frequently covered in IM conversations, and in phone and face-to-face conversations. Adolescents' conversations were more often on a social topic in an IM chat than in a phone call or a visit (χ^2=12.3; df=4; p<.05). In the IM sessions, 87.8% of the discussed topics were social, with 58.1% and 54.5% respectively for visit and phone conversations. (See Figure 3.)

[figure 3 here]

Next, we examined the survey data for how frequently small talk and social support talk were involved in IM conversations, compared to phone and visit conversations. For this analysis, we used again hierarchical linear modeling (described in detail above). The analyses controlled for questionnaire wave, age (younger vs. older teens), household income, gender of respondent and gender of communication partner and geographic proximity to partner (near-by vs. far away). Overall, across all modalities, teens' conversations involved small talk

much more frequently than supportive talk. (See Table 3.) IM conversations involved more small talk than phone conversations (β=-.15; df=46; p<=.07), but IM conversations did not differ from visits in this regard. IM conversations were not significantly different from visit or phone conversations in frequency of supportive talk. Adolescents seem to receive comparable support from peers across modalities. (See Table 3.)

IM use as a group activity

The interviews showed that teens often conducted multiple IM communication sessions simultaneously. Only one interviewee said that he never had simultaneous IM conversations. Thirty-two percent of the teen interviewees emphasized that they liked IM mainly because of the ability to talk to more than one person at a time. Twelve percent mentioned that they found the phone limiting, just because they could talk to only one person at a time, while the same amount of time could be used to talk to many people by IM. One teenager described the appeal of multiple conversations through IM this way:

Amelia: “Personally I like talking to a lot of people at a time. It kind of keeps you busy… It's kind of boring just talking to one person ‘cause then like... you can't talk to anyone else.”

Our interviewees reported usually conducting from 2-3 to up to sixteen IM conversations at a time, and two of the interviewees reported even talking on the phone while chatting on IM with several people. The intensity of IM teen communication, at least at times, is apparent in the description below.

Neil: “I'm talking to this person, this person, this person… I type something to them and when they have something to say to me the… uh, little button down here - the icon - it... flashes blue, so I know that they responded and I just click on their… uh, icon and talk and then click off and then... search some more.”

Interestingly, although being able to talk to multiple friends simultaneously was one of the most revered features of IM, teens strongly preferred person-to-person chatting than using IM chat rooms, where multiple people are on the same conversation. Most IM systems support chat rooms, where users can set up “rooms” and invite others on their Buddy List to talk as a group. Although most of our interviewees were aware of this option, only one of them mentioned that she had used it. It appears that teens like the privacy of one-to-one communication while ‘being in a group’ of friends through multiple open windows.
Analyses of the videotaped IM sessions pointed to the non-selective way in which IM partners were chosen. A few interviewees mentioned that they expected some of their IM buddies to log in at about the same time bracket as they usually did. But for most adolescents, logging into their IM account meant starting to chat with anyone on their Buddy List who was available online. At the varying times of the day when our teen respondents were interviewed, all but one were instantaneously able to start chatting with several of their IM contacts. In this context, logging in to one’s IM account was not a way to get in touch with a specific friend (as a phone call or an e-mail message is); rather, it was a way to join a group of peers whom the teens already knew offline and frequently met in person.

The ‘presence’ information on IM seems to create a feel of group participation, too. If anyone leaves the ‘group’, she or he leaves a message—as in this “I’m away” message reported by an interviewee: “At the Mall shopping with mom. Back in 2 hours.” In other words, although teens engaged in a sequence of one-to-one conversations during an IM session, there was always a feeling of group ‘presence’ through the ‘presence’ of others in numerous active windows and the ‘presence’ information for those temporarily away. As illustrated below—while Amelia actively talks to some friends on IM, she is also aware of the whereabouts of other friends.

> Amelia: “Okay. A lot of my friends have away messages on - they're not really like here - they're probably somewhere else… If they're [away from the computer but still logged on] they usually have the yellow paper outside their name and that means they're somewhere. If you click on their name and then get information like it will say where they're at. Like, for this line, like, he says I'm not available. It says he's not available because he's playing a computer game that takes up the whole screen…”

Another important option of IM that enhances the sense of group belonging is the Buddy List. The interviews provided insights into how adolescents organize and sustain their social networks through IM. As mentioned earlier, IM software provide a Buddy List for keeping a directory of contact “screen names.” Some interviewees had very few screen names in their Buddy Lists, while others had over 100 “screen buddies”.

