Asymmetry of Needs: Communication Tools for Aging Adults in Community Living Facilities

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Abstract

While there exist substantial efforts to support independent living among the elderly, a significant portion of this demographic will continue to require assisted living facilities. Many of the residents in these facilities may experience extreme feelings of loneliness and depression. Our interest is in addressing these feelings of loneliness. We report here on an early pilot study with two participants of a paper prototype for a communication system and offer early insights derived from this process. Specifically, we discuss the asymmetry of desiring communication, the cost of interaction, the accessibility of tools and the topics of conversation.

Motivating Study

The initial plan was to create a digital communication system to replace a computer that is installed in their personal living spaces (e.g. as a piece of furniture, like a television or whiteboard). The proposed communication system would include a message center, calendar, family tree and photo album, phonebook, video calling, and aging adult status update system to notify the family how they are doing. The goal of the system is to provide asynchronous and synchronous communication to give the family a variety of communication options.
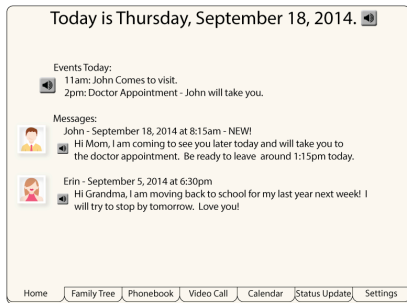
Figure 1. The homepage was designed to have a summary of the most important information: the date, events and appointments, and messages from family and friends.

Figure 2. The family tree feature aims to help remind aging adults how they are related to certain family members. Pictures are proposed to be collected from social media sites from the family members.

Pilot Study with a Paper Prototype. Aging adults in an assisted-living setting were asked to partake in an open-ended interview and to answer questions related to the paper prototype of the interface. The interview included a series of questions to learn more about current technology use, communication forms, and what aging adults would find helpful in a new communication system. The goal was to find out whether or not forms of communication currently in the system are what aging adults would need, want, and use. Two pilot studies were run with one participant each. The pilots were very similar, except more questions were added to the second pilot interview to fill in the information gaps from the first pilot. The paper prototypes can be seen in Figures 1 through 6.

Comments on the Features. Respondents were generally positive about the design of our system. There were two suggestions of features to add: a news feed and a search engine. The news and current events are important to aging adults so they stay updated with what is going on locally and around the world. Both participants stated that they talk about the news when they talk to family and friends each day. Due to the importance of staying updated with current events to the aging adults, this feature would be useful. The second suggested feature is a search engine or a way for the aging adults to get answers to their questions.

Both recommendations that came from our pilot study suggest that our respondents see this system as a potential alternative for a personal computer. If these tools were added, the program could potentially replace the use of a personal computer for residents who are
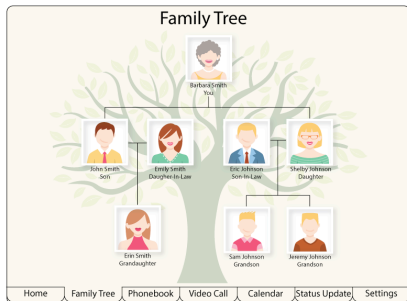
not fully computer literate. Any user could decide this on an individual basis. Replacing personal computers is not an original goal of our system's design, however, this is a valid option and the system could be updated to accomplish this if desired.

Reflections and Asymmetries
Based on these pilot interviews and our own experiences, we articulate three types of asymmetries that our system would need to address.

Asymmetry 1: Desire for Interaction. While older adults living in assisted living facilities may be lonely, much of the family living outside may not have the same level of desire for interaction—these individuals are at a different stage of their lives, and therefore have "many other things" going on, including friends, activities, and jobs/school/etc. Older adults are aware of the asymmetry, and do not want to impinge needlessly on their younger relatives' lives.

Asymmetry 2: Cost of Interaction. Similarly, while older adults have comparatively large amounts of time for such interactions, family on the outside may not. This time is necessarily limited or structured by daily life. This is complicated by the fact that these parties may be living in different time zones—even as few as three hours (east coast vs. west coast of North America) can cause significant problems. This can be addressed through asymmetric communication, but at the cost of introducing store/forwarding technologies and introducing "composition" time without providing the immediate feedback/reaction of symmetric communication tools.
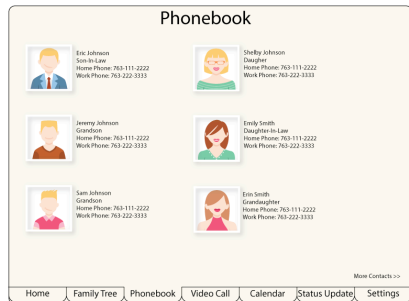
Figure 3. The phonebook is meant to serve as a convenient storage place for phone numbers and important information about the aging adult's family and friends that can be updated by family and friends.

Figure 4. The video-calling feature was created to replace the need to log into a computer and use other video conferencing software, such as Skype.

