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Keeping in touch: talking to older people about computers and communication

Anna Dickinson

School of Computing, University of Dundee

and

Robin Hill

HCRC, University of Edinburgh

adickinson@computing.dundee.ac.uk

ABSTRACT

Computer-based communication has tremendous potential to support older adults but if people are to use such systems autonomously it is necessary to move beyond current interfaces and systems and develop devices that fit into the environment of the user. Using a Grounded Theory approach, three focus groups were held and, subsequently, nine older adults (70-90) were interviewed about the ways in which they kept in touch with friends and relatives. Outcomes included dependence on the telephone as a way of communicating and a specific, supporting role for email, which was used with younger family members or those living abroad to enrich communication with brief, informal messages.

INTRODUCTION

Current computer-based communication is heavily influenced by standard Windows computer systems and by influential early work (see Hiltz & Kerr, 1982), although the technology has developed almost beyond recognition in the last 20 years. Email systems are normally based on legacy technologies, assuming previous knowledge, which has the effect of reducing usability for those unfamiliar with this background or those with no computing experience. Such systems act as a particular barrier to older people, who are unlikely to have experience of computer or internet use (ONS, 2006). Older people may, at the same time, be able to benefit hugely from the communicative potential offered by computer-based communication systems, which makes the

existence of such barriers very frustrating. Approaches that seek to understand the barriers facing older users of conventional email systems, or altering interface designs to support and facilitate use by older users (Hawthorn, 2003), tend to be tied to the assumptions of current email systems. Addressing the issue from the perspective of fitting the system to the environmental context in which it will be used is an alternative, and one which is likely to be more successful in encouraging longer term use by older people.

COMMUNICATION AND OLDER PEOPLE

Successful and regular communication has been demonstrated to have fundamental effects on the wellbeing of older people (Hummert, 1994). As we age, however, opportunities for communication can become less frequent: older people are more at risk of social isolation than younger ones through life events like widowhood, retirement and illness (Revenson, 1990). The segregation of older adults in dedicated retirement communities can reduce opportunities for communication, with institutionalisation having an especially negative effect (Kaakinin, 1992; Lubinski *et al.*, 1981).

Indeed, as a consequence of the physiological ageing process, high quality communication may become more difficult: hearing impairment, tooth loss and declines in short term memory all affect either receptive or expressive aspects of communication (Miura *et al.*, 2004) and people rate their own communication skills as declining over time (Ryan *et al.*, 1994). Some of the diseases associated with old age, for example a stroke, will also have a dramatic effect on the ease of communication.

While most older people will not, in fact, experience a noticeable functional decline in communicative ability, they may encounter a reduction in the quality of communication because of inappropriate “over accommodation” by younger people (Coupland *et al.*, 1988). A large body of research demonstrates significantly different responses to older conversation partners (Giles *et al.*, 1994; Ryan *et al*., 1994), with the extreme being “elderspeak” (Hummert, 1994), a patronizing

and superficial form of communication that has negative effects on the recipients' self-perception as well as their opportunities for enjoyable and meaningful communication.

Negative stereotyping in intergenerational communication is most commonly a problem with strangers: friends and family are more likely to communicate with the individual rather than the stereotype. However, close networks of family and friends are less common than in the past. Although being a grandparent is one of the few positive stereotypical roles for older people, the decline of the extended family means that grandparents are less likely to play a central role in their grandchildren's lives; there is evidence that grandparents do not have as much contact with their grandchildren as they would like (Harwood and Lin, 2000). Demographic changes and geographic mobility mean that older people are now less likely to live close to members of their extended family. Harwood and Lin (2000) report that grandparents associate geographical distance with infrequent and less meaningful contact with their grandchildren, and even when the relationship is strong, they regret the distance. These more widely distributed living patterns mean that people increasingly depend on distance communication, such as letters and telephone calls, rather than on face-to-face meetings to maintain family communication and relationships. These distance methods, which have a narrower bandwidth than face-to-face communication, can cause communication difficulties; for example, telephone calls can be frustrating if one of the participants is hearing impaired: the narrower bandwidth of a phone call removes visual cues to the topic of conversation (Shadden, 1988).