In order to explore how many friends teens communicate with on a more regular basis, in the survey, we asked them to think of the people living within an hour, but outside of their household and list how many of them were friends they actively keep in touch with. Teens reported actively keeping in touch with 14 friends locally and 6 friends far away, for a total of 20 friends they communicated with on a regular basis. In contrast, the interview data showed that over 75% of the teens had more than 20 entries in their buddy list, with many having over 100 contacts. (See Figure 4.) Interviewees who had a large number of people on their Buddy Lists said that they only talked to a smaller group of friends.

> Chuck: "Whoever I talk to at school is on here [in the Buddy List]. Actually, out of all these people I've probably talked to [on IM] like… 15. […] That's how all my friends are - they have... like 100 buddies and talk to like 15. That's just the way it is, I don't know [why]."

[figure 4 here]

Adolescents with a larger number of screen names tended to customize their Buddy Lists with idiosyncratic categories, whereas those with a few screen names left the default grouping provided by the IM software ("Friends", "Family" and "Coworkers", for example, in AOL Instant Messenger). If customized, the new groups were often formed on the basis of major social categories (for example, male and female, or, friends and relatives), or, more often, to indicate reference groups (for example, "my best friends" vs. "other friends", or, "cool people" vs.

“not so cool people”). In other words, IM contacts were classified either as “core” or as “peripheral”, similar to offline “clique” members.

Pam: “Yeah… “cool people.” Those are people I mainly hang out with and that I talk to a long time, like, on the phone and stuff… ”

Interviewees with a large number of screen names could easily identify the screen names of “core” members in their Buddy List, but often could not do so for the “peripheral” members. Although adolescents admitted that they never communicated with certain people on their Buddy List, no one reported having ever deleted a screen name from their Buddy List, unless they needed to to fit the size constraints imposed by the IM application).

DISCUSSION

Adolescents in the United States frequently use instant messaging programs, because doing so allows them to connect to friends in a way no other communication technology does at present: they can have a private one-to-one real-time conversation with a friend and, at the same time, ‘hang out’ with many friends and feel part of a group. Thus instant messaging satisfies two major needs in adolescent identity formation—maintaining individual friendships and belonging to peer groups.

We found some evidence that teens have been abandoning chat rooms in favor of IM. When they need to talk to friends—which they need to do for healthy

adjustment-- they can generally find some of them on IM. Adolescence is a period of self and social identity formation. In order to answer the question "Who am I?", adolescents have a strong need to communicate extensively with peers and compare to them. But they also need to communicate with *familiar* peers and build a sense of security (cf. Erikson, 1968). In a word, teens need to talk to trustful friends more than do other age groups. Internet chat rooms, for example, frequented by teens, have been described as fulfilling some needs in self-identity formation (see e.g., McKenna & Seidman, this volume). But many teens recognize that chat rooms are a place where deception is commonplace and, especially younger teens often consider chat rooms a dangerous place (Pew Internet Project Report, 2001a). IM, of course, does not eliminate online deception—approximately a quarter of online teens admit that they have sometimes used IM to pretend to be someone different (Pew Internet Project Report, 2001). Yet, the most important aspect of IM communication is that a friend can be reached through it (Alvesrtand, 2002).

Who are these friends that teens talk to via IM? Similar to previous findings (e.g., Grinter & Pelan, 2002; Schiano et al, 2001), our study shows that IM is used mainly to supplement in-person talk with local friends. Researchers have previously emphasized that adults often use online communication to sustain distant personal relationships (see e.g., Boneva & Kraut, 2003). In contrast, teens seem to use IM exclusively for conversations with local friends. We found that teens mostly use IM to extend their communication with friends they first met at

school and who live nearby; they know for a comparatively long period of time and they often talk to in person, but rarely by phone. Teens rarely use IM to talk to someone far away. In fact, most of teens' friends live nearby—probably because at adolescence friendships are still primarily based on doing things together.

