
"I Crack My Brain": the Gap Between Older Adults' Efforts and Participatory Design Demands

Robert Douglas Ferguson
School of Information Studies
McGill University
robert.douglas.ferguson
@mail.mcgill.ca

Taciana Pontual Falcão
School of Information Studies
McGill University
taciana.pontualdarochafalcao
@mail.mcgill.ca

Xiaofeng Yong
School of Information Studies
McGill University
xiaofeng.yong@mail.mcgill.ca

Karyn Moffatt
School of Information Studies
McGill University
karyn.moffatt@mcgill.ca

Abstract

Participatory design (PD) with older adults is known to be challenging. This paper reports on a PD study exploring digital pen technologies for e-mail communication with older adults. Participants had difficulties in understanding the goals of the project and lacked confidence in their ability to provide meaningful suggestions or design critiques, mainly due to their limited experience with ICTs. Here, we share our experiences and the challenges we encountered while conducting PD with older adults.

Submitted to the CHI 2017 Workshop Problems in Practice: Understanding Design Research by Critiquing Cases, May 7, 2017, Denver CO.

Copyright is held by the author/owner(s).

Author Keywords

Older Adults; Participatory Design; Challenges; Information Communication Technologies

ACM Classification Keywords

H.5.2. Information interfaces and presentation (e.g., HCI): User Interfaces: User-Centered Design.

Introduction

Social interaction and communication are key aspects of quality of life for older adults, which helps them avoid loneliness and depression, and to minimize cognitive decline [1, 2]. As technological innovations continue to fundamentally change and shape communication practices, older adults risk becoming socially isolated if they are unable to keep up with the pace of change.

Our project investigated the possibility of creating a paper-based communication system using digital pens that would enable older adults to connect via paper with their friends and family members' standard email inboxes, thereby facilitating communication for both parties. The general aim of our participatory design (PD) sessions with older adults was to examine the potential usefulness of such a system and to explore how a paper-based email interface might be designed.

Participant Profiles*

Francine

Age: 85

Sex: Female

Profession: Retired

Accountant

Use of ICTs: extensive use of email with daughter, online banking, spreadsheets for budgeting

Preferred ICT: email

Jack

Age: 87

Sex: Male

Profession: Retired engineer

Familiarity with ICTs: cellphone, some use of email, some use of Facebook to access photos of grandchildren

Preferred ICT: telephone

Dorothy

Age: 86

Sex: Female

Profession: Retired teacher

Familiarity with ICTs: limited use of email with former students internationally

Preferred ICT: telephone

* All names are pseudonyms

This paper focuses on challenges encountered during the PD sessions. In total, we conducted nine workshops across two sites (with different participant groups). Our first sets of workshops were largely successful.

Participants provided interesting insights for how we could design the interface and workflow of a paper-based email system from past experiences with letter writing and address books. In contrast, the second group (see side bar) struggled with the design activities and understanding their role in the PD process. We focus, here, on our experiences with this latter group.

Participatory Design with Older Adults

Older adults have unique needs, capabilities and limitations that must be considered throughout any design process. It is hard for designers (who are often quite young in comparison) to envisage these needs [7]. There is growing evidence that involving older adults in design may result in richer and more relevant solutions [6].

Participatory design is especially compelling as method for capturing the perspective and needs of older adults due to its focus on involving different perspectives and sharing power and control over design decisions. However, implementing it with older adults brings many challenges and past efforts have sought to introduce guidelines [5], frameworks [4], and design activities [3,8] for effectively employing PD with older adults. One consistent theme that has emerged across these projects is the need for early engagement with seniors and for building rapport and community. Such recommendations served as a guide for planning the PD sessions described next.

Methods

Over the course of one month, we conducted five sessions in a residential facility for older adults in

Ontario, Canada. The initial session served as an introduction and ice breaker and consisted of an overview of the purpose of the study, followed by semi-structured individual interviews to learn more about each participant's experiences with ICTs and to better understand their current communication practices. The subsequent four participatory design sessions each began with an introductory presentation to give participants an overview of the design process for that day, followed by an opportunity to practice the activities that would take place in that session. Across the sessions, a variety of approaches were employed. Open discussions explored the ICTs participants normally use, common situations that motivate communication, descriptions of people they like to communicate with, and reflections on communication barriers they experience in everyday life. Design critiquing activities gave participants an opportunity to reflect on the strengths and weaknesses of digital pens and the ways in which they might use them. Brainstorming activities allowed older adults to imagine hypothetical workflows using digital pens to send emails and share concepts for potential prototypes.

Challenges and Barriers

Mismatched expectations and misunderstandings

Despite the explanations given, the older adults in our second set of workshops had difficulty understanding the methods adopted and the goals of the activities. Initially, they thought they would be given computer lessons, a misunderstanding unfortunately introduced via our recruitment approach: our participants were recruited via the staff at their senior's residence, and the exact nature of our study may have become less and less clear as the message passed from person to person. As they realized this was not the case, they started questioning the value of being involved in design activities when they had little or no knowledge about digital technologies. From the six participants

interviewed in the first session, only three continued on with the PD sessions. From their perspective, the two young researchers mediating the sessions were obviously experts, and the reason why these experts would need *them* to say how the system should work was beyond their comprehension. This aggravated their lack of confidence to contribute.

