Overall Project Trajectory

Major goal: Leverage information technologies to promote older adults' health through collaborative social activity engagement and community event participation, called "coproduction".

First stage - Understand: Field observations and in-depth interviews were conducted in different retirement and aging-in-place communities to identify existing coproduction practices, such as physical (taking a walk together), interest-based (crochet group), service (community volunteering), social (group of retired old men eating out), and discussion/learning ones (experience sharing). We also uncovered desired but not yet fulfilled needs, such as more informal and opportunistic coproductions, flexible by time, context, and coproduction partners.

A survey study was administered in these communities to investigate how community structure and social network characteristics between retirement and aging-in-place communities interact with older adults' coproduction practices and health.

We Are Healthier Together: Designing for Technology-Mediated Health Coproductions by Older Adults

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Abstract
Engagement in social activities and participation in community, allows people to coproduce their own health and wellbeing. This paper reports an ongoing design study that uses an email listserv to support older adults to organize and enact more coproductions together. Email is a tool that our participants are familiar with and already use. We augment their daily practices and past experience of this simple technology for promoting health coproductions. We discuss the rationale for using email as a tool, the design of the listserv, and how the older adults use the new technology.

Author Keywords
Participatory design; coproduction; health; older adults; technological mediation.

ACM Classification Keywords
H.4.3. Communications Applications; H.5.2 User Interfaces.

Introduction
The demographic structure worldwide has tipped over with an increasing proportion of older individuals, and a declining number of younger ones. The percentage of older individuals is 8.5 percent in 2015; this is expected to grow to 34 percent in the next 10 to 30 years [5].

Second stage - Co-design: Over the course of six months, we worked with a core group of older adults from a retirement community on designing a platform to facilitate informal and opportunistic coproduction activities. We discussed use scenarios, design features, and tool choices with them. We used a low-fidelity prototype, a whiteboard, to simulate a technological platform with which people can use to initiate and respond to coproduction activities. It is a technology probe for us to learn about general uses and appropriations and inform design. It is also an easy-to-adopt tool that accommodates residents aged from 60 to 95 in the retirement community.

Third stage - Implement: Based on the previous stage, we, along with the participants, decided to move to an email system. We are currently implementing and evaluating this system, *Together,* in the community. The interaction with email is familiar with the residents. We designed protocols for proposing coproduction activities in email, similar to those on the whiteboard.

Table 1. Descriptions about the stages of the project.

On the one hand, given the emergence of such an imbalanced demographic structure, it may not be feasible to rely on the younger generation to provide care to the older generation. On the other hand, the stereotypical notion of older adults as dependent care recipients does not recognize their ability to provide support to one another, engage one another in active and reciprocal interactions, or referred to as *coproduction*. Through coproduction, older adults can help one another to stay physically active and socially connected so as to maintain physical and mental well being [1, 4]. This initiative is also seen in other projects that feature older adults' reciprocal service exchange for health, such as *Give&Take* [6].

Our project applies the lens of coproduction to health promotion among older adults. Specifically, we focus on practices wherein older adults practice various kinds of things together, such as taking a walk or playing chess. Previous studies have established that social connections and coproduction activities are important in facilitating older adults to maintain physical and mental health [3, 8].

Building on this ground, we have conducted several stages of research aimed at gaining a better understanding about older adults' coproduction practices and needs (stage 1); probing design features and co-designing technology that helps them coordinate coproduction activities and partners (stage 2); and conducting a user study of how people make use of an email system, *Together*, to coordinate coproductions (stage 3) (see Table 1). This paper reports the process of stage 3.

