

Instant Messaging in Teen Life

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ABSTRACT

Instant Messaging (IM) is being widely adopted by teenagers. In a study of 16 teenage IM users, we explore IM as an emerging feature of teen life, focusing our questions on its support of interpersonal communication and its role and salience in everyday life. We qualitatively describe the teens' IM use interpersonally, as well as its place in the domestic ecology. We also identify technology adoption conditions and discuss behaviors around privacy management. In this initial investigation, we found differences in the nature of use between high school and college teens, differences we propose are accounted for by teens' degree of autonomy as a function of domestic and scholastic obligations, the development of independent work practices, Internet connectivity access, and even transportation access. Moreover, while teen IM use is in part characterized as an optimizing choice between multiple communications media, practice is also tied to concerns around peer pressure, peer group membership and creating additional opportunities to socialize.

Keywords

Instant Messaging, Teenagers, Chat, Communications, Domestic information technology, CSCW, HCI, qualitative user study

INTRODUCTION

Teenagers' use of Instant Messaging (IM) is on rapid rise, and has been a recent object of media attention. Indeed, the popularity of IM indicates that synchronous (or near-synchronous) text messaging and presence awareness has a place in teenage communications, despite an array of competing media available to them [21]. However, little is empirically known about how and why teens use IM. To that end, this paper reports findings from a qualitative study of IM use within this population.

The objective of our investigation was to explore the space of issues pertaining to IM's place and salience in teen life and, by so doing, inform the growing area of CSCW

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research in domestic environments. We sought to identify the major features of IM use, and describe our findings in terms of teen IM adoption paths, the nature and purpose of IM social congregation, and the place of IM in the domestic ecology. We then turn to an analysis of privacy regulation concerns and practices for IM communications, as well as privacy regulatory mechanisms that support IM use within the home. Finally, we propose that the role and salience of IM in teen life shift as teens age and acquire greater autonomy.

INSTANT MESSAGING

Operational Overview

IM systems support Internet-based synchronous text chat, with point-to-point communication between users on the same system. A window is dedicated to the conversation, with messages scrolling upward and eventually out of view as the conversation ensues. IM also supports group chat, with users inviting others to join them in a specified "room." Some systems, such as AIM and ICQ, make some chat rooms public. In some IM systems, pictures and URLs can be included in the messaging. Colors and fonts are personalizable.

"Buddy" lists display information about IM cohorts. Buddies' on-line handles (usernames) are displayed, along with indicators of activity (usually as a function of input device use) and availability (as inferred by activity and as stated explicitly by user-specified settings). Buddies can be sorted into user-defined categories such as "friends," "family," "co-workers" and so forth.

From IRC to IM: Text Chat Past and Present

Instant Messaging is the newest and most popular incarnation of near-synchronous text chat technologies. UNIX "talk" and "write" have supported one-on-one conversation for over twenty and fifteen years, respectively. Multi User Dungeons (MUDs) and Internet Relay Chat have supported multi-way real-time text chat for over a decade. Zephyr is another multi-way real-time text chat facility first developed at MIT in the late 1980s and subsequently adopted at a number of academic institutions [1].

MUD and IRC systems tend to be used for supporting communications between strangers or, more accurately, people who do not know each other in real space. These technologies enable people to congregate around topics or

activities of common interest, from gaming to discussions of research [22], although off-topic conversation might ensue once initial contacts are made. Like IRC and MUDs, Zephyr communications are often topic-centered (organized around “instances”) with a large but constrained population of users (university students). Research on these systems has focused on the opportunities and difficulties that these virtual user communities experience in the context of public chat (see for example [1, 4, 20, 22]). Today IM offers analogous public chat rooms organized around such topics as “Britney Spears” and the television show, “Sex and the City.”

However, IM distinguishes itself from previous text messaging technologies by users’ predominant messaging with known others. One-on-one and small group chat characterizes use in the workplace, where IM is considered a valuable component of coordination in some places. Existing empirical studies of IM examine mostly workplace use [2, 9, 10, 15, 24, 27], with findings sharing common features. In particular, the informal communicative nature of IM supports much workplace activity. The ability to ask and respond to questions without overt interruption, possess general awareness of co-workers’ availability, participate in social banter and so forth, support the conduct of work and reinforce the social “glue” that ties people together. Although IM is gaining popularity in the workplace, the institutional imperatives of research lab and high-tech environments where much of this research has taken place [2, 15, 24, 27] tend to support the activities associated with informal chat. The work of Herbsleb et al. cautions that challenges for the adoption of IM systems can still be found in some workplaces where “informal chatting” of any kind needs explanation and justification to be understood and valued [9].