Relationship with researchers and peers

Convinced that the researchers were experts in designing new technologies, participants felt intimidated and very concerned with providing “right answers” despite attempts made to encourage flexibility and creativity. Also, they were not effective in working together with peers and building upon each other’s contributions during the activities. Perhaps as a way to create a safer personal space, participants began to compete for the attention of the researchers by talking over each other during the design sessions, engaging in one-to-one parallel conversations with the researchers, and diverting conversation towards personal questions about the researchers during and after sessions.

Contribution to design

Participants had difficulties in taking part in technology-related discussions, as they lacked the basic knowledge and practical experience to understand and opine on this topic. Despite overall positive evaluations of the general concept of the system proposed, participants struggled to imagine using the technology themselves. Perhaps due to their lack of confidence and limited familiarity with technological devices, they tended to fixate on their inability to understand how the technology would work, rather than on imagining the functioning of the system and how they would want to

interact with it. Unlike with the first group, resorting to metaphors and comparisons with lower-tech artifacts and modes of communication such as paper address books and hand-written letters was not as helpful as expected, as transferring metaphors across contexts proved hard for this group of individuals. The creative exercise of imagination itself was problematic, as participants seemed uncomfortable with abstraction, preferring to stick to very literal interpretations. For example, when shown examples of common interface elements, participants focused on the (unrelated) illustrative content like radio buttons options, instead of capturing the general concept and use of radio buttons. The lack of knowledge of interface elements was another important barrier, as comprehending them was already too great a challenge. Using them to design was beyond their capabilities at that stage of the process. The task may have felt impossible: by the third session, we started to see participants giving up in the design activities.

Reflections on PD with Older Adults

In retrospect, we have a new appreciation of the role of partnering institutions (i.e., the residence) in setting the expectations of participants during recruitment, and bridging the gap between researchers and older adults, which makes them important knowledge translators in PD with older adults. Misunderstandings about the goals of the sessions generated disappointment and lack of interest from some participants.

The choice and structure of the participatory design activities with older adults proved to be crucial to the outcome of the sessions. For example, while the design critique exercise had a great level of active participation and led to the expected results, the participants backed

off during the 'actual' design activities. In retrospect, we realize these design activities lacked structure, more specific context/scenarios and clear, easily attainable goals. Comparing these phases of the process also showed the importance and the need for visual aids to help older adults conceptualize scenarios and devices, and specific prototyping tools (to our knowledge not yet envisioned) that could support and stimulate their creative process. Making this process collaborative was not easy to achieve either. Interpersonal dynamics among participants and with researchers bring into play social and emotional needs of older adults and the value that research participation can have to them.

As older adults are living longer, it is becoming increasingly important to address the technological and communication challenges they face. In order to achieve this, researchers need to adapt and improve PD techniques to better support the needs and barriers that older adults experience as design partners.

Acknowledgements

We would like to thank the participants and residential facility for their support and enthusiasm for this project. This research was supported by AGE-WELL NCE Inc - a member of the Networks of Centres of Excellence program, the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Canada Research Chairs Program.

References

1. Kathryn Beth Adams, Sylvia Leibbrandt, Heehyul Moon. 2011. A critical review of the literature on social and leisure activity and wellbeing in later life. *Ageing & Society*, 31: 683–712.
2. Denise Cloutier-Fisher, Karen Kobayashi, André Smith. 2011. The subjective dimension of social isolation: A qualitative investigation of older adults' experiences in small social support networks. *J. of Ageing Studies*, 25(4):407-414.
3. Roos Eisma, Anna Dickinson, Joy Goodman, Oli Mival, Audrey Syme, Lachimi Tiwari. 2003. Mutual inspiration in the development of new technology for older people. In *Proceedings of INCLUDE 2003*, 252–259.
4. Stephen Lindsay, Daniel Jackson, Guy Schofield, Patrick Olivier. 2012. Engaging older people using participatory design. In *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems (CHI'12)*.
5. Michael Massimi, Ronald M. Baecker, Michael Wu. 2007. Using Participatory Activities with Seniors to Critique, Build and Evaluate Mobile Phones. In *Proceedings of the 9th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS'07)*.
6. Alan Newell, John Arnott, Alex Carmichael, Maggie Morgan. 2007. Methodologies for Involving Older Adults in the Design Process. In *Proceedings of the 4th international conference on Universal Access in Human Computer Interaction (UAHCI'07)*.
7. Andrew Sixsmith, Gloria Gutman (Eds.). 2013. *Technologies for Active Aging*. International perspectives on aging, volume 9. New York, NY: Springer.
8. John Vines, Mark Blythe, Paul Dunphy, Vasilis Vlachokyriakos, Isaac Teece, Andrew Monk, Patrick Olivier. 2012. Cheque mates: Participatory design of digital payments with eighty somethings. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*.