Computers and Communication

Computer-based communication for older people has the potential to overcome many of the barriers to quality communication: its use is minimally dependent on physical fitness; it can be used to communicate cheaply over distance; it allows various input/ output modalities which could ameliorate communication difficulties caused by hearing, visual or speech impairments; and there are possibilities for overcoming ageist stereotyping by presenting a neutral face. Mild memory impairments, such as difficulty remembering people's names (Cohen, 1994) or remembering to contact someone, could be reduced by inbuilt assistive software.

Yet there has been little research in this area and most communication systems remain inappropriate and difficult to use for the older section of the population. Exceptions include work by Czaja et al (1993) and Hawthorn (2003), both of whom have approached the issue from the perspective of interface design without seeking to fit the system into the environment of the user group. Focus on design is of central importance: a study at the University of Dundee found that, when using Microsoft Outlook Express, only 50% of older novice computer users could complete basic email tasks such as reading a received message and replying to it (Dickinson *et al.*, 2005). In large part, these difficulties stemmed from the inappropriate and unusable interface of the email system, and the large number of expectations its designers had made about the knowledge of the user group. However, as well as exploring the details of interface design it is important to develop contextual knowledge about the users for whom the system is being designed.

Research on assistive technologies amply demonstrates the potential pitfalls of introducing inappropriate technology to older clients (Reed, 2002), particularly because the stability of the home environment is of vital importance. Projects which introduce computers into homes for older adults often show an initial reaction of enthusiasm, followed by abandonment of the systems by all but the most able and experienced users, as the researchers withdraw their support for participants' computer use (see, for example, Namazi and McClintic, 2003; Straka and Clark, 2000) and yet, it is often the least capable who would benefit the most from ongoing use. If computer-based communication is going to be used and accepted, it must not only be usable but also support current patterns of communication wherever possible and fit into the environment in which the older person lives, enhancing existing methods rather than introducing radical paradigm shifts. An important first step, therefore, is to achieve an understanding of current communication patterns and to explore where computer-based technology could best fit into people's lives.

GROUNDED THEORY

Grounded Theory (Glaser & Strauss, 1967) is a qualitative field research approach in which the concepts and theories *emerge* from the research data: thus, instead of attempting to fit data to an existing theory or framework, the researcher sets out to collect data and, though a process of iterative coding and data gathering, to extract a framework (and ultimately a theory) from it. Grounded Theory recognises that the processes of data collection, coding and the identification of patterns of interest (categories) are largely simultaneous.

Glaser and Strauss intended the methodology to be used for the development of sociological theory, but its focus on the iterative approach and on the centrality of data rather than theory makes it a powerful tool for qualitative research in applied computing, particularly in this area, where the researcher is seeking to find a common language in which to discuss technology: interviews can be focused or directed according to emerging issues of interest or areas of possible disagreement. Grounded Theory has been used successfully to examine the attitudes of older people towards technology (White & Weatherall, 2000).

STUDY 1: METHOD

The first study involved focus group research with small groups of older adults attending an Age Concern day centre in Dundee. The clients of the centre were, in general, older old (80+), experiencing moderate to severe age-related impairment and often at some risk of social isolation. Their attendance at the centre was widely represented to the researcher as preventing isolation and loneliness, and the regularity with which this was expressed by those who attended perhaps indicated their anxiety about this risk.

Three short focus groups took place; in total, thirteen participants were involved. Probes included questions about communication, friends and family, and which communication form was preferred (e.g. telephone or written letter). There was no explicit reference to loneliness or other stigmatizing aspects of communication in the researcher's probes: this was intended to maintain an ethical approach to the discussions (see, Russell, 1999).

Groups were small, composed of people who were familiar with each other, and were informally structured to allow participants to socialize. Focus group participants were selected by day centre staff as being people with little or no cognitive impairment who would be prepared to talk to the researcher about “keeping in touch with family and friends”.

