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# CallingYou – Tackling loneliness by fostering interactions among elderly

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ACM ISBN 978-1-4503-5621-3/18/04.  
<https://doi.org/10.1145/3170427.3170665>.

**Abstract**

Social interaction is essential for the mental health and general wellbeing of elderly people. Information and communication technology (ICT) tools such as social media, gaming application, etc. have been developed to improve our social lives. However, older people struggle keeping their social lives active using these technologies and face the risks of feeling lonely and socially excluded. At the same time many of the previous contact points to other people, such as the local shop or bank office have disappeared. Research has shown that there is significant correlation between loneliness and chronic conditions in elderly people and social interactions play an important role in reducing isolation. In this paper, we try to address loneliness and social exclusion issues by introducing a smartphone application (app), CallingYou. A low fidelity prototype has been developed and tested with four elderly. The preliminary results show that CallingYou is easy to learn and use. The participants liked the app and think it would be beneficial for people who lack of social interactions.

**Author Keywords**

Mental Health; Elderly People; Social Interaction; Loneliness

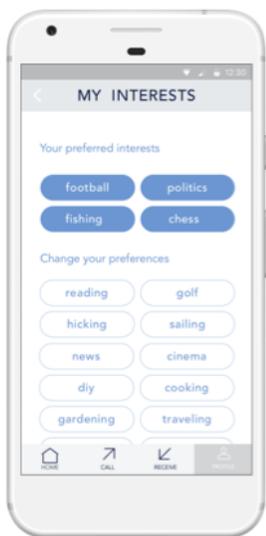


Figure 1: My Interest page in CallingYou



Figure 2: Home page in CallingYou

## ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## Introduction

Having good social well-being is important for mental health [7]. While a person's social network correlate with her social integration, contribution, coherence, actualization and acceptance (five dimensions of social well-being)[5], having sufficient social activities keeps the person happy and not feeling socially excluded or lonely, thus contributing to good mental health [4].

From studies published from year 2000 to 2015, Khosravi et al. [6] found eight types of ICT tools (i.e. general ICT, robotics, social network sites, tele-care, video game, 3D virtual environments and health support chat room) aiming to address the issue of social isolation. Most of the tools were positive in terms of their effect in resolving older adults' social isolation. However, elderly people who have low ICT literacy, experience difficulties in using current ICT tools in keeping their social lives active. As a result, they face higher risks of feeling lonely and socially excluded [2; 9].

Thus, for elderly people, keeping their social lives active are crucial since it is beneficial to their mental and overall health. In this paper, we try to address the issue of elderly people feeling lonely and socially excluded by introducing a smartphone application, CallingYou. Using the Human-Centered Design approach, a low-fidelity prototype has been developed and tested with four elderly participants. Our research aims to contribute to the social inclusion of elderly people by fostering their social interaction.

## CallingYou

While the phone is an interesting tool for social interaction, the challenge for people who lack of social network is that one have to know the person one calls in advance. The idea of Calling You is to be able to call, anonymously, another person based on interest. The profiles of users including interests are pre-registered (Figure 1). Opening the app a user can call from a contact list (Figure 2), or make a call based on interests. For example, a user may call other users that are interested in football in general, or those that have shown an interest in the teams in an ongoing game. After each call, a user can give a rating on the caller. The ratings are used to sort the contact list.

## User Testing

A total of four elderly participants (P1 – P4) between 60 and 79 years old have participated in our user testing. They were three women and one man (P3); except P2 (self-employed freelancer) they were all retired. Except P4 who uses a smart phone few times during the day and has never used any social apps, the other three use smart phones many times a day and have experience in using apps such as Facebook, WhatsApp, Instagram, etc. They described themselves as average competent with technology. P1 and P2 have college and graduate degree respectively; while P3 and P4 have Master's degree and PhD.

The researchers first give a brief introduction of the project and the objective of the smartphone application. They were then told that the application was a Lo-Fi prototype with limited functionalities. Before testing, they were asked to sign an informed consent form and we followed ethical procedures according to the Norwegian Center for Research Data.

The testing consisted in three scenarios. In each scenario, the participants performed a series of task. While they were performing the tasks, the researchers observed them and compiled a Cognitive Walkthrough survey for each task. Lastly, they were also asked if they had any comment about the scenario in terms of clarity or stress for example.

