Human-Computer Interaction -- INTERACT'03
M. Rauterberg et al. (Eds.)
Published by IOS Press, (c) IFIP, 2003, pp. 551-558

Managing one's social network: Does age make a difference?

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Abstract: Keeping in touch with family and friends should be easier now that we have a repertoire of communication tools available to us (e.g. SMS, IM, email, mobile and landline phones). And yet many of us continue to find it difficult to maintain and manage our personal contacts. Why is this so? This paper describes a study that looked at how three different age groups manage their personal networks and what types of technology-mediated communication tools they use. Our findings were that older teenagers have the largest social networks and experience considerable contact management effort; that people around the age of 30 use the greatest variety of communication technology; and that people in their fifties have the smallest social networks consisting mainly of family and very close friends. Using qualitative data representations, we discuss our findings in terms of ways to more effectively support people to manage multiple modes of communication.

Keywords: communication technologies, contact management, age difference, social networks, design ideas

1 Introduction

We all know how difficult it is to maintain social contact with all our family and friends. Besides the close friends and family who we have regular contact with, communication with others is sporadic and less frequent than we would like. Typically, it requires a special occasion (e.g. Christmas, a wedding) to get us back in touch again. In the past we have done this through sending cards, letters and making occasional phone calls. Nowadays, we have a much wider repertoire of technology-based means to do this. Email, virtual cards, mobile phone text messages (SMS) and instant messaging (IM) are available. A sales pitch often used by telecomms companies, to promote such products and services, is their relative ease of use for getting in touch; for example, sending a mobile phone photo message or firing off an email takes much less effort and commitment than calling someone up or writing a letter.

Given the range of opportunities now available for people to keep in touch with their social contacts, is there any evidence that people are finding it easier? An aim of our research is to support people in maintaining their social networks. Recently there has been much work on 'social capital' (Putnam, 2000; Quan-Haase and Wellman, 2002); by this it is meant "the interpersonal communication patterns, including visits, encounters, phone calls and social events" (Quan-Haase and Wellman, 2002, p. 1). Here we look at one aspect of social capital by exploring people's communication patterns with members of their social network, and how they manage the ever-increasing task of maintaining them using different technologies. To be able to support and encourage interpersonal communication, however, requires us to understand how it evolves and is maintained in the first place. Firstly, our paper describes how people actually use different technologies and services to keep up with their social contacts, especially those outside of work. A key variable we are interested in is age; do people of different ages communicate differently, having been brought up with different genres of technologies? Another focus is on the differing technologies available to people, and how they choose which to use with which people.

To this end, we looked at (i) the different kinds of social networks people have, (ii) whether there are differences among age groups in their usage of communication tools, and (iii) what problems different age groups experience when using different kinds of communication technologies. We carried out an in-depth qualitative study of the communication patterns of different groups, where they varied in terms of

age: older teenagers (16 to 18 years); people in their late twenties and early thirties; and people in their fifties. We asked them, firstly, to describe and visualise their social networks and, secondly, to describe how they contacted different people in their network.

A key problem we identified is the potential costs of having *multiple* ways of keeping in touch: using more tools to communicate potentially increases the amount of 'housekeeping' activities that need to be carried out, such as saving messages, deleting messages, and updating addresses and phone numbers, for all the different devices used. Hence, while having a wider repertoire of communication methods potentially makes it easier to get in touch, the effort involved in keeping in touch can, ironically, increase. It could also be the case that the more social capital people have, the more effort is involved in maintaining them, especially contacts' details; and whether this relates to age is the focus of the study. The second part of our research is to consider what kinds of support might help people to maintain their social networks more effectively.