Three older men participated in the first focus group, six older women took part in the second, and four older women took part in the third. The focus groups were not audio-recorded; notes were taken and later analysed for communication-related themes.

STUDY 1: RESULTS

Three themes emerged clearly across all three groups: first, the difference between telephone calls and letters; second, loneliness; third, perceived irrelevance of computers.

Telephones/ letters

All three groups indicated that the most common way in which they kept in touch with their family and friends was through telephone calls. In the atmosphere of the focus groups no one volunteered the frequency with which they were in contact with family members, although one member of the first focus group indicated that his daughter and her family in Australia phoned far less frequently than he would have liked. She tended to contact her family in the United Kingdom by email, but these were sent to her sister, sidelining their father.

The second group clearly identified a difference between telephone calls and letters: although all of them used the telephone as the primary way of staying in touch, they also felt that letters were a better means of communicating with someone since they took more thought and effort, and the writer really thought about what they were writing. This was balanced with the comment: “but it’s so easy to pick up the phone!”. Two participants in the third focus group explained their use of the telephone not only in terms of its ease (pointing out that letters demanded correct spelling and grammar), but also because of manual dexterity impairments: one participant had painfully arthritic hands, and the second had had a stroke which left her right hand semi-paralysed and often numb. These impairments made holding and manipulating a pen difficult and painful.

Moderate hearing impairment, which one of these participants also had, was a barrier to ease of use of the telephone, but did not prevent its use.

Loneliness

Perhaps surprisingly, loneliness was a theme that came up several times with all three groups. The most frequent method of introducing feelings of loneliness was by reference to the very positive environment of the day centre, where it was easy to meet friendly people to talk to and befriend. The second most common reference to loneliness was through the death of husbands and wives, usually accompanied with the number of years of the marriage and the corresponding number of years of widow(er)hood. The importance of friendship and mutual support was clearly expressed, especially by the first group, one of whom attributed the end of a severe bout of depression to his attendance at the day centre. Although most of the participants saw or heard from their families regularly, some indicated that they did not hear from them sufficiently regularly. A member of the third group, for example, reported that her son visited only once a week and might, or might not, telephone her. Since she lived alone after the death of her husband she was lonely and would have appreciated more contact with him.

Irrelevance of computers

No one had used a computer, and only one showed any interest in learning to use one. Some members had heard of “email” from younger family members. Members of the first group explicitly stated that they were “too old” to learn about computers. Members of the second group began to talk about children and grandchildren as soon as the subject of computers was introduced, noting that their grandchildren were now taught to use computers at school, and that young children found it easy to learn new things (whereas, by implication, grandparents did not). A single member of the third group indicated that she had seen a computer (one had been briefly available for use in the day centre; this was not been mentioned by anyone else), and that she might be interested in learning to use one. It was clear that she perceived the use of a computer to be a heavily guided and supported process; not something to be ventured independently.

These focus group discussions helped to identify topics of interest, and ways of introducing and discussing them. In the next section a more in-depth series of individual interviews is described.

STUDY 2: METHOD

Interviews were carried out with nine older people (70-90; 5 women, 4 men; 5 computer users, 4 non-users) who lived in their own homes. Participants were healthy and none was cognitively impaired. With the exception of one participant's moderate hearing impairment (participant G), none of the participants had a condition which noticeably affected communicative ability. Participants from sheltered housing complexes were selected by the warden of the complex as people who would talk to the researcher about "keeping in touch with family and friends". Other participants were recruited from the UTOPIA database at the University of Dundee (Eisma et al, 2004).

The research consisted of in-depth interviews on communication. Interviews were guided as little as possible, with participants being encouraged to talk for as long as they wanted about any topics they felt were relevant to the issue of keeping in touch with friends and family. Interviews were recorded, if the participants gave permission, on a Palm LifeDrive™. Recorded interviews were transcribed and analysed for themes concerning communication, methods of communication and computer use.

Where possible, interviews took place in the participant's home, although in three cases people preferred to be interviewed at the university. Interviews lasted between 30 minutes and an hour and a half.