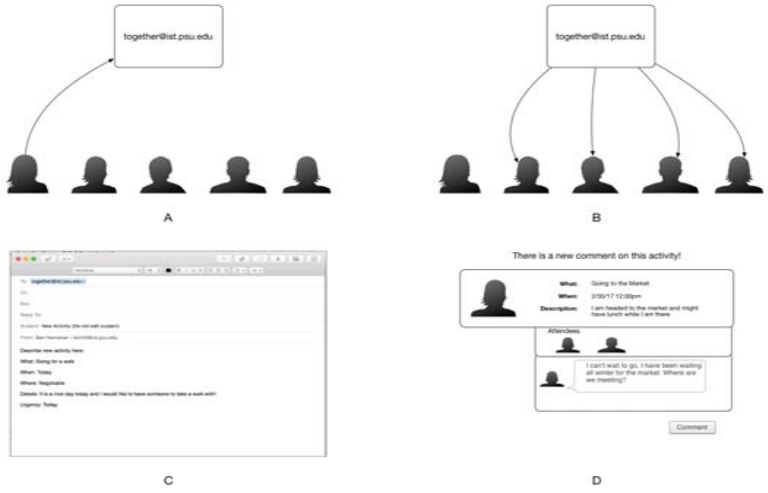

Figure 1: (A) A user sends an email to the augmented listserv to propose an activity; (B) The listserv sends out an email to all the subscribers; (C) In the email, the user proposing the activity fills out details about the activity; (D) Other users respond to the activity proponent for coordination.

Figure 2. A digest about coordinated events.

***Together*: Design and Implementation**

Background

Overall, our design goal is to facilitate the initial stage of coproduction collaboration: proposing and joining coproduction activities. This study is a continuation of a long-term participatory design activity through which we have actively engaged a group of older adults in a retirement community to discuss design ideas and desired features for mediating coproduction coordination that is based on a low-fidelity whiteboard prototype. Our participants are the design partners and actual end users who hold expertise and experience in the coproduction activities. This long-term engagement is especially valuable in developing trust with the participants and reveals insights on their actual practices [2]. Given that the residents in the retirement community belong to diverse age groups, from individuals in their 60s to their 90s, working with them requires us to take special consideration of their levels of technology proficiencies and prior knowledge about technologies to successfully implement designs [7]. Our decision to adopt a whiteboard as our initial prototype and transition the features, functionalities, and lessons learned to an email system, reflect our careful and purposeful considerations of the users and their actual practices.

Rationale for Choosing Email

There are around 200 residents in the retirement community, around 80% of whom use email on a daily basis to receive information and communicate with friends and family members. The adoption rate of smart phones is much lower. By using email as the platform, we augment their daily practices with a tool for coproduction opportunities that they are already using regularly.

In addition to the consideration of our target users' technology proficiencies and current use patterns, another reason for the choice of email over other tools (e.g., an interactive public display or a website that may be more similar to a whiteboard), was a general concern over the "publicness" of communication that takes place on the whiteboard; we observed the effects of this publicness affordance at stage 2. While whiteboard affords efficiency in relaying information to potentially interested people from the general community, the residents expressed their hesitancy of posting activities of personal interest on the whiteboard for the fear that they might not appeal to the community as a whole. Moreover, an activity posted without responses could bring negative feelings (i.e. disinterest) relating to both the activity and the poster.

On the contrary, while an email listserv affords efficiency in sending information to its subscribers, it helps attenuate the publicness issue because each user interacts with the system when proposing activities until other interested users respond. Plus, it is a familiar and frequently used tool to our users, which eases the learning curve of adopting a new tool.

Method

Our email system, "Together," is an opt-in listserv that solicits people who are interested in connecting and being connected for a wide range of coproduction activities in the community.

We are currently using Wizard of Oz prototyping to simulate how the actual listserv system functions before building the system. This means the research team plays the role of an "email operator" who receives users' emails about proposed activities and sends out

notification emails to the listserv members (see Figure 1A & B). The notification email contains information about the name of the person who proposes an activity, the details about the activity (date, time, and place), and his/her email contact (see Figure 1C). Anyone who is part of the listserv can respond to the person directly through email for activity coordination once they see the notification (see Figure 1D). In order to protect users' privacy, we do not disclose subscribers' emails.

We also send out periodic digests (see Figure 2) that include information about new subscribers and recent successfully coordinated activities as a way of recognizing our users' accomplishments in coproducing social interactions and health.

Ongoing Work

We are at the initial stage of this study. Currently, about 8% of our partner community has subscribed to *Together*. We have observed steady use of the listserv and in the growth of subscribers. After seeing a more critical mass, we plan to analyze the proposed activity types, coordination processes, and offline coproduction activities using the log data and the user-generated data. We also plan to conduct interviews with the users to explore their social roles and practices. Design sessions will also be organized for evaluating *Together* and discussing other potential features our users may want to integrate as they adopt and expand their use of the system.

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