Mediated Communication Between Extended Family and Friends: A Case Study

Emilee Patrick and Crysta J. Metcalf
Applications Research, Motorola Labs
1301 E. Algonquin Rd. MD IL02/2230
Schaumburg, IL 60640 USA
[epatrick , crystam]@labs.mot.com

ABSTRACT
The social science literature describes in detail communication among nuclear family members within a single household; however, there is a surprising lack of information available about how people use communication media to keep in touch with extended family members and friends living outside their household. This paper describes a field study that was conducted to identify communication breakdowns between people who maintain relationships without seeing each other on a daily basis. "Rapid ethnography" methods were used to collect data from six households who participated in the month-long study. Findings describe the use of media from greeting cards to instant messaging, and underscore the impact of face-to-face contact on the frequency and intimacy of communication events. Implications for designing communication technology for the home are discussed.

Keywords
Mediated family communication, rapid ethnography, qualitative research

INTRODUCTION

Technology-Mediated Communication

People communicate with each other not only to request and share information and coordinate activities, but also to establish and maintain social relationships [3,16]. Planning and carrying out the behavioral interactions upon which relationships are built requires an investment of time and energy that can be significant, and the frequency and intensity of these exchanges predicts how "close" a relationship is [2]. Berg and Clark [1] define "closeness" between two people as the degree to which their behaviors are interdependent, and asserts that they make decisions about whether or not their relationship will be close based on factors such as the perception of the other person's availability, responsiveness to past actions, and concern for their needs.

A variety of communication media have been invented to assist in the task of maintaining relationships with others over distance and across household boundaries. From handwritten letters, to the telegraph and telephone, to email and instant messaging, new technology has changed the way people communicate in ways that were sometimes unforeseen by it's creators. For example, when the telephone was developed it was marketed not as a tool for social interaction, but as a vehicle for information and entertainment [11]. The first purchasers of telephones reported buying them for safety or business reasons, similar to the non-social reasons given today by first-time cellular phone purchasers [15].

The Internet, created as a means for scientists to share data and research results, is increasingly being appropriated as a channel for mediated social exchange [11] (by "mediated" we mean communication that is not face-to-face, and is instead transmitted through a medium such as the telephone or email). Use of new communication technology like the Internet does not become pervasive until it becomes inexpensive enough to buy and simple enough to operate that critical mass can be reached. That is, people interested in using the communication technology have enough others with whom they can communicate that it becomes worth their while to go through the effort required to get connected [12]. Survey results suggest that this is happening right now with the Internet in the United States. In the first half of 2000, 46.9% of Americans had Internet access at home, and 76% of email users checked their email at least once a day [5]. According to another recent survey, 59% of those who use email to keep in touch with a family member they don't see every day say that they communicate more often with that person since starting to use email, and 60% of those who email a friend they don't see, say the same thing [10].

While the fact that people check their email from home daily and report using it to keep in touch with friends and family is an indication that they find it useful in some way, Cummings et al. [6] argues that computer mediated communication is less adequate than telephone or in-person conversations for "building and sustaining close social relationships". Evolutionary psychologist Robin

Dunbar agrees, saying that nonverbal, physiological cues like facial expressions and gestures that are essential for listeners to be able to make sense of the intention behind a speaker's words are not transmitted via email [7].

Communication Technology at Home

New technology (like the personal computer) is increasingly being incorporated into the social context of the home [17]. In fact, media and technology have become a pervasive part of family life in the United States. In a survey of 1300 families, 46.3% of US households had access to a TV, VCR, video game equipment, and a personal computer. Less than 1% had no electronic media at all [18]. And while homes as well as workplaces may be technology-rich environments, buying decisions made by home consumers involve the consideration of different factors (such as aesthetics and self-image) than the traditional productivity concerns of business consumers [8,9].

Venkatesh [17] advises that when a new technology is introduced into the home environment its capabilities and how people will use it can be extremely different, and that those interested in inventing the next new communication medium should first take time to understand the "intersection of the social space and the technological space" within the home. To gain this understanding, researchers must go into people's homes to collect data, because it is only there that we may identify the minute details of people's lives that influence how they currently use communication technology.