Participants took breaks when required. After completing all scenarios, an overall evaluation of the app was conducted through the administration of two surveys, SUS survey [1] and Net Promoter Score Survey [8]. The participants were also asked if there were any other suggestions they wanted to give about CallingYou.

## **Results**

### *Scenario 1*

In this scenario, the participants were asked to perform a series of action that allowed them to explore the app CallingYou, i.e. setting up profile details, location, contact list, interest and topic, etc.

All participants managed to complete their tasks rather smoothly. They only encountered some minor issues. For example, participants had difficulty in finding the 'sign out' button. They were used to having 'sign out' button on the corner of the app so they had to use more than 5 seconds to realize that it was placed in the middle of the page (see Figure 1). Participants needed more clarification about terminology, e.g. the meaning of 'interests and 'topics'. After clarifying the definitions, they could complete the tasks. Lastly, participants found the scroll down functionality somehow not self-evident.

### *Scenario 2*

In this scenario, the participants were asked to sign in the app, receive a call, send a complaint about the caller and block the caller.

Due to their experience in scenario 1, they had fewer difficulties and spent less time in performing the tasks in this scenario. The participants raised their concern about transparency of their complaints. The blocking and sending complaints features were considered as negative features. It was suggested that the app should instead focus on more positive aspects, for instance asking to keep the person to whom s/he has just had a conversation.

### *Scenario 3*

This scenario requires the participants to make a call by choosing someone from their contact list and finding new user via interests and topics. They were asked to rate the user they have called, and add a new user (who they had found and called previously) into their contact list.

Similar to Scenario 1 and 2, the tasks were quite straightforward. The participants commented mainly on user's rating. They would like to be able to re-edit ratings after being presented with such screen at the end of the call.

### *Summary*

All in all, the participants found the Calling You app easy to use and learn. They liked the app, especially its intended use. One of the participants was visually impaired and some accessibility issues such as font size and color contrasts were identified.

**Q1:** I think that I would like to use this app frequently - *Moderately disagree (Avg: 2.75)*

**Q2:** I found this app unnecessarily complex - *Strongly disagree (Avg: 1.25)*

**Q3:** I thought this app is easy to use - *Strongly agree (Avg: 5)*

**Q4:** I think that I would need the support of a technical person to be able to use this app - *Strongly disagree (Avg: 1.75)*

**Q5:** I found the various functions in this app were well integrated - *Strongly agree (Avg: 4.5)*

**Q6:** I thought there was too much inconsistency in this app - *Moderate disagree (Avg: 2.5)*

**Q7:** I would imagine that most people would learn to use this app very quickly - *Strongly agree (Avg: 4.5)*

**Q8:** I found this app very cumbersome to use - *Strongly disagree (Avg: 1)*

**Q9:** I felt very confident using this app - *Strongly agree (Avg: 4)*

**Q10:** I needed to learn a lot of things before I could get going with this app - *Strongly disagree (Avg: 1.25)*

SUS scale: 1-5

Table 1: Summary of average score for SUS survey

The results of SUS survey is summarized in Table 1. Based on the results, we could see that CallingYou was easy to use and not unnecessarily complex for the participants. They could learn and use it without much help, and thought that most people would learn to use it very quickly. However, they were not sure if they would use CallingYou frequently. This is mainly because most of them are experienced smartphone users. CallingYou can be too simple for them since they have already experience using other smartphone apps and social media, but being simple is an inclusive principle we designed CallingYou for.

When asking about the possibility to recommend CallingYou to a friend with a Net Promoter Score Survey, we received 5/10 from one participant (P1) while the other three gave 9, 8 and 10 respectively. CallingYou is considered to be suitable for people who are inexperienced in using smartphones or computers, and would benefit their friends who are often home and feel lonely which was the aim of our original design.

### Conclusion

One aim of our project is to address the issue of loneliness of elderly people. Using the preliminary feedback we have received from our testing, we would like to improve the app. Thus, we target to test the app with a broader group of participants in the future. By understanding the elderly's needs and engaging them throughout the process of designing and developing, we also see that there is a need of more accessible interfaces for elderly people, for instance tangible user interface[3], since some of them might be unfamiliar with smartphones while the other might have disabilities that make it difficult to use smartphones.

### Acknowledgements

The CallingYou project (200445-100) is funded by the strategic funding at OsloMet. We thank all the elderly participants for their constructive and valuable feedback.

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