2 Background

A number of recent studies have focused on teenagers' use of communication media (Grinter and Eldridge, 2001; Schiano et al., 2002; Taylor and Harper, 2002). The studies have shown how IM, email and text messaging have provided a whole new way of keeping in touch with friends, especially close ones. For example, by providing a way of online flirting and sending personal 'gifts' (treasured messages). The way mobile phones are used has also been the focus of much research; a general finding being that friends and family use them frequently to maintain a high degree of awareness about what each other is up to when apart, together with making up-to-the minute plans of where to meet and what to do (Ling, 2000; Grinter and Eldridge, 2001). Studies of more senior persons' use of the internet have found that they have improved their connections with their family (e.g. Pew-Internet, 2001; Kraut et al., 2002). Hence, there is much evidence of increased communication, especially among close friends and family. However, the down side is that it incurs additional costs to manage. Indeed, a number of studies have shown how maintaining online relationships and the consequential multiple sources of contact data that evolve can be a very onerous task (Farnham, 2002; Nardi et al., 2002; Neustaedter and Greenberg, 2002). The need for more effective contact management tools has been identified, but as of yet has received very little attention (Schiano et al., 2002). In contrast most research has focused on supporting domestic communication by the design of innovative prototypes and services which can provide new forms of awareness (e.g. Strong and Gaver, 1996; Browne et al., 2001; Hindus et al., 2001; Mynatt et al., 2001).

We are interested in whether people of different ages manage and maintain their social networks in different ways, and if so, could they benefit from different kinds of contact management tools. A number of studies of technology usage and age have found that usage does diminish with age, and sometimes this is linked with attitudes towards specific technologies such as the internet (e.g. Pew-Internet, 2001; US Department of Commerce, 2002). The Department of Commerce study found that computer and internet use in the US is highest among children and teenagers. It is also relatively high among those in the workforce (aged in their 20s to 50s); while people over 50 are less likely to use computers. The e-Living project, for example, (Ling et al., 2002), investigated technology uptake across age and found that internet usage, mobile ownership and household internet connections rapidly decreased for the over 50s, whilst being high for younger adults (see **Figure 1**).

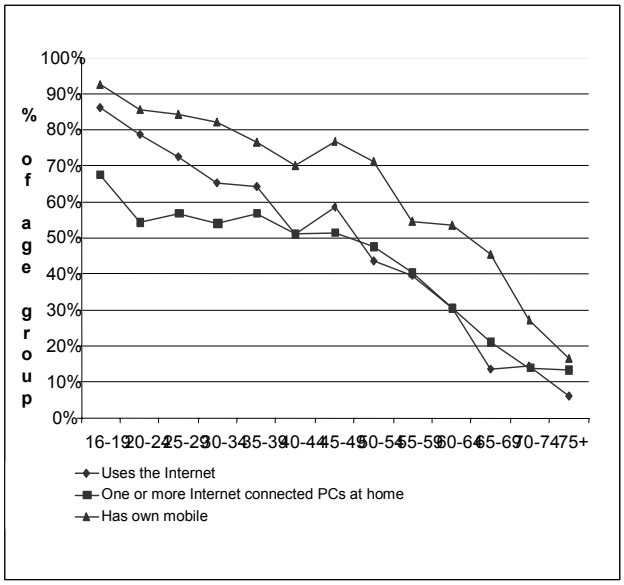

Figure 1: Technology uptake across age. Data source: UK sub-sample of the e-Living survey, a representative survey of the UK population, Autumn 2001. Data weighted for survey non-response, n = 1752.

This suggests that there is a much greater uptake of communication tools among the young and working. Older people, however, typically have built up a large number of social contacts throughout their life, but which they may not maintain very well. How might we address this disparity?

3 Method

We designed the study in two parts: an initial session to get people to describe their social networks by

drawing them as visual maps; and a follow-up interview in using their social network representation to explore in more detail how participants communicate with their social network members and manage their contacts' details. A common technique used in the social sciences to tap into people's social networks and, which we also used, is to ask them to draw a map of their contacts (Schiano et al., 2002; Taylor and Harper, 2002). Externalising in this way allows people to remember who is in their network and to readily see the various relationships they have with the members of their social network.