Teenage IM Adoption Wave

Empirical study of IM in the workplace has illuminated adoption factors and use characteristics among adults. We draw on these observations and findings to explore the concurrent adoption wave among teenagers, an area rife with interesting and open research questions (see for example [12, 21]).

Within the context of CSCW research, we believe that teenage IM adoption offers three potential insights. Firstly, teenage IM adoption marks a significant entry of collaborative information technologies into the home. Studying teenagers’ use of collaborative technology in the home offers new insight about its role in the domestic ecology. Secondly, since most teenagers have little previous experience with technologies that convey presence between remote peers, they must learn what it means to be simultaneously private and public people. Finally, teenagers are the workforce of the future, and communication habits they develop now may indicate what we can expect from them as adults.

THE STUDY

Method

The objective of the study was to understand and identify the most salient attributes of teenage IM use. The intention

was to take a grounded, bottom-up approach to the investigation, allowing the most common and significant issues to emerge from the inquiry, with few initial expectations. To that end, we restricted the study to IM users only, studying non-use only from their perspective, albeit acknowledging that the study of non-users should figure into future investigation. We note that one participant was 20 years old, and therefore slightly outside the teenage demographic. However, he shared much in common with the 19 year olds in college, and we chose to include his data in this paper after finding that IM usage characteristics among young people appears to be correlated to increasing autonomy in part as function of student status.

With a set of 16 teenage IM users (whose descriptions follow) the first author conducted in-depth interviews [14] lasting from 1/2 to 3 hours each. Interviews with P1-4 took place in the United Kingdom and P5-16 in the United States. Following the interviews and with participant permission, the first author added participants’ usernames to her buddy list to make general observations about participants’ on-line activity and to verify participant estimates of time spent on-line.

Participants

All 16 participants were IM users employing at least one of the four most popular IM systems: AOL’s Instant Messenger (AIM), ICQ, MSN Messenger (MSN) and Yahoo! Messenger. Four teens resided in the UK with the remaining in United States¹. Three participants lived in dorms at their universities, while the others lived at home with their families.

All participants lived in regions where the local economies centered on computing and telecommunications. Our assumption was that this population of people leads others in technology adoption, and that examination of such a group forecasts future practice of wider and more diverse populations.

Table 1 summarizes select demographics and IM characteristics.

INSTANT MESSAGING IN TEEN LIFE

In this section, we describe our findings about teenage use of Instant Messaging in detail. We organize the discussion in terms of IM use frequency patterns, IM adoption factors and trajectories, IM cohorts, the nature of IM-based social congregation, and the relationship between IM technology and domestic environments in which it resides.

Use Frequency & Connectivity Profiles

IM use is generally characterized by two different patterns: discrete or continuous connectivity. Discrete connectivity generally describes a user with a dial-up Internet access using a modem and/or a shared computer. These

¹ We found that after analysis of this data, as well as the first author’s experience from empirical study of UK teen use of short text messaging, differences between US and UK teens were minimal along the dimensions we discuss in this paper.

Participant	Sex	Age	Years of IM Use	Residence	Internet Access Technology	Share or Own Personal Computer	Reported IM use /day (Hours) ^a	Reported # IM Buddies /Session ^b
P1	F	15	3	Family	Modem	Share	2-4	6-8
P2	M	16	3	Family	Modem	Own	<=2	6-8
P3	M	16	3	Family	Modem	Share	2-4	8+
P4	M	19	6	Dorm	Ethernet	Own	24	6-8
P5	F	14	3	Family	Modem	Share	2-4	5-8
P6	F	14	2	Family	Modem	Share	<=2	4-6
P7	F	15	2	Family	Modem	Own	<=2	6-8
P8	M	17	3	Family	Modem	Share	2-4	1-2
P9	M	17	5	Family	DSL	Own	<=2	1-2
P10	M	17	2	Family	DSL	Own	<=2	1-2
P11	M	17	6	Family	DSL	Own	<=2	3-5
P12	M	17	5	Family	DSL	Own	<=2	3-5
P13	M	17	5	Family	DSL	Own	24	3-5
P14	F	17	7	Family	Modem	Own	<=2	3-5
P15	F	19	7	Dorm	Ethernet	Own	24	3-5
P16	M	20	3	Dorm	Ethernet	Own	24	6-8