Asymmetry 3: Accessibility of Tools. While this difference may go away with time, the general stereotype is reasonably true: younger family members have access (and use) a wider range of communication tools (e.g. social media) compared to their older counterparts. Finding ways to address this asymmetry (perhaps by building hybrid tools or proxies) may help.

Asymmetry 4: Topics of conversation. Finally, finding good topics for interaction that are of interest to both parties can be challenging—particularly if there is a substantial age gap.

Addressing the Asymmetries through Social Media

The option of having ephemeral awareness of loved ones is something that keeps reoccurring when brainstorming the features of the system. An example of this is to take location information from family member's cell phones and send them to the loved on in the retirement facility (or to populate a "news feed" with updates from Facebook, Instagram, check-ins from Four Square, etc.). This keeps the loved ones aware of what is happening in their family member's life without any effort from the family member. This is an example of a feature that can populate the system and create new opportunities for interaction between the resident and their family. This obviously introduces challenges with respect to privacy.

To address the accessibility of tools, we have also considered different styles of help tools and interaction mechanisms. For instance, an artificial intelligent character like Apple's Siri to help the user with any

questions they may have. A help character like Siri can also aid with aging adults that would prefer to use a voice command option.

Related Work

The growing communication gap between aging adults and their loved ones has become a prominent issue. There are related works that pertain to trying to bridge the gap and help keep communication open and flowing. We touch on several that have motivated our thinking here.

The Magic Box and Collage [4] aimed to support intergenerational play between grandparents and grandchildren that are not co-located. Boxes were traded each night and contained items that each household put together for the other (e.g. food, photographs, and items that were found throughout the day). The researchers then created the Collage, which consisted of two computers, one at each home, and mobile phones that could take pictures for each user. During the study, the computer monitors were mounted in convenient locations in each home. These monitors were touch screens and mirrored one another. The mobile phones were used to send text and photograph entries to the monitors. The items on the display could then be manipulated and played with. Since the monitors were mirrored, if one user was playing with it, the other monitor would also show these changes so the two non-collocated users could both play and manipulate items together. This created both asynchronous and synchronous forms of play between grandparents and grandchildren. [4]
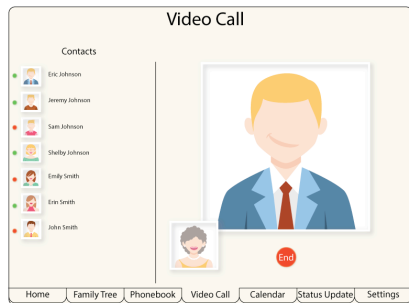
Figure 5. The calendar feature is meant to keep the aging adult organized and aware of events. The family and the user can edit this section so that it stays up to date.
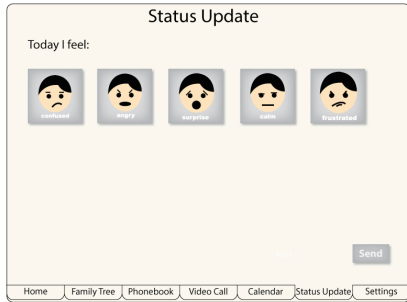

Figure 6. Through the status update feature, the aging adult would select an adjective that describes how they are or their day is and it would send an email or text message update to their family members and friends that subscribe to the updates.

Digital Family Portraits [2] was also motivating and related, in particular, the use of sensing technology in the home the aging adult's home to monitor health/activity levels. We took inspiration from this in our ideas of populating news feeds with social media posts. Similarly, Let's Stay in Touch [1] is motivating because of the similar setting. The goal of the study to help the patients stay connected through digital photographs sent via mobile phones from family and loved ones. The photographs that were sent to the digital picture frames were meant to keep the patient aware of what was going on in the family and friends' lives as a form of asynchronous communication. It was found that some photographs did spark conversations and the patient called the sender to ask what was going on in the photograph. This acted as a supplement to communication for the patients and photograph senders. [1] Our family tree idea is motivated by these ideas. Finally, Audio-Enhanced Paper Photos project [3] was done to help create conversation and aids in reminiscing for a resident of an assisted living facility. [3] The family of the participant recorded audio for each photograph. It was found that the participant would liven up when she heard the audio and the photographs. It also helped her reminisce with her family when they came to visit. [3] The observations that were found when the participant was reminiscing became a key reason why we feel the family tree and photograph section would be very important. It is a conversation starter and could potentially also help the aging adult strengthen their memory skills.

Brainstorm
Recently I have spent some time narrowing down my project idea. The current idea presented in this paper is probably too large for a master's thesis. My current

idea is to combine a family tree with family updates. The older adult will have access to the family tree and each person on their tree will have their social media sites synced to the tree to update their grandparents or parents on what they are up to. Along with the social media updates, the older adults will be able to send messages to their family through a message center.

My Goals for this Workshop
I am interested in learning how to create a system that can evolve and be customized to the needs of the residents of the retirement and assisted living facilities. Additionally, I am interested in the effects of evolvable technology in homes to create a smart home and if a single system could be created to aid users in all stages of life.

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