3.1 Participants

Age related studies frequently use the adult life span to investigate technology usage (e.g. Rousseau and Rogers, 1998; Ling et al., 2002), whilst analysis of teen behaviour tends to focus on a span of a couple of years e.g. 16-19 years (Taylor and Harper, 2002). Here we chose three distinct groups to illustrate examples of participants across various life stages. Older teenagers are at the youngest end of 'adult life' and enter a period when friends and building social networks become important, and both 25-35 year olds and 50-60 year olds will have established sets of friends and colleagues with whom they regularly interact, though the emphasis of family could be less for the younger group than for those in their fifties.

The age groups we used do not all span an equal 10-year period since we felt that a smaller age range was a more appropriate cut-off point for the youngest group. As a proportion of age, a 3 year span in late teenage years covers more changes in growing up (e.g. desire for independence from parents) when compared with a 10 year span for people in their late twenties or fifties.

Participants were recruited by advertisement posters placed around the researchers' workplaces and by invitational email messages on a social distribution group. Eight participants were female, and ten were male. They lived in either Ipswich or Brighton, in the south of England. Participants were paid £10 each for their time.

Six people were interviewed in each age group (16-18, 25-35, 50-60), 18 people in all, to establish a mix of gender, backgrounds and occupations. Our goal was to obtain in-depth qualitative data rather than large-scale quantitative data and hence, only a small number of interviews were conducted. By way of comparison, in a study of teens' text messaging behaviour by Grinter and Eldridge (2001) five males and five females were interviewed, similarly, in another study of people's monitor usage, only 18 participants were interviewed (Grudin, 2001).

3.2 Sessions

In the first session, participants were given various materials to use to draw their social network maps, including coloured pens, a large sheet of flipchart paper, stickers and post-it notes™. They were told to place the names of their social network members on the paper in a way that was meaningful. They were also asked to overlay them with the kind of communication methods they used with each member. A key was provided for them to use to do this (F = face-to-face; P = phone; E = email; L = letter or card; T = SMS text message; IM = instant messaging).

Participants were then given their drawings to take home and asked to amend or add any further names if they thought of them. This was to allow the addition of names they may have overlooked or forgotten during the session. In the follow up session, one week later, a more in-depth interview was carried out. Participants were asked to review their social network map to identify which names they had added (or taken off), followed by describing who they would communicate with and how during a typical half-day's communication.

3.3 Data collection

We took digital photos of the social network map after the first session and collected the network map from participants in the second session. Sessions were audio recorded and transcribed. Participants were also given a demographic questionnaire to complete to enable us to determine their age, their available technology and their device usage, particularly in the home.

4 Findings

The key findings of our study were that:

- Older teenagers were found to have the largest social networks and experienced considerable effort in keeping up with changes in their contacts' details.
- People between 25 and 35 years old use the most technologies to communicate with friends and family, and have contact details scattered over many devices.
- People in their fifties are much more focussed around family and close friends; have much smaller social networks and are more tentative in their use of newer technologies such as SMS and IM.

The findings are described in terms of three core themes:

(1) Patterns of communication across age groups
(2) Size and structure of social networks
(3) Communication management

4.1 Patterns of communication

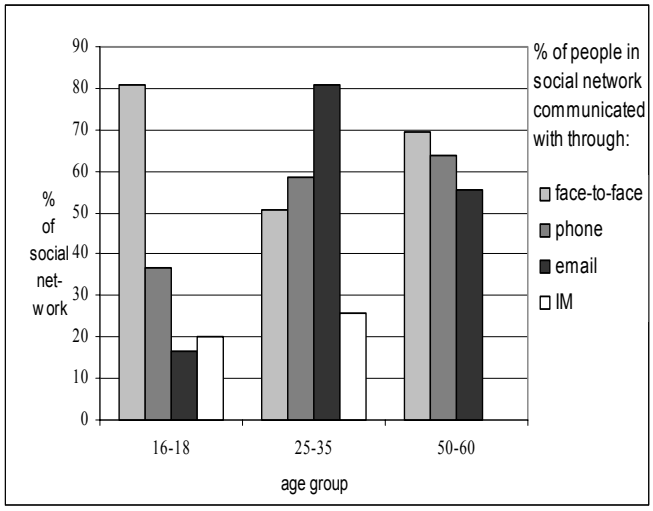

Figure 2: The main methods (face-to-face, phone, email and IM) used by groups when communicating with contacts in their social networks (percentages refer to the average number of people out of average total number in social network that were contacted using a given method).