It appears that adolescents use IM more than other communication channels to talk to the other gender. While both other research (e.g., Duck, 1973; Hartup, 1993) and our own show that most face-to-face and phone communication among adolescents is with members of the their own sex, IM is used to cross the gender barrier. Previous research has also suggested that people of both sexes have a general preference for a female communication partner (e.g., Duck, Rutt, Hurst, & Strejc, 1991). IM is a technology that teenaged boys have taken advantage of to hold these cross-gender conversation. With IM, female teens talk most often to their female friends and only occasionally to male friends, while boys frequently talk to girls over IM.

Interestingly, teens rated their IM communication partners as less psychologically close than their face-to-face or phone communication partners. As Cummings, Lee and Kraut (this volume) suggest, this may reflect the non-volitional nature of much of IM communication—teens often talk to whichever of their friends and classmates is available online. Interestingly, in their longitudinal study of students who moved to college, Cummings, Lee and Kraut (this volume) found that, even

though at a given time period communicating via IM was associated with lower levels of psychological closeness than by phone, over time IM (but not in person or phone) communication reduced the decline in psychological closeness, when college students used it to stay in touch with friends. This indicates that the long-term impact of IM use may be different from the impact suggested by the cross-sectional snapshot.

Even though teens feel less close to their IM communication partner than to phone or face-to-face partners, they receive as much social support from them. Similarly, teens' IM chat involved as much support talk as their visit and phone conversations.

However, even though teens use IM to receive social support from friends as frequently as in person and by phone, and to freely talk to others of the other gender, they find their IM conversations much less enjoyable than their visits or phone conversations. The nature of the relationship seems not to explain why teens do not enjoy IM chat—we found that even when talking to their closest friends, they still rate an IM conversation as least enjoyable. Media richness and social presence approaches suggest that more clues contribute to a more satisfying communication. In a recent study, Mallen, Day and Green (2003), for example, showed that face-to-face dyads felt more satisfied with the experience than the online chat dyads. We cannot tell from our data what whether inherent characteristic of IM communication—e.g., the lack of audio and visual clues—

that makes it less enjoyable than in person and phone communication with similar partners There could also be specific behavior that teens engage in when using IM that contribute to their lack of enjoyment of these conversation. Consider, for example, multi-tasking, i.e., doing other things while also chatting and not being focused on the conversation alone. If the teen has several IM chat windows open at a time, while also doing homework, listening to music and possibly browsing the Web, they not be paying enough attention to any one of the conversations to enjoy it. In contrast, phone and in person communication may capture more attention.

It is intriguing that teens have flocked to IM, even though they do not find it enjoyable. Apparently, IM fulfils other important psychological functions that make it popular. The decline in IM use with age that we found may be at least partly because IM satisfies specific generational needs. They may like IM because it satisfies the heightened need at this developmental period to communicate with peers. In addition, they have a sense of being with others, not feeling alone while physically away from friends. There is always someone out there to share with, as Grinter and Pelan (2002) notes. Age-specific social norms could also be involved in the popularity of IM among teens. For example, although not enjoyable, IM may be 'cool' to IM. Teens who do not use IM may feel excluded by peers.
IM also helps teens boost their group identity. Using IM simulates joining an offline peer 'clique' or 'crowd', without their rigid acceptance rules. The ability to talk to many friends at a time via IM and to organize Buddy List contacts into

social categories are both indicative of such a function. Interestingly, teens rarely invite a group to an IM session. It is not clear whether this failure to use the explicit group communication built into most IM software is the result of logistics problems of coordination or because teens value the unique combination of private person-to-person conversations on IM, while also maintaining the feel of being with a lot of friends.

The Buddy List *is* teens' social world—it includes almost all peers they know personally or through someone else. By organizing their contacts into Buddy List categories, teens label self and others as belonging to one or another group. Categorizing peers into, for example, "cool people" or "my best friends" versus all others assigns belonging to a group of peers—thus facilitating the process of social identity and boosting the sense of security. In addition, including many screen names in one's Buddy List creates the *feeling* of building a large social network. It is well known that sense of security—essential at adolescence, is gained trough building social networks (Degirmencioglu, 1995). IM facilitates extended social networks. For example, by just including a person's screen name in the "friends" category in the Buddy List, a teen can make that person 'a friend'. This unilateral creation of friendship contrasts with offline friendships, which are generally thought of as a "bilateral construct", assessed through reciprocal nominations and interpersonal communication (Asher & Parker, 1989; Masten et al., 1995).