Despite the importance and utility of research investigating technology, media use and communication in homes, the literature is noticeably lacking in explorations of the impact of technology on family communication. Only 14 papers about families and media have been published in communication journals since 1990, as catalogued by the Social Science Abstract Index [18]. The Human-Computer Interaction literature contains a great deal more information about workplace communication than communication technology use at home [8]. Existing studies of media use in the home tend to heavily emphasize television; for example, Bryant & Bryant [4] discuss the symbiotic relationship US families have with their television sets, and provide survey results describing changes television viewing, programming, and advertising over the years. Studies like these are interesting, but have little to contribute to the understanding of communication media in the home. Other studies take a broad approach to studying technology and home life: Mateas et al. [13] sought to understand a "typical day" in participants' homes through videotaping and analyzing home visits and ethnographic interviews, and in a study designed to "[scope] issues related to the delivery of digital interactive services to the home environment", O'Brien, et al. [14] used ethnographic methods to uncover details of everyday life in order to quickly inform design and development activities. Finally, the Casablanca project worked for several years to develop prototype "household social communication devices", incorporating both field research and consumer testing [9].

This paper discusses a field study designed to fill gaps in the existing literature by examining "inter-household" communication, to uncover communication breakdowns between family members and friends who maintain relationships without seeing each other on a daily basis. Data was collected from six households using several "rapid ethnography" techniques. Unlike previous work, this study did not attempt to gather data on all aspects of home life; rather, specific details relating to communication and communication media were targeted as useful for the design of new communication technology for the home. Findings both support and augment previous work.

METHOD

Participants

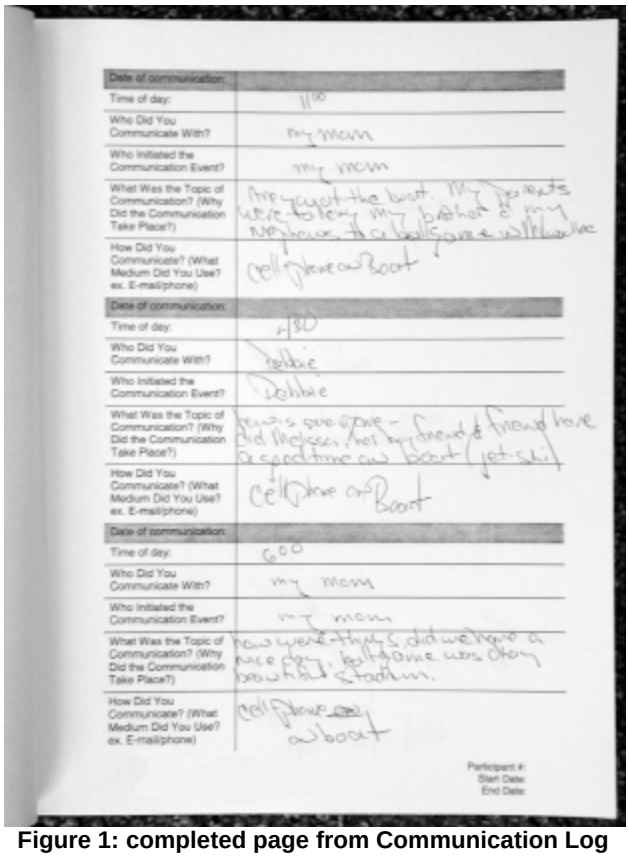
A total of six households (nuclear families living in the same dwelling), all from the same region of the United States, participated in this study. One member of each household was considered the main participant in the study, although in many cases data was collected from other members of the household as well. To be eligible for the study, the main participant in each household was required to have regular contact (3-4 communications per week) with one family member or friend they did not see every day. In addition, they were required to have less frequent contact (1-2 communications per week) with two to three additional extended family members or close friends.

The six households were recruited as follows: three "primary households" were recruited from a market research database of people willing to participate in studies such as this. The main contact in each primary household identified a "secondary household" for participation in the study – a household willing and available to take part in the study and with whom they communicated frequently (3-4 times per week). Informed consent was obtained from participants and their family members prior to data collection, and participants received adequate monetary compensation for their time.