To identify trends in communication mode usage, each participant's social network map was analysed by calculating the total number of people communicated with through each mode as a percentage of the total number of names on that social network. As might be expected, the most common communication modes used by the two older groups were face-to-face, phone and email, whilst for the youngest group IM overtook email (see **Figure 2**). There were also quite distinct patterns of usage across the different age groups. A main finding was that the teenagers communicate with proportionally more of their friends and family in face-to-face mode (81%) than any other mode. However, those around their 30s used email with most of their friends and family (81%). Those in their 50s communicated with proportionally more of their contacts using both face-to-face (69%) and the phone (64%). Teenagers used the phone (37%) and email (16%) much less than adults; and IM (20%) slightly less than the 25-35 year olds. However, they reported they would regularly have SMS text message conversations over a number of hours in an evening. This suggests that teenagers spend a lot of time physically with their friends and family, and when they are not with them, use a variety of technologically-based communications to maintain their contact.

In contrast, the 25-35 year olds were the most multi-modal in their communication, and interestingly, were the only group to report not using face-to-face as their most frequent means of communicating (51%). On average they used the phone with 58% of their social networks, postal communication with 28%, IM with 26% and text messaging with 20%. Having the opportunity to be connected in multiple ways therefore appears to have had a significant impact on changing the way this group communicate.

4.2 Size and structure of social networks

The average size of a person's social network, as indicated by the names placed on their map, was 35 people (n=18). This is almost twice the average size (18, n=53) found in Vronay and Farnham's study of general public members (Vronay and Farnham, 2000). We found however, considerable difference across age groups (see Figure 3). The largest number of contacts was for the teenage group, averaging 59 (SD=26.4) per person, which was significantly greater than any of the other groups. They included school, college and work friends; family; internet friends; club friends; their parents' friends; and friends they no longer saw regularly. The least number of contacts was found for the 50s group, who averaged 21 contacts (SD=5.5).

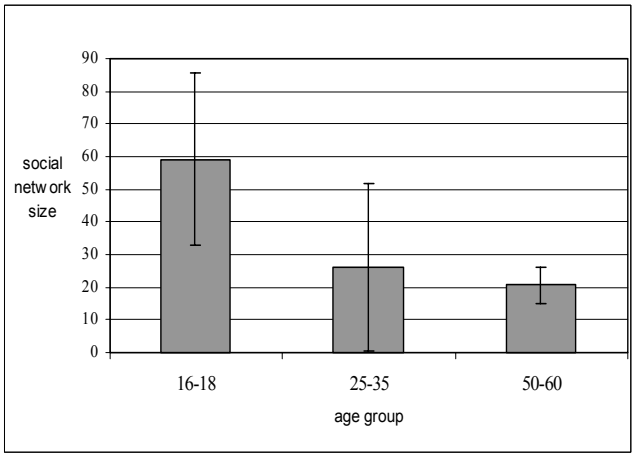

Figure 3: Average number of contacts per network (standard deviation shown).

The act of drawing out a social network map often led people to comment on the (perceived) size of their social network and the amount of communication they found time for. One participant in their 50s commented, *"looking at my map, it is clear I don't communicate as much as I feel I do…I would like to talk more with people, but I just don't have the time"*. Participants also mentioned their feelings of guilt at not contacting more friends and extended family, and at losing touch with old school friends. This was especially the case with the older groups, who were likely to have made more friends, but many of whom had moved away, during their lifetime. Reasons given for not keeping in touch by the participants in their 50s included a busy family life, college and school changes, job changes and home location changes.