The study received ethical approval from the departmental ethics committee. All participants were capable of giving informed consent; participants signed consent forms and were told that results would all be anonymous and that they could stop at any time.

Participant	Sex	Age	Comments
A	M	76	Has owned a computer for 5 years & uses email.
B	F	77	Non-user. Attended classes but found no use for computer.
C	M	70	Has become a regular computer user within the last 6 months. Owns a computer.
D	F	88	Non-user.
E	F	83	Novice computer user.
F	M	88	Computer user. Has owned a computer for over 10 years.
G	F	84	Computer user at local learning centre. Some hearing impairment. Stroke.
H	F	90	Non-user. Partially sighted (macular degeneration)
I	M	79	Committed non-user of computers.

Table 1: Study participants

RESULTS

Seven of the nine participants had family or friends who lived at a distance. Only two participants did not (Participants I and D), although Participant D's family lived in the surrounding countryside rather than in the same city as she did. The common experience of having family throughout the UK, and living abroad, reflects the common experience of more widely-distributed families.

Letter-writing

Most participants rarely write letters, and only if there is no alternative. One participant commented that he only wrote letters if "someone's holding a gun to my head or if it's the only way I know to get in touch." (Participant A). The exception was Participant I, a retired teacher, who writes letters in preference to other means of communication; for this interviewee, letters are a means of communicating something of himself, something that is lost when it is mediated by a machine, even a typewriter or a telephone. I felt that letters gave him time to consider what he wanted to say, and allowed him to come back to the subject if he thought of something else a few hours later. He described letter-writing as an activity taking place over several days.

The most commonly cited reason for not writing letters was the effort they took: "it's just laziness" (Participant D). Letters take so much effort partly because of their formality: even letters to friends and family can betray poor spelling or handwriting and lack of grammatical knowledge. Participant A was the most negative about letters; when his wife was alive he used to write letters

to his sister in Canada, but “I would write as I spoke and put a full stop at the end [of the letter]”. He described his spelling as “deplorable”. When he had written a letter, his wife, a teacher, would correct it. This story was related as a piece of entertainment, as “fun”, but also clearly illustrates the formality of the medium: letters need to be written correctly, even if they are being sent to close relatives. This reflects the existence of recognised “norms” for letter writing; norms which do not seem to exist for telephone calls (consider the lack of instructional books on making phone calls, compared to the many books on letter-writing), and which have been consciously abandoned by many users of email, producing what Danet calls a situation of “normlessness” (Danet, 1997).

Corresponding by letter also demands levels of visual acuity and manual dexterity which are vulnerable to age-related conditions. Participant H explained that she used the telephone because “I can’t see well enough to read letters - I’m almost blind in this eye - or to write them.” Participants F and G both have manual dexterity impairments which make letter writing onerous, although not impossible. Participant F types letters on his computer and prints them out to send: his explanation is that others would find his writing impossible to read because he has such difficulty forming comprehensible letter shapes. Participant G similarly finds writing difficult for physical reasons: she has had a stroke and has manual dexterity difficulties. She writes to only one friend, a former nurse in Zimbabwe, who is now blind “but someone reads them [the letters] to her.”

Telephone calls

All but one of the interviewees said that their normal, and preferred, way to stay in touch was by telephone. About half of the interviewees had had telephones since youth, but others (Participants D, G, B & I) had only owned a telephone relatively recently, within the past 25 years. In the case of Participant G this was because she had been working in Zimbabwe as a nurse and had returned to the UK only 12 years ago. Participant D had never felt she needed one until her family became concerned about her safety and encouraged her to buy one: it is worth it for the

security and she now telephones friends regularly. Participant I did not make a deliberate decisions to get one, but happened to move into a new house which already had a telephone and, although he was anxious about how much it would cost, his wife was keen to keep it. None of the interviewees used additional functionality on the telephone (e.g. memory options; ring back services), with the exception of '1471', a facility that allows the user to get the telephone number of the last person to call them.