Table 1: Teenagers' IM Demographics

^aReported IM use per day refers to total length of IM sessions, and does not reflect whether the teenagers engaged in IM exclusively or switched between IM and other activities. Those who left IM on continuously are noted as reporting 24 hours per day.

^bReported number of IM buddies is a self-report estimate of how many buddies are IM-ed during any one on-line session.

conditions make it impossible for teenagers to stay on continuously. Their IM use can be characterized as intensive and focused, with other concurrent Internet activity. Participants who shared this profile reported IM sessions lasting no more than 3 hours.

Continuous IM connectivity is possible when users have a dedicated DSL or Ethernet connection and a personal machine. All college students had such conditions, as well as high school teens P9-13. This usage is typified by sporadic IM use intermingled with other computer and non-computer activities. IM windows might remain open over a period of days with bits of conversation added across the day. Sessions might only be terminated when a reboot is required. However, we note that even when conditions make "always-on" use possible, some participants (P9-12) reported their use to be much more like discrete users.

Technology Choice & Adoption

Instant messaging is finding its way into teen communications despite a lack of system interoperability, which would intuitively seem to be a major obstacle to adoption. After all, other text communications technologies like e-mail and SMS benefit from being interoperable. For teenagers, peer pressure is a major catalyst in IM adoption, and helps overcome the problems that a lack of interoperability initially presents.

Among our participants, IM communications are mostly restricted to one's "real space friends"—people who first met face-to-face in physical space settings such as school or summer camp. Technology adoption is best described as group-wise, similar to the discretionary, bottom-up pattern found with shared calendaring systems [9, 19]. A group of friends settles on a particular IM system while others in the social group are encouraged to join in, using the same system. P4, for instance, used one IM system with his college friends and a different IM system with his high school friends. He and his high school friends had collectively decided on one IM system, but when he arrived at college, another system was already dominant. Only P16 had found a technical solution to the problem of having friends that used different IM systems. He used Jabber, an interoperable IM client for MSN, Yahoo! and ICQ.

Our participants experienced high and sustained IM use because of a desire to conform to and increase socializing opportunities with their peers. For example as P6 explained, it was a matter of "be on or be out." Another, P5, offered that she started using it "because all my friends were talking, and I didn't want to miss out." Peer pressure helped to achieve a critical mass of users within a social group, which in turn sustained long-term use [13]. Over time, claiming membership in a particular social group rested in part on the ability to participate in IM communications. IM use was also sustained by the desire to socialize and keep abreast of social event planning, as was similarly found in the case of SMS [8].

Participants reported being annoyed by IM non-users and complained of the inconvenience and additional work required to contact them. Moreover, non-users' lack of IM presence rendered them even somewhat invisible, or at least missing-in-action: one participant (P6) complained about not feeling like she knew where her friends were. Indeed, some participants felt that maintaining relationships with IM non-users was more difficult than with IM users.

Price performance also figured into adoption success for this population. Their IM clients were free. Moreover, the hardware and connection set up costs were absorbed by the "domestic infrastructure"—either the parents who bought the machines and paid for the Internet connection and/or a university that provides Internet connectivity in dorm rooms.

Limited financial resources coupled with a great desire to socialize meant that participants were sensitive to the relative costs of all technologies they used or could use. They also actively sought solutions that maximized their communication opportunities while conserving money. This was made especially clear by those participants who used a dial-up connection to IM. Participants knew that for the cost of a local call to an Internet service provider, they could communicate with several of their long-distance as well as local friends via IM. Choosing IM over the telephone, then, is not just determined by its conversational affordances, as media richness theory [6] would predict [11]. Rather, constraints faced by its users, including price performance concerns, limited social congregation opportunities and a desire to create private conversational

spaces, (which we discuss later in the paper), figured in to the decision to use IM.

