Engaging Older Adults in the Participatory Design of Intelligent Health Search Tools

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ABSTRACT

Engaging older adults (adults 65+) in technology design can be challenging. At the same time, it is becoming ever more important to ensure inclusion of diverse perspectives in design research. Several strategies currently exist for successfully recruiting and engaging older adults in design. However, there is still much to learn about how to effectively engage older adults in the design process.

In this position paper, we reflect on our experiences engaging older adults in participatory design of "smart" tools for health information search. We share our study design, including our recruitment process and procedures. We then discuss the strategies we used in the design process and challenges we encountered when designing and implementing our research protocol. We contribute our experiences in an effort to facilitate discussion of strategies and opportunities for including older adults in design research.

CCS CONCEPTS

• Human-centered computing → Human computer interaction (HCI) → HCI design and evaluation methods → Field studies

KEYWORDS

Older adults, Participatory design

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1 INTRODUCTION

For individuals that collaborate with older adults on research, it can be challenging to recruit and engage older adults in the technology design process. However, as technology becomes more pervasive, it is ever more important to include diverse perspective in technology design. As such, over the years, methods and strategies have emerged for effectively including older adults in participatory design. Researchers have examined among others, strategies to improve recruitment [2, 3, 4, 6], data collection [2, 3, 4], study environment [5], and participatory design activities [1, 4, 5, 6] for older adult participants. However, due to several factors, there is still much to learn about effective strategies for engaging older adults in participatory design.

In this position paper, we reflect on our experiences conducting a participatory design workshop with older adults (adults 65+). The workshop was conducted as part of an on-going research project that focuses on designing personalized "smart" tools to assist older adults with health information search in a non-clinical setting. Specifically, we were interested in understanding older adults' ideas regarding how they felt that this type of technology should behave and interact with them to assist them in finding information and/or making decisions.

We provide details about our study design including our recruitment process and procedure. We then discuss strategies and challenges we encountered when designing and implementing our research protocol. We hope to contribute to the discussion of strategies and opportunities for including older adults in design research. We anticipate that our shared experiences will provide others with ideas of strategies to overcome challenges faced when conducting participatory design with diverse users.

2 RECRUITMENT PROCESS

For our study, we engaged individuals that were 65 years of age or older and community-dwelling. Our recruitment strategy included several communication channels: email, word-of-mouth, and contacting organizations that support seniors. We identified potential organizations through recommendations from colleagues and online search. We contacted organizations through telephone and email. From the organizations contacted, we were able to

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successfully connect with one community center that welcomed us to recruit from their senior center. We coordinated our recruitment efforts through the director and the senior program lead. The senior program lead advertised our study to their member base and collected contact information from seniors who were interested. The program lead also assisted us in scheduling a day and time for the study and coordinated with the seniors that agreed to participate. The director and program lead worked together to schedule a room at the senior center with a proper room layout to conduct the workshop.

3 PARTICIPATORY DESIGN WORKSHOP

The participatory design (PD) workshop included seven phases (See Figure 1) in which we gathered data about participants' current health management strategies and their perceptions toward technologies that support them in managing their health. The workshop lasted around three hours. Eighteen older adults participated in the workshop and two researchers assisted with co-design. Participants ages ranged from 61 to 93 (AVG=76, SD = 8.25).

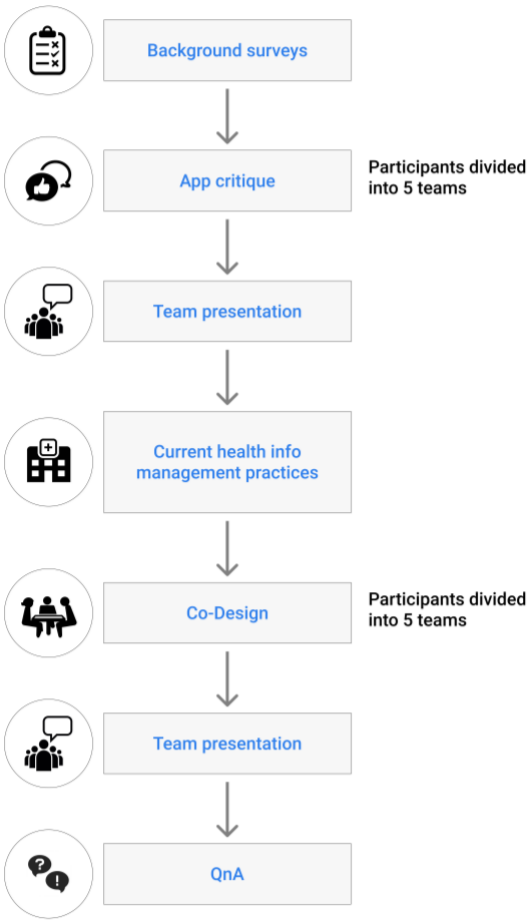

Figure1. Participatory Design Workshop Procedures.

Fifteen participants identified as female and three identified as male. Eleven participants indicated that they were managing at least one chronic illness. The majority of the participants listed high school as their highest level of education (N=11). Four participants earned less than a high school education and three participants earned an Associate's degree. All but one participant was retired.