In summary, IM seems to fulfill two separate psychological functions for adolescents. First, IM connects adolescents to peers and extends their opportunities to communicate. This is is the communicative function of IM that has already addressed in the research literature. Second, IM helps define adolescents' social identities, a non-communicative function of IM that has not been studied and understood yet. These developmental functions may partially explain why IM use is so popular among adolescents in the United States and its uses drops off so sharply with age.

ACKNOWLEDGMENTS

This research was made possible by National Science Foundation grants IRI-9408271 and IIS-9900449.

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Chapter 14 Table 1

	Year Range	
	1996-1999	2001-2002
Chat rooms	26.90%	12.10%
IM	0%	100%
Sample Size	33	26

Chapter 14 Table 2

	By chat/IM			In person			By phone		
Variable	N	Mean	Std	N	Mean	Std	N	Mean	Std
Respondent[1]									
Gender (% male)	41	41	50	32	44	50	33	45	51
Age	41	14.9	1.4	32	14.8	1.4	33	14.8	1.3
Income (1 measure point = $10,000)	41	$40,000	0.7	32	$45,000	0.8	33	$35,000	0.8
Partner[2]									
Gender (% male)	41	22	42	31	42	50	32	41	50
Age	40	15.5	1.6	29	15.4	2.8	32	17.4	8.6
Geographic location (% nearby)	41	88	33	32	88	34	33	91	29
How long know partner[3]	41	5.0	1.3	30	5.2	1.3	32	5.4	1.2

[1] *Not all respondents reported on all three communication sessions.*

[2] *Partners are different for each modality.*

[3] *Measured on a 6-point scale (see detailed scale in the Measures section above).*

Chapter 14 Table 3

Variable	IM session/partner N	Mean	Std	Visit session/partner N	Mean	Std	Phone/partner N	Mean	Std
Frequency of communication with partner [1]									
By IM	41	5.61_{a}	1.34	31	4.39_{b}	2.22	32	3.81_{b}	2.39
In person	40	5.28_{a}	2.03	31	5.94_{b}	1.41	32	5.22_{c}	1.79
By phone	40	3.45_{ab}	2.05	31	3.84_{a}	1.77	32	4.56_{b}	1.54
By e-mail	41	3.34_{a}	1.56	31	2.71_{ab}	1.53	30	2.33_{b}	1.71
Across all modalities	41	4.40	1.33	31	4.22	1.27	32	4.05	1.24
Attitudes toward the conversation [2]									
Useful for developing or sustaining a personal relationship	41	3.93_{ab}	1.01	30	4.13_{a}	0.68	32	3.56_{b}	1.24
Useful for exchanging information	41	4.34	0.85	30	4.33	0.76	32	4.34	0.75
Useful for getting work done	41	3.24	1.22	31	3.42	1.15	33	3.27	1.33
How much conversation was enjoyed	41	1.63_{a}	0.70	31	4.42_{b}	0.62	32	3.84_{c}	0.72
Psychological dimensions of the relationship									
Psychological closeness to communication partner [3]	41	3.93_{a}	1.10	31	4.23_{b}	0.80	32	4.34_{b}	0.83
Social support from communication partner [1]	41	4.22	1.35	31	4.35	1.65	32	4.30	1.57
Topics of conversation [4]									
Small talk scale	41	0.83_{a}	0.31	30	0.77_{ab}	0.41	31	0.61_{b}	0.40
Social support scale	41	0.35	0.37	30	0.38	0.35	30	0.38	0.40

Notes: Means with different subscripts are significantly different.