There was little perceived difficulty associated with using the telephone; nor were there indications that participants found face to face communication any easier than telephoning. This outcome was slightly unexpected, given the narrower bandwidth that telephones offer and research suggesting that older adults depend on extra-linguistic clues like lip reading to compensate for hearing impairment (Villaume *et al.*, 1994). Participant G, who has some auditory impairment, did not find telephone calls difficult as long as the caller knew to speak clearly: "they all know I'm deaf!"

Participant A emphasised one positive aspect of telephone use: the importance of hearing someone's voice on the telephone: the inflexion in their voice can tell you how they are, irrespective of what they actually say to you. He illustrated this with an example of how his son had been exhausted from over-work, but reluctant to admit it. Talking to him on the telephone allowed Participant A to detect that something was wrong.

There were few negative comments about telephone calls, although two participants indicated that they tended to lose track (or control) of the conversation on the telephone and they addressed this by writing a list of the things they had to say before they made the phone call (Participants D and C). Both Participants I and C found that phone calls rushed them and made them feel uncomfortable. Only Participant G suggested a potentially negative social outcome from the telephone: "they phone you to check you're alright and then they don't feel they have to come and see you."

Loneliness

Loneliness is a sensitive area and one that, by comparison with the focus group participants, few interviewees volunteered information about. Only three participants live with partners, the other six live alone, four of them in sheltered housing complexes. Of those who live alone, four are widowed and two have never married. Since the focus of the interviews was on communication methods, it was inappropriate to question interviewees closely on their feelings of loneliness or isolation. It is, in any case, an emotion that people tend to underreport. Nonetheless, the discussion of communication elicited some comments relevant to loneliness, especially from H whose husband of 60 years had died eight years previously. She was socially active and extremely alert, with a family living locally who came to visit and took her out regularly, yet she suffered from loneliness in the evenings and especially at night when she missed her husband. Such individual experiences reflect the limitations of measuring loneliness and isolation solely in terms of the number of contacts an individual has. Both Participants F and C noted towards the beginning of the interview that most of their friends were dead; both of them described the resulting situation as boredom rather than loneliness.

Concern about Family

When the interviewees discussed communication, reasons for retaining close communication ties with their families emerged. Contrary to stereotypes of ageing and dependency, these did not focus on the interviewee's loneliness, isolation or boredom, but on their (implied) responsibility for their family and friends, maintaining parental roles and continuing long-term habits of care. Participant H, for example, discussed the son of her friends who had never married and who she "kept an eye on". In spite of the way in which she cared for him, and his professional position as a chief electrician, she did not ask him for help with electrical tasks around her house: the flow of support was from her to him and not the reverse. Participant A similarly regarded his sons as his responsibility and valued the telephone for the way in which it allowed him to make sure they were well. Participant F had moved from the south of England to be close to his ill son and regarded himself as responsible for supporting both his son and his son's family. The way in which interviewees did not focus on themselves as recipients of attention and care, but regarded

themselves as providers of support for their families, agrees with Aldwin's adaptation of Erikson's concept of generativity in later life (Aldwin, 1990). This emphasis on autonomy and independence is found elsewhere in the research (for example, Williams and Guendouzi, 2000).

Computers and email

The interviewees were divided between those who used computers and those who did not. With the exception of Participants I and B, who were convinced non-users, the difference in use reflected opportunity. Even attending a class was no guarantee of confidence with computers: Participant C had attended classes for 6 weeks but had learnt nothing because of a lack of suitable support, it was only when he received one-to-one, targeted support from a trainer that he started using a computer. Participant D had asked about computers in the library but was told to come back when the specialist was there and "it was too much of a hassle [to go back] – I couldn't be bothered."

Non-users

Four of the interviewees were non-users of computers: two (Participants B and I) resisted computer use determinedly; two had never had the opportunity to use one (Participants H and D) but were interested in finding out how to.[1]

There was some nervousness about computers as electrical items which could start a fire if they malfunctioned, and reluctance in Participant D's case to have one in her flat (although she was looking forward to the introduction of one in the sheltered housing complex). An interesting aside is that both Participants H and D identified themselves as non-technical in precisely the same terms: "I can't even set the video!".