Email was reported as serving different purposes than IM, consistent with other experiences around IM media choice [15, 21]. All participants had email accounts they checked regularly. In fact, email was often used to coordinate IM sessions with others, but did not replace IM. Participants described email as having more “formal” purposes, such as college application submissions and communications with teachers. Among this population, email was used for communications that require careful thought and time to compose and spell-check, even over the course of multiple days.

In addition to IM and email, the British participants used Short Message System (SMS), a nearly instant text messaging service for mobile phones. (Only half of the US teens owned a mobile phone and none of them used SMS). These teenagers felt obligated to monitor their incoming SMS messages all the time [8, 25], even while using IM on a desktop machine. This again illustrates how media choice is determined by several factors, including obligations to others to participate within a particular medium, a function of critical mass [11] that is in turn is a function of group membership assertion.

IM Cohorts

For most participants, their IM peer group reflected their real space relationships. For high schoolers, the most active IM social groups mirrored those at school. Some of the high school students also reported having contact with distant friends they had either met during vacations or at former schools. The use of IM to maintain real space relationships with distant friends was even more pronounced with college teenagers.

College students living away from home also used IM as a way to maintain ties with their families, as Nardi et al. also found among office workers [15], and, in some cases, were the evangelists that encouraged their families to adopt IM. P15 reported making a special point of regularly IMing her parents and siblings to reinforce their use.

Participants reported that they did not use the public IM chat rooms. A number of participants observed that the chat in these rooms was a “waste of time” because the quality of the content in public chat rooms was extremely poor. However, some participants did have one-on-one chats with strangers. P8 observed that he usually did this when his friends were not on-line. P4, P8, and P16 each reported talking with strangers but used other chat technologies to do so, gravitating towards systems with public chat organized around defined topics. Specifically, P4 and P16 used IRC, and P8 used Aimster, a combined music-sharing and IM client, to share and discuss music with like-minded strangers, a practice consistent with Brown et al’s [3] findings that people who share music on-line also like to talk about it with potential recipients.

These observations suggest that IM might be conceptualized differently by users than preceding chat technologies. We hypothesize that IRC, MUDs and MOOs are conceptualized as “destinations,” with users knowing

where to congregate with like-minded people. IM, on the other hand, appears to be conceptualized more neutrally as a general communications tool for reaching known others but without the constraints of keeping to particular topics, much like the telephone or email.

Social Congregation: Means and Purpose

Participants explained that IM allows them to converse with friends outside the places and times that socializing is traditionally permitted. IM also made congregating with multiple people in such places and times easier than telephones permitted, simplifying their coordination and planning processes.

Study participants, particularly those in high school, explained that they “needed” to use IM to talk with peers after school, with some claiming that they had too limited social time during school hours. As P5 explained, the trend in her school district was to start and finish school early, with very short breaks in between. Many of the participants had structured activities scheduled in the afternoon, leaving, they felt, too little time to converse face-to-face.

How did peers congregate using IM? One way was to send out IM system-generated invitations to join in a chat session. Some also reported talking about IM at school, making arrangements to meet on-line later. Some participants reported asking their friends to “IM me” after school. This integration of technology references into everyday speech was also found in studies of shared calendar use, where users would use a specific calendar software name to instruct others to “Schedule Plus me,” for example [18]. This language use then re-asserts technology use within the social group, a reciprocal process Giddens calls “structuration,” a concept Orlikowski in turn applies to information technology use phenomena [7, 17].

Additionally, as best as the interview data could indicate, it appeared that the participants developed expectations for when they could find their friends on-line. These times varied, but they had enough local cultural and personal knowledge about their friends to make educated guesses. They employed cultural knowledge about events and activities in which their friends would be involved, such as watching a popular television show. Personal knowledge of friends’ schedules, such as extra-curricular activities and domestic rhythms of their homes, were also calculated into decisions about when to go on-line.

Times for IM use were different for the high school- and college-aged teens. For high school teens, use of IM commenced after school, a time of reduced resource contention for those who shared computers or Internet access with other family members; later in the evening, computer access often had to be negotiated with family members. Logging on immediately after school also offered continuity to the day’s events, the primary topic of conversation. Even when high school teens owned their own computer and had their own connection (P9-14), computer time still had to be balanced against other family activities. The college students, all of whom had dedicated computers and continuous Internet connectivity, had less

predictable schedules, leading to an IM pattern of use where participants reported simply leaving IM windows up for particular friends, adding to the conversation every now and again.