Visualisations of social networks varied with participants aged under 35 using the most diverse formats. A key finding was the overriding omission of

colour and decoration from maps by many participants over the age of 18. Although not absolute, the vast majority of social network maps by participants over 18 were drawn using the same colour pen throughout the map. Our teenage group tended to make use of colour to categorise the map and provided a legend, developing quite sophisticated coding schemes for grouping and labelling their contacts (e.g. drawing two faces next to a contact to indicate face-to-face communication with that person). Different colours were used to represent different groups within the map in addition to the method of communication.

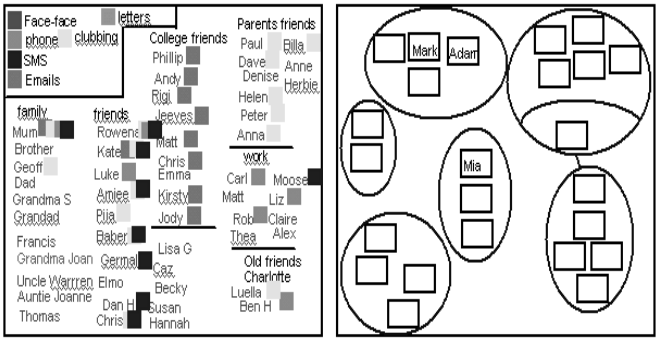

Figure 4: Example schematics of teenager's (left) and 25-35 year old's (right) social network maps.

Figure 4 shows typical structures that were used. One uses lists for each group of contacts; with colour coding to represent how each contact is communicated with. The second uses bubbled areas to identify each group, however groups labels were not explicitly added.

In contrast, the 50s group tended to be much more conservative in how they visualised their contacts; using one of two map structures, either conveying their contacts as a set of lists (see **Figure 5** right), with some groups indicated by colour coding, or as a network of interlinked people (see **Figure 5** left). For all age groups, the most common category types were friends, family and work or school friends with other types including social activities, geographical location, clubs and neighbours. Friends were frequently separated by geographic area: by town, distance or country if abroad. In general, group names were not deemed necessary: *"…because I know by looking at the names which group is which"*.

4.3 Communication management

As with the communication mode used, the methods used for storing contact details varied over the age groups. Teenagers used the least number of methods at four types overall (even though they had the most contacts to remember) with paper and email address books and mobile phone memories being the most common. The 25-35s group understandably had the most diverse assortment of storage media (11 types) with electronic organisers, online directories and random scraps of paper being used often in addition to the methods used by the teenagers. The 50s group used 8 different types with paper and email address books being by far the most common.

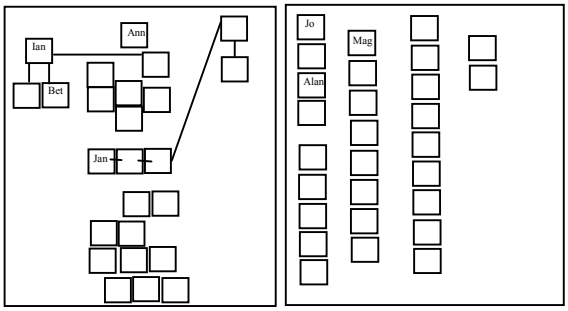

Figure 5: Schematic examples of the 50s' social network maps, link-based (left) and list-based (right).

Some participants (all under 35 years old) had broadband internet connections at home. They found themselves using IM a lot more than previously, pointing out how they adapted their mode of communication to being in 'always-on' mode. They often relied on IM status messages (e.g. I'm available, I'm away, etc.) to decide whether to initiate conversations with others, and to indicate their own availability. They were very conscious of the potential to distract others, in the same way they found it distracting to be interrupted themselves. One participant spoke of how he used IM, *"I tend to use it opportunistically. I am always logging in and with the [broadband connection], I can see people coming on and off [line]… I use it in the same way as if I am working in the room and someone walks in and I've got a particular question at that time that's relevant to them, or I just feel like downing tools and saying 'hello', and so I'll just send an instant message and say 'hello, how's things?'"*

Such a high degree of visibility, however, can be very overwhelming, as pointed out by one participant, *"it got to the point where I'd go online and everyone would see you online and start chatting and I would go 'nooo!'"* At the same time, the participants with broadband spoke about becoming addicted to the medium, finding it very difficult to log out and turn off their computer.