Computer users

Of the four computer users, three of them owned computers and used them to send regular emails. The fourth, Participant G, attended a computer class at a local learning flat but had not

[1] The sheltered housing complex in which they lived was seeking funding for a computer, and this had been advertised by the duty manager. Undoubtedly this had an effect on their attitude.

attended for several weeks because of illness. She had previously sent email but did not anymore: when she had returned to the classes she found that her email account with *Yahoo!* had been automatically deleted. Participant E had attended classes but was not a confident or autonomous computer user; after ten weeks she depended on the class tutor or other members of the class to help her with basic Windows tasks.

Four of the computer users had used email; three of them were regular users with computers and internet access at home. For these participants, email occupied a particular place in their ways of keeping in touch: they used email to supplement, not to replace, other forms of communication. All but one of the computer users used the telephone for longer conversations but used email as a way of keeping in touch informally between phone calls. All preferred the telephone for serious issues. Participant A especially felt that computers allowed people to disguise their true feelings: “on a computer you could be sitting there with a face as long as a fiddle – but nobody knows unless you say.”

Email is especially useful (and cheap) for keeping in touch with friends or relatives who live at a distance: Participant A emails his sister in Canada; Participant F emails a daughter-in-law in Rhodes and Participant C noted: “I’m more in contact now with my family down in England than I’ve ever been.”

The asynchronous nature of emails was noted and appreciated. Participant A distinguished between telephoning someone, which was dependent on whether they were there to answer the phone or not, and emailing someone which you could do at any time “and they’ll get it when they check their email.” This removed the responsibility (and control) from the sender, which could be frustrating: “you can’t *make* them check it.” Participant C, who started using email relatively recently, finds this especially frustrating. Although he was initially surprised by how quickly people responded to his emails, “I wondered if they did any work,” he reached the stage when, if he didn’t get a rapid response to his email, he would phone the recipient and tell them to check their inbox.

More importantly, however, email allows communication irrespective of time differences, allowing communication across time zones; Participant A says of his sister in Canada: “I can write about what’s happening to me now, while she’s sound asleep – like I’ll go home and say ‘I was at the university…’ – and I know she’ll get it when she wakes up, and she’ll ask me about it [while I’m asleep].” In addition, you can email people when you feel like communicating, for example, when you are awake during the night: “…there was one night I was up, during the night, and I think I sent three or four emails, during the night and that lasted, you know, three or four hours. You know, it’s it’s great enjoyment as well...” (Participant C), and this is clearly something that is not confined to those over 60: “One morning the wee man [his grandson]… he woke up, he woke up in the early hours – I think it was when they were going away to America and he woke up and uh he’s excited and all – cos it’s his first time and that – and he sent me an email you know – and he said it was good, you know, that he had someone to talk to.” (Participant C).

Email is often initially adopted as a way of staying in touch with younger family members, particularly grandchildren, although it is adult children who put pressure on their parents to start using it (Participants B; I). Participant C especially has seen far more regular contact with his grandson: “But now… he, the young lad, you know, he sends photographs now and that would never have happened [before]”.

The informality of email communication is one of its most attractive features. The stress associated with letter writing does not seem to occur with email; there seems to be little emphasis on correct spelling or grammar. Participant A feels that, with email, “If you can read it and understand it, that’s fine” and was very irritated by the inbuilt spell-check: “I had it on – I don’t know how – and it drove me crazy – it would come up and tell me all the stuff I’d misspelt and it wouldn’t send it [the email].” Participant C emphasised the use of email for casual conversation, “I find that in my emails I’m just chatting, in general, like with my sons it’s always about sport and the young lad I say to him “you got a girlfriend yet?”…”. He mentioned that before the interview he had received an email from a friend with whom he corresponded; the entire text of the email was:

"I don't think so!" This was something, he felt, you would not make a phone call to say, but email, apparently paradoxically, gave a more "conversational" tone to distance communication.