Eleven participants used either a computer, smartphone or tablet to browse the Internet periodically. Two participants browsed the Internet on a regular basis (more than 3 days per week). Overall, most participants were not everyday users of technology, but did use technology as needed. Institutional Review Board approval was obtained before conducting the study.

On arrival, participants completed a demographic and computer use survey. We included time in our protocol to explain the survey and allow individual participants to complete the survey as they arrived. Once all participants arrived and completed the demographic and computer use survey, we provided an overview of the study and described the workshop schedule. For the first activity, participants were asked to divide into groups of 4-5 people and they critiqued a health information website. During the critique session, participants were provided with 15 minutes to demo the interface and discuss the benefits and challenges of the interface with their teammates. One person in each group acted as a scribe and took notes as their team reviewed the interface. During the critique session, participants were also given a set of questions to consider as they reviewed the interface's design. Afterward, each group presented their thoughts and feedback on the design to the larger group of participants.

After the critique session, the larger group of eighteen older adults and two researchers participated in an affinity diagraming session to identify participants' current health information management practices. Each participant was provided with sticky notes and a marker. One researcher acted as a facilitator and asked participants a set of questions about the ways they currently manage their personal health information. After each question, participants were asked to write answer(s) to the question asked on one or more sticky notes and post it in a common area. A researcher then led a group discussion to obtain further details about participant responses.

In the next phase of the study, participants worked with researchers to brainstorm and sketch ideas for the design of intelligent or "smart" technology to assist them with health information. To provide participants with some guidance for their brainstorming sessions, the facilitator, provided a broad scenario of a non-technical form of assistance (i.e. call a doctor) for finding health information and general parameters of the technology's purpose (i.e. assist with questions and decisions about their health). The facilitator further explained that they were free to design any technology or tool that they felt could assist them with achieving this goal.

Participants divided into five groups and were given 30 minutes to brainstorm and sketch ideas for their tool as a group. Each group

was provided with a set of questions to guide their thinking about their design. For example, they were asked to think about: What they would want the technology to do for them? Where they would use it? and If and how they would store information? Each team was asked to select a team lead to take notes. Each group brainstormed and developed their idea first without the assistance of a researcher. However, toward the end of the design session, each researcher visited each group to help them summarize their ideas for presentation. At the end of the 30-minute sessions, each team presented their idea to the larger group for discussion. In the discussion session, other group members and researchers asked questions to help the team further summarize their idea.

4 REFLECTIONS AND LESSONS LEARNED

Overall, we found that our approach worked well for the purposes of answering our research questions. The research protocol we designed incorporated several strategies that have been successfully used to engage older adults in research and participatory design. We enlisted allies for recruitment [2, 3, 4, 6], and included a critique session [1]. However, we also encountered challenges. Instead of scheduling multiple visits to conduct multiple design sessions with different groups, we incorporated multiple group design sessions in one visit. Our participants were comfortable brainstorming and explaining their ideas, however they did not actively participate creating tangible artifacts (drawings, prototypes). From the ideas generated in the design sessions, it seems that participants understood that one of the goals of the study was to explore novel "smart" technologies, however we faced challenges when designing the protocol on deciding the best way to explain and contextualize these concepts at the exploratory phase. In the following sections, we discuss what worked and what did not, and the approaches we used.

4.1 Strategy: Enlisting Allies in Recruitment

At the recruitment phase of our study, because we were interested in input from a variety of users, our only inclusion criteria were that the person was 65 years of age or older and be community-dwelling. When we began the study, we first attempted to recruit broadly through flyers posted on and off campus. However, this strategy was not effective and after about a month, we began to contact local organizations that served older adults. We have used the strategy of partnering with local organizations in the past and it has been useful for recruiting older adult participants. Similar to past experiences, for our study, we found it more effective to work with a local community center to recruit participants. The center's director and lead of the senior programming advertised to their member base and collected names of those individuals interested in participating. They also assisted with scheduling the workshop and coordinating with the interested participants to arrange days and times that would work within their schedule.

4.2 Strategy: Incorporating a Design Critique

In their research, Davidson and Jensen explored the use of critique in participatory design with older adults [1] for supporting innovative design ideas. At the time of their study, they found no evidence that the inclusion of critique lead to more or less creativity. We included a critique session in our study to introduce the participants to the idea evaluating an interface's design by considering its benefits and tradeoffs. We also used the critique session as an ice breaker to prepare our participants for the design activity later in the workshop.

Based on our findings, we found that similar to Davidson and Jensen's findings, the critique session did not seem to limit participants from brainstorming novel ideas in the latter part of the study. Participants critiqued an interactive website that provides consumer health information, however only one group presented a website as an idea and the website they discussed had somewhat different functionality. We do feel that the critique was useful as an icebreaker earlier in the study. In addition, many of the participants were not familiar with the website they critiqued and expressed that they were happy to learn about a new resource for finding health information online. We also feel the critique was useful for acclimating participants to providing feedback on interface design.