Data Collection Tools

A number of data collection tools and procedures were used to gather "real-world," contextual data about mediated communication between family and friends, in order to guide early stages of technology design and development. (See O'Brien et al. [14] for a description of the use of this type of methodology in new product innovation.)

- *Photo Scrapbook:* disposable cameras were provided to "primary household" participants and their families, who were instructed to take photographs over a period of 5 days showing tools, artifacts, locations, events…



Date of communication:	
Time of day:	11:00
Who Did You Communicate With?	my mom
Who Initiated the Communication Event?	my mom
What Was the Topic of Communication? (Why Did the Communication Take Place?)	[illegible]
How Did You Communicate? (What Medium Did You Use? ex. E-mail/phone)	cell phone on boat
Date of communication:	
Time of day:	4:30
Who Did You Communicate With?	debbie
Who Initiated the Communication Event?	debbie
What Was the Topic of Communication? (Why Did the Communication Take Place?)	[illegible]
How Did You Communicate? (What Medium Did You Use? ex. E-mail/phone)	cell phone on Boat
Date of communication:	
Time of day:	6:00
Who Did You Communicate With?	my mom
Who Initiated the Communication Event?	my mom
What Was the Topic of Communication? (Why Did the Communication Take Place?)	[illegible]
How Did You Communicate? (What Medium Did You Use? ex. E-mail/phone)	cell phone on boat

Participant #:
Start Date:
End Date:

Figure 1: completed page from Communication Log

anything they could think of involving mediated communication with family and friends.

- *Communication Log:* for a period of 10 days, participants were instructed to enter information into a written log each time they finished a phone call, email, chat session, writing a letter, etc., with a family member or friend not living in their household. Log entries included the time of day, who they communicated with, what medium was used, and what they communicated about (see Figure 1, above).
- *Voicemail Journal:* at the end of each day during the 10-day logging period, participants called a voicemail telephone number to describe the day's communication events in greater detail, including additional information such as what room the communication event took place in and who else was in the room (based on a procedure developed by Palen et al. [15]). This data was used to help participants get back into the context of specific communication events during a later interview.
- *Home Tour:* "primary household" participants took researchers on a guided tour of their homes in order to describe the areas that were frequently used for communication, and to explain how they used these areas and the communication devices in them. Some participants were also observed while using the computer.
- *Ethnographic Interviews:* "primary households" participated in three home visits. "Secondary households" participated in one home visit and one telephone interview (with one exception who was visited in her home twice). Questions during these visits and interviews ranged from specific "who and where" details about participants' social networks, to queries designed to come as close as possible to observation by eliciting details about the mechanics of communication events as well as descriptions and explanations of the overall communication experience.

Procedure

The initial contact with participants was a visit to their homes to explain the study, obtain informed consent, and collect data about their communication partners (especially names and locations). All participants were provided with instructions for the Communication Log and Voicemail Journal, and began logging communication events 3-5 days after the initial contact. Logging continued for a period of 10 days. Additionally, "primary household" participants were provided with disposable cameras and instructions for completing the Photo Scrapbook, which was completed over a period of five days immediately following the initial contact.

After having the photos developed, researchers returned to "primary households" for a description of the photographs and an explanation of the circumstances in which they were taken. The Home Tour also took place on this visit, and completed Communication Logs were picked up at this time. ("Secondary households returned their Communication Logs by mail.)

Finally, ethnographic interviews based on log and voice mail data were conducted with both "primary" and "secondary" households to facilitate the detailed description of participants' recent communication events. These interviews were also used to collect information about why the participants choose to communicate in certain ways and their perceptions of communication media.