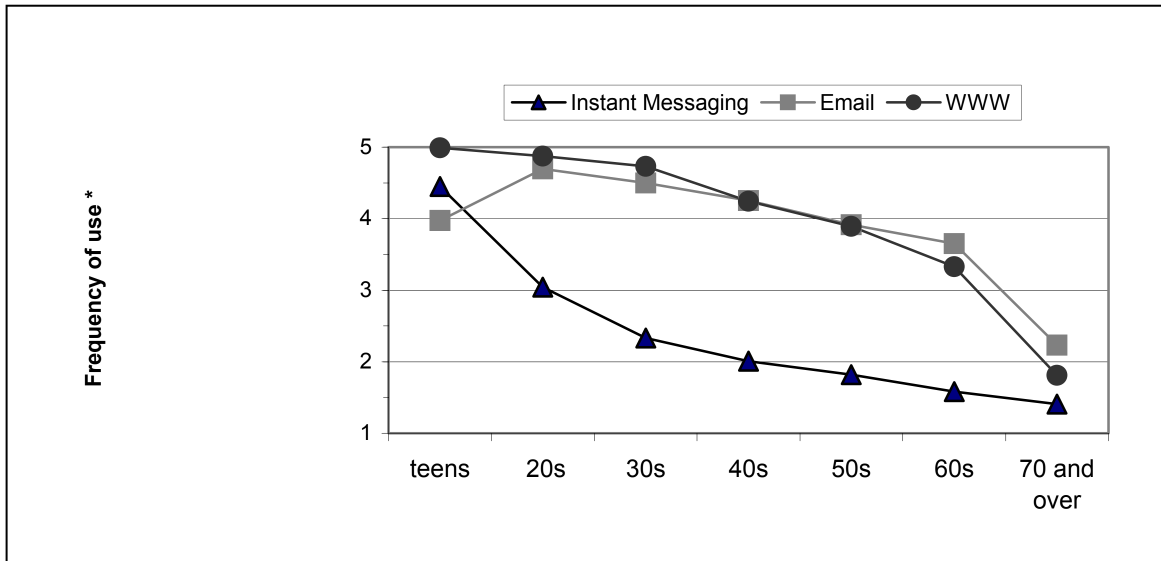
[1] *Measured on a 7-pt scale: 7=several times a day; 6=about once a day; 53-5 days a week; 4=1-2 days a week; 3=every few weeks; 2less often; =1=never.*

[2] *Measured on a 5-pt scale: 5=very useful/enjoyable; 1=Not at all useful/enjoyable.*

[3] *Measured on a 5-pt scale: 5=very close; 1=not al all close.*

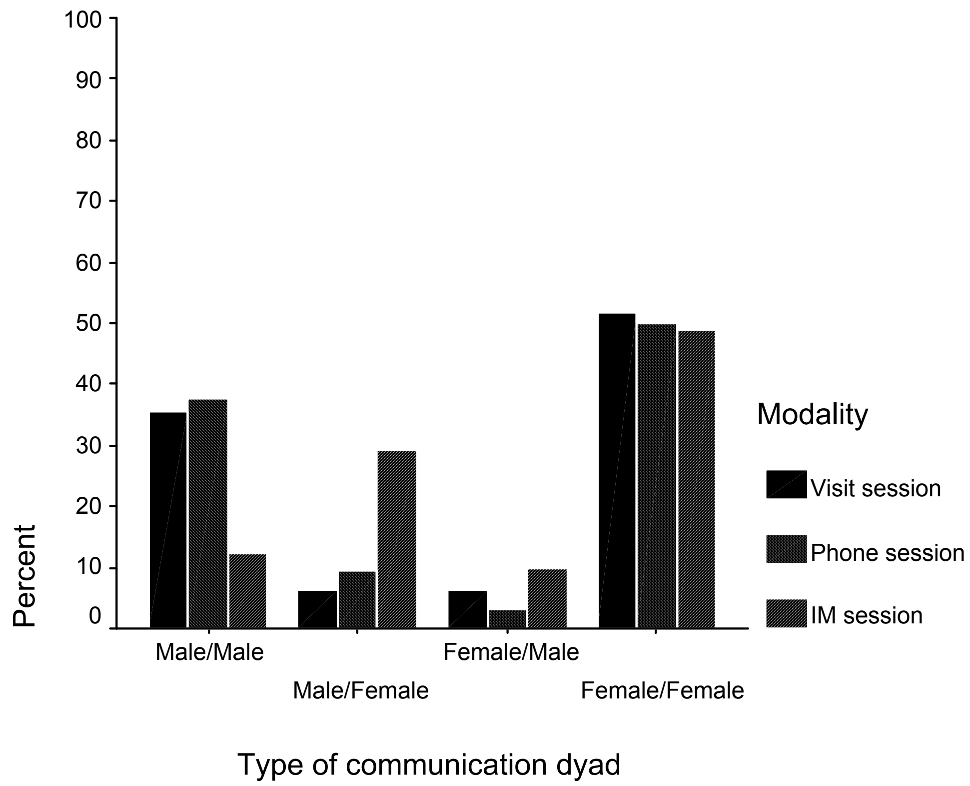
[4] *Scores vary between 0 (none of the topics was included in the conversation) and 1 (each of the topics was included in the conversation)*