Many participants under 35 commented that they spend far too much time dealing with incoming emails, IM and SMS text messages. Their PC desktop was often used as a potpourri area, where files were placed as they came in, many of which remained there indefinitely, rather than being stored in named, organised folders. As a result, desktops became very cluttered very quickly. A coping strategy used was to archive a batch of messages and files in one chronologically labelled folder when it got too much. Never-

theless, one participant commented that sometimes it was easier to re-contact the person who had sent them a file than to search for the information in their archive.

Many people resisted throwing away old emails, and kept them for years, especially if they were treasured messages from their loved ones (cf. Taylor and Harper, 2002). Several talked about the pleasure they got from reviewing their sent and received emails. If an entire thread of emails is saved, then it is almost possible to "relive" the conversation.

Several teenagers had extensive buddy lists of people they IMed with, which they viewed quite differently from their mobile phone lists, for example. One IM buddy list, while comprising 90 names, was actually filled with old, outdated names, many of whom were rarely online to communicate with.

5 Discussion

Our study has presented a number of findings concerning the communication patterns of different age groups. Most striking was the large number of contacts teenagers include in their personal networks, and that the way they keep in touch with them is primarily through face-to-face. When away from their friends and family, they use a combination of text messaging, email and IM. Although many of them had virtual friends whom they IMed, they were considered to be only a small part of their personal network. In contrast, the older participants tend to keep in touch with their personal contacts more by using the phone and email – a main reason being that they have much less time to physically be with their friends, due to work and family commitments. Another interesting finding was how people's communication patterns change when they become always-on at home. A number of participants, particularly in the 25-35 age group had broadband connections to the internet and they were found to spend far more of their time keeping in touch with their contacts using a wider repertoire of methods than other participants.

As we predicted, one of the main problems identified in our study was the extraneous work involved in managing online contacts. The 25-35 years group and older teenagers, in particular, spend a lot of time working out what to do with their incoming messages and attachments (i.e. whether to save and where to place them). This was most notable with email, but also occurred with SMS and instant messages. The same dilemma is well known in work-based communications (Isaacs et al., 1996; Whittaker and Sidner, 1996). However, there appears to be quite different motivations behind why people decide which messages to keep and which to throw away in the different contexts. People tend to file their work-related emails and attached documents into nested folders that cover a whole range of categories and topics, including projects, reports, events, companies, archived material, pending, inbox and sent (e.g. Ducheneaut and Bellotti, 2001). In contrast, our findings showed that personal email tends to be saved using far fewer categories, and sometimes by the person who sent them.

Because of the highly restricted interface and memory limitations of mobile phones, only a few text messages can ever be kept. Hence, many people are forced to save their favourite messages using a stack-based model, where they have to prioritise them, and decide which to remove from the stack to allow for new messages to be received. There may be much reluctance to throw away treasured messages (cf. Taylor and Harper, 2002). This suggests to us that, like photos, people want to be able to store and review their collections of text messages in more extensive and flexible ways.

Current folder-based and list-based models of saving and organizing messages were seen by some to be limited and cumbersome to use. Saving, reviewing and deleting messages arising out of different communications are done as separate activities, even though the same friend may frequently be contacted using a variety of communication means. Clearly, there is much scope for better supporting people to manage their multiple modes of communication.

While the housekeeping tasks of saving, organizing, deleting and locating messages were seen as time-consuming and tedious, many people also pointed out how much they enjoy the process of reminiscing and revisiting their sent and received online messages. This suggests to us that we could exploit this positive aspect more, by finding ways of transforming what is normally perceived as tedious into a more enjoyable experience, where the computer-based tasks of storing, deleting and accessing files are redesigned around a conceptual model of collecting, sorting, looking and reminiscing. Thus, instead of *saving* attachments as files in folders, the activity could be metaphorically re-badged as placing the items that have been received and sent (e.g. photos, music tracks, jingles, video clips, recorded messages) into various collections. These could be linked to a representation of the person that sent them and also as part of a collection of their kind (e.g. photos could be placed in an album as part of the collection of memorabilia associated with the person in their network who had sent them).