Researchers conducted a total of 15 visits and interviews: 3 with each primary household, and 2 with each secondary household. Home tours were videotaped, and all interviews were audiotaped. Over 22 hours of interview were recorded, and transcripts of interviews, log books and voice mail resulted in over 300 pages of raw data. A multidisciplinary team including software engineers and product designers as well as field researchers collaborated to analyze the data through building an affinity diagram – an inductive tool for consolidating large amounts of information and extracting themes and broad categories (see Figure 2, above). The affinity diagram was created by combining raw transcript data with observations and insights from the home visits in new ways, to reveal commonalities. The triangulation of different viewpoints and perspectives resulting from the multidisciplinary aspect of the team was an important

part of the analysis, as it increased the reliability of the findings.

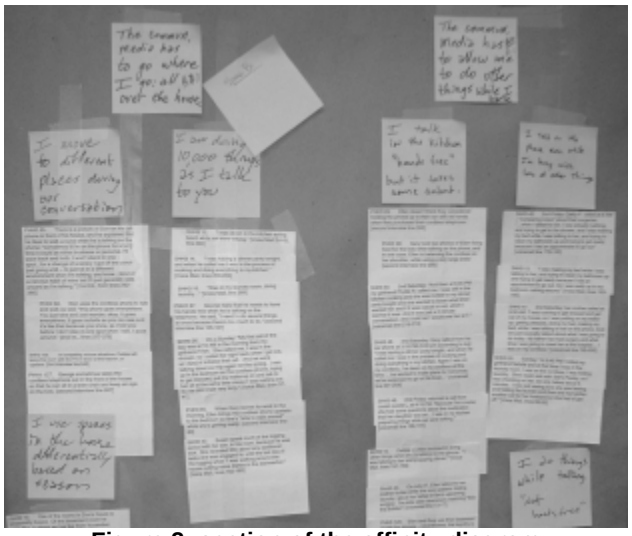


Figure 2: section of the affinity diagram

FINDINGS

For participants in this study, communication with family and friends was squeezed into the cracks of their normal routine. The communication media they used had to be flexible because they had many things to do in a limited amount of time. The telephone, a very flexible medium, dominated communication events recorded by all six households. In the voice mail and logs our participants recorded doing a number of other things while they talked on the phone. In fact, most participants did things that required both their attention and their hands while they talked on the phone: from giving babies baths, to making dinner, to cleaning the floor, to watering plants, to doing laundry or putting on make-up and making the bed (see Figure 3, below).

Communication events themselves were also flexible, fitting in to the hectic nature of participants' home environments. The mother of 2 small children in "primary household" 3 (PH3) probably said it best: "The kids don't understand when the phone rings…you just gotta keep going with them whatever you're doing…try and fit the phone in." (PH3 interview two). Even for households with grown children like "secondary household" 3 (SH3), engaging in multiple activities at once was often a consequence of having limited time for communicating: "I was rushing to get dressed and get out of my house, so I was putting on my make-up, getting dressed, doing my hair, making my bed, while I was talking to her on the phone," (SH3 interview two). This finding supports the observation in O'Brien et al. [14] that family activities are spread throughout the home. Even when there was no "thing" to do, most of the people in our study found something to do other than simply talking on the phone. For example, most of our participants at some point reported watching TV while talking to someone.

Not only were our participants "doing," while talking, they were "moving" while talking. One participant talked about his restless behavior: "I'll pace back and forth. I won't stand in one spot…I'll just generally walk around as I'm talking," (PH2 interview two). In fact, many participants referred to carrying their cordless phone with them as they moved from room to room in the house: "I bring it [cordless phone] up[stairs] so if I hear it in the shower I could pick it up," (PH3 interview two). And: "I like the mobility. I don't like to be in one place," (PH1 interview two). Participants even took the phone outside – members of PH1 and SH1 talked about going outside when they talked on their cordless home phone, sitting down on the front stoop, or in the driveway. This change of location while talking sometimes resulted in the communication media getting lost: "It's always someplace else…So he's lookin' around, lookin' around, lookin' around..." (PH1 interview two).

Participants in this study seemed to have three main purposes for communicating: exchange of purposive information that is unambiguous and goal-oriented, exchange of intimate personal information or casual conversation that builds and maintains social relationships, and imparting behavioral directives that serve as social sanctions.