Chapter 14 Figure 1

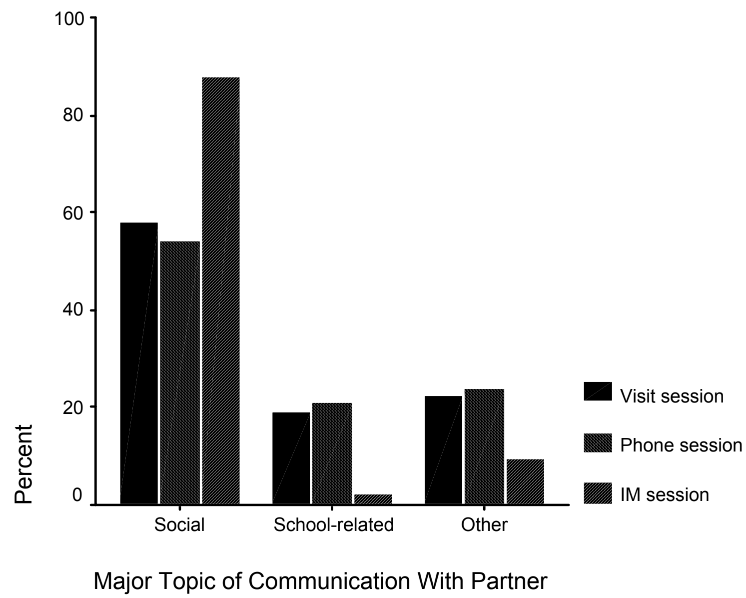


* 1=never; 2=less often; 3= every few weeks; 4=1-2 days a week; 5=3-5 days a week.

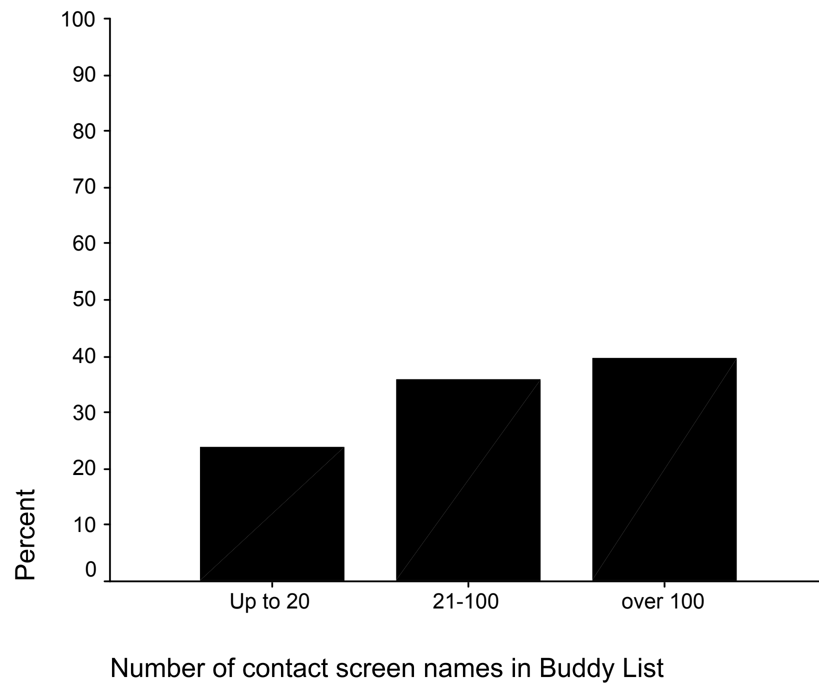
Chapter 14 Figure 2



Chapter 14 Figure 3



Chapter 14 Figure 4



Captions

Chapter 14 Table 1: Tendency in adolescents migrating from chat rooms to IM.

Chapter 14 Table 2: Sample size, means and standard deviations for respondent and partner.

Chapter 14 Table 3: Means and levels of significance of the dependent variables, based on differences of lease square means.

Chapter 14 Figure 1: Overall use of IM, e-mail and the Web by cohort.

Chapter 14 Figure 2: Comparing frequency of communicating with same-sex versus mixed-sex partners in each modality.

Chapter 14 Figure 3: Conversation topics with communication partner.

Chapter 14 Figure 4: Number of contact screen names in Buddy List.