CONCLUSION

Communication is central to the wellbeing of older people; an insight into the communication methods used provides a framework for understanding how communication fits into daily life. Research with this small group of participants suggests categories that warrant further investigation, and areas for consideration for those designing computer-based communication systems for older people.

The first conclusion is that, for most people, the amount of effort needed to use a communication method is inversely related to its use: thus the telephone is the preferred method of keeping in touch, because it is seen as easy to use, and allows 'normal' behaviour, like chatting, rather than enforcing formal (and difficult) external norms of grammar, spelling and handwriting. Part of this formality may be the culture of letter-writing: letters are objects that persist, that can be kept and re-read, examples of especially brilliant letters are available to be bought. Personal telephone calls are not recorded, or ever heard by another.

The telephone also allows richer communication by allowing you to hear someone's mood, or health, in their voice. It also benefits from its immediacy, offering security in case help is needed quickly.

Although the older adults , with more impairments and less social independence, who took part in the focus groups seemed to regard computers as wholly irrelevant to their lives (certainly when they discussed the issue in groups), among the interviewees there was willingness and interest in computer use among most, although also some anxiety (see Morrell *et al.*, 2004). Anxiety was based more on lack of knowledge than on technophobia. For those who have made an informed

and determined decision not to use computers there appears to be little that can be done to persuade them, indeed, there is no reason to try.

Where people use computer-based communication they consistently use email rather than other forms (instant messaging, chat rooms). For this group, use of email enriched communication with family and friends, especially those who live at a distance or younger family members. Again, the importance of ease of use emerges: email correspondents, often younger family members, use email to chat informally with older relatives in a way they would be unlikely to on the telephone. Children who use email at school or to keep in touch with friends can easily drop a quick email to a grandparent, whereas making the effort to telephone them is likely to happen less frequently. Extending this to the sending of text messages seems unlikely to be widely useful: only one of the interviewees owned a mobile phone.

Email is popular in part because it is informal: the norms associated with letter-writing do not apply to emails and thus do not act as a barrier. Its informality and immediacy allows the sending of short, conversational comments in a way that would be strange in other mediums. As well as immediacy, however, it allows asynchronous conversation which supports communication with those in other time zones, or communication when it suits you.

It is clearly important that any computer-based communication system is easily usable, without training: although the potential usefulness of such a system is apparent, barriers or difficulties in accessing it will put people off, in the same way as difficulties setting advance recording times cause them to wholly neglect that aspect of the video recorder. An always-on system that does not demand start up and sign in procedures is more likely to be successful than a conventional computer system. A system that can be presented and explained in terms of conventional methods of communication is likely to be more successful than one that cannot be, and this is possibly one reason for the popularity of email as opposed to instant messaging.The fact that people ignore the additional functionality of a system (advance recording on videos; memory options on telephones) if its use is unclear or demands effort indicates that software tools

designed to support memory should be presented as an integral part of the system, rather than as additional options.

The interviewees consisted of a group of older people ageing well and, generally, healthily. Although they had encountered aspects of the age-related isolation mentioned in the literature, for example loneliness, the experiences they talked about were concerned with being central to support and communication networks of family and friends. Negative aspects of communication, like elderspeak, were not mentioned, perhaps because the focus of the interviews was on existing communication networks. It is also unlikely that people will volunteer information which, however unreasonably, they may feel reflects negatively on them. It is important to realise that systems developed to address issues like loneliness and social isolation are unlikely to attract this group; descriptions of the systems have to be positive, not stigmatizing.

The tremendous potential of technology to overcome physical barriers has not yet been made accessible to older people. While physical networks of people effectively disable those who have reduced mobility and telephone networks may disable those with hearing impairments, we can overcome these barriers by providing 'virtual' networks which allow people to access their correspondents in whichever form suits them, and removes the relevance of the physical space. To design such technology so that it is used, and usable, we need to gain further access into the contexts where it will be used: we need further information about how to design positively for older people so that our systems support their current practices and understandings rather than forcing them to adopt new and alien ways of keeping in touch.

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