The type of goal-oriented exchange of information that was most common related to planning visits or get-togethers. Every household engaged in this type of communication activity: "She knew we were going camping this weekend and wanted to know if her family could join us," (SH2, voicemail). Another common activity was exchanging information that helped one or the other party with a particular task: "I sent him some chapters of my book," (PH1 interview three). However, even these seemingly task-oriented communications possessed elements of maintaining social bonds, through the visits that were being planned or because more than just technical information was being exchanged: "When I asked her for the recipe she said that everyone likes the dip…I was writing it down as she was telling me, and

Figure 3: 'multitasking' while on the telephone

asking questions about how it was supposed to look and what to serve with it," (SH3 interview two).

Many communication events recorded during the study period were about "connecting," in a relational sense, with the communication partner. Participants used both "high intensity" communications and "low intensity" communications to make this "connection" and maintain social bonds. "High intensity" communications take time, thought, and concentration; for example, communications that convey emotional support in times of crisis: "Valerie's my best friend. I've known her since I was 18 and she lives in Tucson, and she's going through a horrible time with her son. So it's just horrible, so that's what all those…I mean all the phone calls are about that," (SH3 interview two). "Low intensity" communications take little time, thought, or concentration, such as forwarding an e-mail joke or "gossiping" about a mutual friend.

While "chit-chat" was de-emphasized by the participants during interviews, log and voicemail data show that it was used often as a means of connecting with others. For example, this type of conversation was repeatedly dismissed by one participant who used the word "just" to qualify her statements: "…it was just nothing, you know, nothing talk," (SH3 interview two), even though she engaged in this kind of low intensity communication on a regular basis. A male participant who dismissed chit-chat as "girl-talk" used a form of computer mediated chat while playing backgammon on-line. He simply did not think of this activity as "chat." Similarly, the form of "chat" his wife used while exchanging music files with people online was not viewed in the same light as going to a "chat room" for the express purpose of having a conversation (PH3 interview two).

As relationships became more diffuse, frequency of communication declined: "out of sight, out of mind," said one participant of formerly close friends who moved away and with whom he has now lost touch (PH3 interview three). Distance was a barrier to "closeness". This supports the assertion by Berg & Clark [1] that the degree of interdependence between two people is a determinant of the closeness of their relationship. Participants seemed to use communication technology most often with the people they frequently spent time with in person. The ability to physically get together ("visit" or "see" each other), then, seemed to be correlated with more frequent communication media use. This held true even when people did not live in the same community but still met from time to time (friends and family of PH1 and PH3), or did not live in the same state and still got together (SH3 and a friend 800 miles away). Furthermore, PH3 demonstrated this trend in reverse when a friend who had moved away several years ago reappeared suddenly during the study period (PH3 interview three).

In conjunction with using communication media to maintain social bonds, participants in this study used mediated communication events to convey explicit information about social obligations. The mother of the main participant in SH3 expected a phone call every day, and was not shy about communicating that via a reminder phone call: "I talk to her every day. Heaven forbid I shouldn't…if I don't, then I get the call – Why haven't you called," (SH3 interview two). PH2 and SH2 were part of a family that had obligatory events. If someone in the family planned not to attend one of these events, they were required to produce a good excuse for their siblings, who made it a point to call: "there's a baby's birthday party – my nephew's…everybody's going, and I got the phone calls – Why aren't you going?" (SH2 interview two).

Communication media were not only used to convey social obligation. Mediated communication was used to fulfill social obligation as well. Most participants had at least one person in their lives to whom they made "obligatory" phone calls or visits. For most, this obligatory call or visit was to their mother (or father). SH3 also felt obligated to call people she had not talked to in a while, or who were sick. Sometimes the feeling of obligation to communicate and the desire to communicate were aligned, as in PH3 where the main participant was expected to communicate with her mother, but also enjoyed those communications. This alignment was not always the case, however: SH3 disliked her mother-in-law and yet felt obligated to call her.