Three primary activities characterize teenage IM communications: informal talk or socializing, event planning, and schoolwork collaboration, any or all of which might occur in a single IM conversation (similar uses have also been reported in [12]). IM communication for both teens living at home and at college can be broadly described this way, although the nature of their engagement with these concerns varies with the degree to which school activities overlap with peers and degree of personal autonomy. We highlight some of these differences here, but explore the factors that explain the differences more deeply in the Discussion.

Socializing

Participants explained that informal conversation—everyday chitchat—was the primary use of IM. Unlike Usenet Newsgroup or even most IRC chat, the conversation was not dominated by specific topics. Since IM peers knew each other in real space, and often shared school experiences, the nature of their conversation was reported to be much like what they have in real space: reflections on the day's events, gossip about others including what clothes were worn and who was seeing whom, and so forth. Another category of IM chat among this age group that has been reported elsewhere is “chatting up” or flirting and even breaking up with boyfriends and girlfriends [12, 21].

We found differences between the college and high school students in the reported nature of the talk. Because the college teens no longer shared as many of their daily activities with their friends due, in part, to different class schedules, accounts of personal daily experiences tended to be shared as news updates, rather than as rapid-fire, gossipy exchange. It would appear that as people develop more autonomy, the nature of the conversation with their peers changes.

Event Planning

Social congregation enabled by IM systems also involved event planning, such as meeting others for shopping, seeing a movie, and so forth. The younger the teen, the less spontaneously and independently they could engage in such social activities, in large part because of access to transportation, as well as because of their own family's internal rules and obligations. For this sub-population of teens, IM was surprisingly efficient at enabling multiple people to coordinate around these numerous constraints all at once, coordination that was once subject to multiple iterations of dyadic telephone conversations until appropriate arrangements for all could be met. As P5 explained, making arrangements by phone “took forever to get it sorted out.”

IM removed some of the complexity in many-person coordination. Participants described instances where friends proposed a plan together in a group chat session, sometimes accompanied by simultaneous use of the WWW to gather relevant information, such as film start times.

After leaving the computer briefly to request parental permission and transportation to the meeting location, they described rejoining the conversation and either confirming or revising plans until everyone's criteria had been met.

The older teenagers in college did not have the same constraints, and this was reflected in the nature of their IM conversations. A much more salient use for these users was spontaneous event planning, similar to the informal planning use reported by Nardi et al [15]. Because of their greater autonomy, college students were able to exploit the immediacy of IM to issue spontaneous invitations to meet for coffee, for example, to friends who also had few constraints imposed by others.

Schoolwork Collaboration

All participants reported using IM for some kind of homework support. This use of IM seemed to increase with age, with the younger teenagers valuing camaraderie while working on homework, and older teenagers either actively preparing for or already in college wanting to coordinate with friends on-line to ultimately improve course grades.

The older school teens reported using IM for a number of different types of school activities. P9-P14, who all attended the same school, described using IM to discuss course readings. P14 also reported using the text-based properties of IM to practice writing French by having French-only conversations with school friends.

The growing shift from using IM as primarily a social medium to one that incorporates discussion of work activities culminated at college age for our participants. Entirely responsible for their own schedules, commitments, and schoolwork, the college students reported using IM in ways that resemble the IM practice of office workers. For example, P15 explained that she used IM to schedule face-to-face meetings with a group of people who were working together on a course assignment.

Finally, one of the college-age teenagers was using IM as a teaching tool. P4 worked as a teaching assistant for an undergraduate college class, advertising the times he would be available on IM to discuss programming problems with students. (Anecdotal reports also suggest that adult teachers are experimenting with IM as a medium to field questions from students.)

Multitasking

All participants reported that they regularly used IM while engaging in some other computer-based activity, such as completing schoolwork, web surfing and emailing. Multitasking across several applications is a common feature of use across populations of users, as demonstrated by the findings of Lenhart et al [12] and Nardi et al [15].

Participants also reported engaging in concurrent IM conversations. Some participants reported that they would often be involved in a central group conversation while concurrently engaging in multiple, side one-on-one conversations, often with the some of the same people involved in the group conversation. These side

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