4.3 Challenge: Use of Common Vocabularies

Most the participants in our study were occasional technology users. They used a computer, smartphones, or tablets only a couple of times a week to complete specific online search tasks. While we did not screen participants based on past technology use, we were concerned that it might be challenging to introduce unfamiliar concepts to older adult participants [4], and in general to participants that may not have been previously exposed to similar technologies. Therefore, it was important for us to address language barriers in the protocol design. Our approach to addressing language that was potentially unfamiliar to participants was two-fold. First, after completing a first draft of our protocol, we dedicate several subsequent sessions to refining the protocol with the goal of simplifying the language we used and providing metaphors for certain concepts that could not be easily deconstructed [4]. Second, to introduce participants to the concept of "smart" technologies, we created a plain language scenario that related directly to a real-world scenario and included examples of how a person might provide assistance in lieu of a technology.

4.4 Challenge: Accommodating Schedules and Adapting the Protocol

Working with the community center was effective for recruiting and building rapport with our participants. However, it also introduced some constraints. It was more feasible and more accommodating to participants to conduct the study at the community center. Many of the seniors that agreed to participate traveled to the center at least once a week for social activities or to take advantage of services the center provided. The community center was very flexible in providing dates and times for us to visit, but as a center they also provided their own set of

programming for their senior members. Because many of the participants travelled long distances (up to 1 hour) to visit the center, it was important to coordinate and schedule the study on days that more than one interested individual would be available.

Scheduling the study therefore had to fit within the confines of the center's existing programming, but also had to be flexible enough to accommodate those travelling long distances as they would not be able to easily reschedule. Our strategy for addressing this was to work with the senior to schedule a one-day workshop. The center's senior programming director collected contact from those members that were interested and scheduled a date and time so that participants would know well in advance what day they would need to travel to the center. Taking this approach, however, required us to adapt our protocol. Instead of scheduling multiple visits to conduct multiple design sessions with different groups, we incorporated multiple group design sessions in one visit.

4.5 Challenge: Participation in Creating Tangible Artifacts

During the study, our participants were active in brainstorming and envisioning new technologies for assisting them in finding health information. Each group worked together to discuss potential ideas and were later able to verbalize their ideas to the group. However, we were not successful in getting our participants to actively participate in creating tangible artifacts. We provided participants with common participatory design tools (e.g. sticky notes, markers, paper) to assist in brainstorming and prototyping ideas as well for sketching their ideas, however most participants preferred note-taking or scripting to as tools to describe their design.

Our approach to addressing hesitation to create tangible artifacts was to facilitate further co-design during group presentations. The participants explained their concept and the researchers sketched on large pieces of paper as participants verbalized their idea. The participants guided the researchers as they sketched and corrected any misinterpretations about what they wanted to include in their designs. The researchers also asked follow-up questions during group presentations to further summarize and refine participants ideas. Using this approach limited the amount of influence we as researchers had on their original design idea but provided some opportunity to visualize and better understand how their technology would look and behave.

5 CONCLUSION AND FUTURE WORK

In this position paper, we present the methods we used for conducting participatory design in the first stage in an on-going project that will include older adults in the design of novel "smart" technologies to assist them with health information search tasks. We discuss strategies and challenges we encountered when designing and implementing our research protocol. In general, our approach seemed to work well for answering our study's research question. Enlisting allies in recruitment was helpful for reaching our target population and incorporating a design critique in the study helped to introduce our participants to the idea of evaluating an interface's design. However, we encountered challenges with use of a common vocabulary, adapting our study to accommodate scheduling, and getting participants to actively participate in creating tangible artifacts. Through these reflections, we present an example of strategies for approaching participatory design with older adults as well as ideas for overcoming challenges related to recruitment and study design.

We believe our reflections can also contribute more broadly to design for other user groups by emphasizing different approaches to participatory design given the unique context, constraints, and diversity of users that might participate. We discuss several topics that can be challenging for researchers working with diverse populations including identifying successful recruitment strategies, building rapport, and identifying successful ways to engage participants in the design process. In this paper, we share our experiences and the strategies we used to recruit participants by including allies and engaging older adults in design by using critique, scenarios, and different design activities.

The next phase of the research includes synthesizing the findings from this workshop to create initial designs that are informed by findings from this study. We will continue to explore the design of personalized "smart" tools to support older adults' health information search. We will build on the findings of this study to design tools and evaluate them with older adults. The findings from this study will inform future designs.

As we move forward in design process, we hope to identify from our participation in this workshop ways of addressing past challenges and opportunities to improve our design sessions. We are interested in understanding other strategies for actively engaging older adults in the design process (i.e. prompts, tools, and activities), but also the implications for including or not including participants based on technology experience, particularly at the exploratory phase. Similarly, while our recruitment strategy of working with a local organization is advantageous, it can also limit the diversity of our participants. Therefore, we hope to discuss other recruitment strategies that might overcome some of these limitations. We hope that the reflections and lessons learned presented in this paper will also help contribute more broadly to the discussion of strategies and opportunities to improve participatory design among diverse groups.

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