Finally, most participants had at least one person in their life that they did not want to talk to, or wanted to screen out much of the time. While the concept of privacy has been much addressed in the literature, most of the discussion has to do with maintaining privacy from strangers. All households in this study but one mentioned someone they knew who initiated communication, but was someone with whom the participants would rather not communicate. During analysis sessions this phenomenon was lightheartedly termed the "mother-in-law effect" because in all but two households, one person participants wanted to screen out was their mother-in-law.

Participants attempted to manage other peoples' access to the household or to themselves through monitoring the media (caller ID and privacy manager), and avoidance techniques: "My husband gets on me just to at least call her once a week, but I have a hard time with her, so it's difficult for me...I guess I should call. But I'll get to it," (SH3 interview 2). Participants were motivated to limit others' access to themselves and their households to varying degrees, based on circumstances surrounding the communication and the identity of the people who were attempting to engage them in communication. They wanted to know and control who gained access to their homes, and tried to limit communication with people they

did not like, or limit communications events they perceived painful or annoying.

DISCUSSION

As stated previously, this field study was designed to collect data that would support efforts to design new communication technology for the home. A large amount of rich, detailed information was collected from six households located in one geographic area of the United States. Several interesting implications emerge from the findings of this study, and future research should include efforts to discover whether or not these trends hold for more diverse populations.

Implication #1: Physical Constraints

Photo Scrapbook and Communication Log data reinforce what participants said in interviews: they consistently do other things that draw their attention away from telephone conversations. Activities concurrent with phone conversations ranged from watching television, to preparing dinner while pinning the phone between ear and shoulder. Not only do participants 'multitask' to fit in all the things they need to do in their busy day, but they also move from room to room while on the telephone, and even outside the house.

The telephone was the most frequently used communication medium in this study, but participants also recorded using email and instant messaging, and spoke about sending letters and cards. Communication by email and instant messaging was necessarily tied to the room where the computer was located. This caused problems for one household, in which conflict existed over taking turns on the computer. The father and teenage daughter spoke about "stealing" the other's turn when they had to get up to go to the bathroom.

While participants did not indicate that they wished to move around while composing email messages, they expressed a clear preference for cordless telephones over corded phones. The home is different from the workplace in this respect. At work, people generally do not wander in and out of the building while placing telephone calls, and the things they do while talking on the phone do not include folding laundry or bathing their children (although they do sometimes work on the computer while carrying on a conversation).

Any new technology developed for home use should either take into account the desire for mobility and the range of activities people conduct while communicating or reflect a clear, justifiable reason for not doing so.

Implication #2: Goal-Oriented Communication

Participants in this study on many occasions engaged in goal-oriented communication, which involved the exchange of information or the planning and coordination of a future meeting or event – conversations like "hey, I'm on my way" or "are you free this weekend" or "who is picking the book up from the printer" or "here's a recipe for you." The telephone and email were appropriate media for undertaking these relatively brief, targeted communications that had a specific starting point and end point. At times these media were also useful for "low-intensity" communications intended to convey attention and interest in continuing the relationship, while at the same time requiring little time and effort. For example, forwarding a joke over email served this social purpose for participants in this study.

Because the telephone seemed in this study to be so well suited to brief, direct exchanges of information, it would be unwise to develop new communication media that attempt to replace the telephone while excluding this functionality. For example, any new technology making it more difficult to initiate a communication event than simply picking up a telephone handset would probably not be used by people for this type of exchange. Additionally, data in this study suggest possible improvements to the telephone's ability to support conversations in which conveying information is the primary purpose, specifically in cases where information needs to be written down or where more than two parties need to be involved in the conversation.

Implication #3: Communication for Shared Experience

Participants in this study recorded multiple instances where their attention was divided between a telephone conversation and something they were doing simultaneously, whether it was watching whatever was on TV, or washing the dishes while the person on the other end of the line continued talking, unaware of activities going on at the other location.

In addition, one participant had virtually the same conversation several times with one friend who was going through a crisis; another talked to her mother more than four times every day. These findings indicate that the content or information exchanged was not always the most important aspect of a communication event; rather, the telephone call or greeting card or email message was an expression of interest in the relationship that sometimes inspired a decision to reciprocate.