Another finding from our study was how useful many people thought an interactive visualisation of their network could be in helping them remember events and providing them with a way of storing specific information next to the individuals in their net-

work. This was especially mentioned by the 50 to 60 years group, who felt they needed to be reminded more. They felt that for an interactive social network map to be useful, it needed to be dynamic, with pop up reminders (e.g. birthdays, events, communication with contacts is overdue), and to enable other information, such as personal details to be overlaid over their map (e.g. full contact details, activities each member enjoys).

Our research has shown that a growing need for all groups is better support for the management of *social contact* and *received content* arising out of the mix of online communications people engage in. In a recent article, Wellman (2000) foresees a time when communication routinely links with databases so that information can be easily accessed about the other parts of a particular communication. He suggests that future communication will be aided by relational information so that users can see a list of people that a particular person knows. This links in with work concerning "friend-of-a-friend networks" (Dumbill, 2002); a kind of computer network-supported global social network. Our research supports this to some degree, in that a number of our participants noted their social network had expanded through getting to know the friends of friends.

We suggest one way of helping to manage social networks is to transform what is normally perceived as time-consuming and onerous tasks into ones that are viewed as being more enjoyable kinds of reminiscing and reminding activities. This seems most relevant for people such as older teenagers and those in their late twenties to early thirties, who find themselves having to cope with excessive numbers of messages, resulting from using a range of devices. Such 'high volume' users are likely to build up many contacts via email, SMS, and IM, and need to constantly be updating their details (e.g. altering information about friends who are new, peripatetic or short-lived). What kind of support might be appropriate?

An alternative approach we propose to the default hierarchical folder model is a people-centric one, where messages and sent items are linked to the person they originate from, or relate to. In so doing, it could allow the range of media and items people receive, including pictures sent from mobile phones, to be stored in a flexible and personalized way. It could also provide a visualisation of a personal network map – which all ages, but especially the older people, liked. This could be linked to a centralised resource where messages, files, photos, etc., can be sent from different communication devices and applications. For example; people could download messages and pictures from their mobile phones onto their network map. The updated visualisation could then be viewable on a number of devices, like a TV or PC.

The application could also provide certain 'push' functions that could be configured if desired (especially aimed at busy and forgetful types of people) that include: reminders to contact people after a specified time between communications; indicators of who is yet to reply to their communications; and reminders for events, birthdays and anniversaries.

6 Conclusions

The key findings from our research are that:

- Older teenagers have the largest social networks, and use the least number of ways of storing contact details, often relying on memory.
- People between 25 and 35 years use the most diverse range of technologies when communicating, and this takes considerable effort in maintaining contact details over these tools.
- People in their fifties are much more focussed around family and close friends; have much smaller social networks and are more tentative in their use of newer technologies such as SMS and IM.

Our study has shown a difference in the ways communication tools are used by different age groups. Teenagers keep in touch with their contacts in quite different ways from those in their fifties, which in turn is different from the late twenties/early thirties group who are technologically aware and may have the income to support use of newer technologies such as mobile phones, IM and broadband. A key finding of our study was that people were using multiple ways of getting and keeping in touch. However, the cost of doing so was the extraneous work involved in managing friends and family as online contacts. We suggested a new conceptual model is needed that supports contact management more effectively, while also transforming housekeeping tasks, that are normally perceived to be tedious, into interactions that are more enjoyable and akin to reminiscing and collecting type activities.

7 Acknowledgements

This study was funded by the PACCIT programme under the ESRC/DTI initiative. We thank our collaborators, especially Debbie DiDuca and Jon Yon. The data represented in Figure 1 were collected by the e-Living: Life in a Digital Europe project (Ling et al., 2002) as part of a project funded by the European

Commission. Our thanks to the project consortium for permission to use these data.

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