As other researchers have found, "face time" breeds closeness, more so than in mediated communication events. People who live in the same household are close almost by definition – they certainly share some common experiences. Keeping in touch with people far away is a different undertaking because a great deal more effort is required to have common experiences, which breed the "interdependence" that Berg & Clark [1] refer to as an indication of closeness. People's decisions about whether or not to put effort into a long-distance relationship hinge on the effort expended by the other party involved, or, more accurately, their perception of the effort of the other party [1].

Participants in this study seemed to accept this as a fact of life. They expressed regret over losing touch with those they cared about, but did not go to the extraordinary lengths required to maintain strong ties with distant friends and family. Not only is it hard for them to make

time to reiterate the events of their lives during communications with separate people, but also with the telephone it is much harder to send and receive essential nonverbal information that communicates interest to the other person in these exchanges.

There is certainly opportunity for the future design of communication technology to repair some of these breakdowns. A greater emphasis on supporting shared experience instead of purely exchanging information might help people preserve relationships that are currently too costly, in terms of time and effort, to maintain over long distances.

Implication #4: Controlling Availability

The data contains many instances where participants exercised control over their availability through communication media; they decided when they were available and for whom, and took actions to either grant or block access. Nearly every participant had at least one person they did not want to talk to or see, or recorded occasions when they explicitly made themselves unavailable or cut a conversation short. These data show that privacy, in the sense of "controlling availability" and not necessarily "protecting information", was important.

Existing technology such as "privacy manager" (a service provided by the local telephone company requiring unfamiliar callers to identify themselves before their call is connected) and caller ID helped participants make informed decisions about when to make themselves available. However, there are times when the technology does not provide adequate feedback for either party to make this decision. In cases where a glance at the caller ID motivated someone to not answer the phone, the initiating party has no idea if the person they were trying to reach was in the shower, or really didn't want to talk to them. One participant in particular expressed resentment at being involved in three-way calls by her mother-in-law; it seemed like she would like to avoid these situations if it were possible. Technology should give people timely information about an imminent communication event, and control over whether or not to become involved.

Implication #5: Controlling Communication "Fidelity"

An interesting finding in this study was that participants used communication media to fulfill social obligations with family members and a few friends, and to impart social sanctions for an unacceptably low level of contact. For example, daily telephone calls to an elderly parent were sometimes regarded as a social obligation, and if the call did not take place when it was supposed to there were definite social repercussions. Interestingly, in general these repercussions came in the form of telephone calls themselves. One participant talked about getting her daily phone call to her mother "out of the way" at a time that was convenient, within the constraints of her schedule for the day. Another participant screened his calls to avoid a fight with his sister that he knew was coming after talking with a different sibling.

Participants seemed to regard obligations like this as unpleasant tasks and used communication media that allowed them to communicate at their convenience, in a way that afforded them more control over the situation. It is important for communication technology to support varying levels of "fidelity" for different kinds of situations. While the lack of purely observational data in this study prevents definitive conclusions from being drawn as to why people chose to use different media in different situations, it was clear that these choices were being made (sometimes explicitly, other times implicitly). This suggests future work to uncover the motivation behind these choices, and also that attention should be given to the type of interaction a new medium is best suited to support.

CONCLUSION

Communication media in the home is used to exchange information, coordinate events, and to create and maintain relationships. Previous work suggests that a new medium for communication, the Internet, is being rapidly incorporated into the home environment. However, little recent research has examined the way even a ubiquitous communication technology like the telephone is used to keep in touch with family and friends living outside one's household. The homespace is vastly different from the workspace, with different motivations for communicating and different styles of communication, so what is known about work-based communication may not pertain to communication in the home. It is therefore important to consider current everyday practice when attempting to create new ways for people separated by distance to keep in touch.

The most striking implication from this study is that communication for shared experience, so important in maintaining distance relationships, is not adequately supported by the communication media available today. Reinforcement of these mediated relationships currently takes place through seeing each other, participating in events together, and engaging in common activities and interests. It is clear that people need better reinforcement of "closeness" to maintain mediated relationships, but what form should that reinforcement take? Further research in a variety of disciplines is required to explore the many different facets of this problem.

REFERENCES

1. Berg, J.H. and Clark, M.S. (1986). Differences in Social Exchange Between Intimate and Other Relationships: Gradually Evolving or Quickly Apparent? in *Friendship and Social Interaction*, Derlega, V.J. and Winstead, B.A., Editors. Springer-Verlag: New York, NY. 101-128.
2. Boneva, B., Kraut, R. and D., F. (In press). Using E-mail for Personal Relationships: The Difference Gender Makes. *American Behavioral Scientist Special issue on The Internet and Everyday Life*. Available online:

http://homenet.andrew.cmu.edu/progress/abs-submitted-10.pdf

3. Bonvillain, Nancy. *Language, Culture, and Communication: The Meaning of Messages*. Prentice Hall, Englewood Cliffs NJ, 1993.
4. Bryant, J.A. and Bryant, J. (2001). Living with an Invisible Family Medium. *J. of Mundane Behavior, 2*, 1. Available online: http://www.mundanebehavior.org /issues/v2n1/bryants.htm
5. Cole, J. (2000). Surveying the Digital Future: The UCLA Internet Report. Available online: http://www.ccp.ucla.edu/ucla-internet.pdf
6. Cummings, J., Butler, B. and Kraut, R. (In press). The quality of online social relationships. *Comm. of the ACM*. Available online: http://homenet.andrew.cmu.edu /progress/acm-trust-submitted.pdf
7. Dunbar, R. (1999). Social perspectives: getting the message. *interactions, 6*, 6, 20 - 25.
8. Hindus, D. (1999). The Importance of Homes in Technology Research. In the *Proceedings of the Second International Workshop on Cooperative Buildings (CoBuild'99).* Pittsburgh, PA USA. Available online: http://www.debbyhindus.com/documents/Hindus-CoBuild99.pdf
9. Hindus, D., Mainwaring, S.D., Leduc, N., Hagström, A.E. and Bayley, O. (2001). Casablanca: designing social communication devices for the home. In the *Proceedings of the ACM Conference on human factors in computing systems (CHI '01).* Seattle, WA USA.
10. Howard, P., Rainie, L. and Jones, S. (2001). Days and Nights on the Internet: The Impact of a Diffusing Technology. *American Behavioral Scientist, 45*. Available online: http://www.pewinternet.org/papers/ paper.asp?paper=7
11. Kraut, R., Mukhopadhyay, T., Szczypula, J., Kiesler, S. and Scherlis, W. (1999). Information and Communication: Alternative Uses of the Internet in Households. *Information Systems Research, 10*, 4, 287-303.
12. Markus, M.L. (1990). Towards a Critical Mass theory of Interactive Media, in *Organizations and communication technology*, Fulk, J. and Steinfeld, C., Editors. Sage Publications: London.
13. Mateas, M., Salvador, T., Scholtz, J. and Sorensen, D. (1996). Engineering ethnography in the home. In the *Proceedings of the ACM Conference on Human Factors and Computing Systems (CHI'96).* Vancouver, Canada.
14. O'Brien, J., Rodden, T., Rouncefield, M. and Hughes, J. (1999). At Home with the Technology: An Ethnographic Study of a Set-Top-Box Trial. *ACM Transactions on Computer-Human Interaction, 6*, 3, 282–308.
15. Palen, L., Salzman, M. and Youngs, E. (2000). Going Wireless: Behavior & Practice of New Mobile Phone Users. In the *Proceedings of CSCW'00*. Philadelphia, PA.
16. Trudgill, P. (1974). Sociolinguistics - Language and Society, in *Sociolinguistics: An Introduction to Language and Society*. Penguin Books: London. 13-33.
17. Venkatesh, A. (1996). Computers and other interactive technologies for the home. Com*munications of the ACM, 39*, 12, 47 - 54.
18. Wartella, E. and Jennings, N. (2001). New Members of the Family: The Digital Revolution in the Home. *Journal of Family Communication, 1*, 1, 59-70. Available online: http://www.catchword.com/erlbaum/15267431/v1n1/contp1-1.htm