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Toward a Typology of Technology Users: How Older People Experience Technology's Potential for Active Aging

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Abstract. This paper outlines an emerging typology of older users of information and communication technology (ICT) to facilitate active aging. Through inductive data analysis from focus groups, iterative workshops, and personal interviews, we suggest three types of technology users. These types are "the Excluded," "the Entertained," and "the Networker." Clearly, ICT offers several benefits to those who are enthusiastic and frequent users, exemplified as the Entertained and the Networker. Hence, our findings support the notion of technology as a tool to maintain or increase an older person's engagement and activity level. Conversely, for those reluctant, uninterested, or incapable of using ICT, such potentials are limited and imply fewer opportunities for participation in activities.

Keywords. Active aging, technology, tablets, user experience, older users, user types

Introduction

"Active aging" refers to social, physical, and mental well-being relating to a person's participation in society, having an adequate opportunity to maintain physical and mental health and self-efficacy, and sustaining autonomy, independence, and dignity [1]. According to the World Health Organization, strategies to postpone or reduce citizens' need for extensive health-care services would reduce increasing pressure on long-term health-care services. Policy makers promote information and communication technology (ICT) as part of this strategy [2]. There is currently an increasing interest in older people as technology users, from design and development of digital solutions [3, 4] to ICT literacy, adaptation, and use of technology [5, 6]. We are exploring how technologies such as Internet-connected PCs, cell phones, and tablets enable easy access to a variety of resources selected for their potential to promote active aging. For simplicity, we henceforth use the term "technology".

Age has traditionally been seen as the determining factor regarding technology and Internet use [7], implying that interest and skills in using technology decrease as age increases [8]. However, the general population, including older people, is using

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technology more and more frequently at home [9]. "Older people" is not a homogenous group; rather, there is more heterogeneity among older adults than younger adults [10]. The group of people termed "older" spans about 40 years, from the 60s to the 100s. Hence, older people's aspirations, capacity, attitudes, knowledge, and use regarding technology and the Internet vary. In turn, technology's potential for active aging equally varies from person to person. In general, older people do not adopt and use new technology as fast as younger adults [11]. Yet, studies show that older people, even the oldest, are interested in and capable of learning and using technology [11, 12].

A review of studies discussing technology and Internet use among healthy older people found studies claiming positive effects, such as increased self-efficacy and feelings of competence and personal growth [11]. Technology and Internet use presumably decrease feelings of loneliness due to an increase in the possibilities of social inclusion [12]. Moreover, frequent use may have benefits in terms of activity level, social interaction and participation, life satisfaction [13], reduction in loneliness, and increased quality of life [12]. Therefore, it is reasonable to presume the increased potential for self-efficacy, which in turn reduces or postpones the need for extensive health-care services [1]. This paper reports from a study exploring the potential of technology for active aging among older people on the basis of their self-reported experiences with technology use and hands-on tryouts of Internet-connected tablets.

1. Materials and methods

This paper reports on a sub-study within a three-year-long study: "ACTIVE: Active aging enabled by services and communication technologies" [14]. For this sub-study, data was collected from November 2012 to July 2013. At the outset, seven focus group interviews were conducted with a total of 39 people. They included chronically ill care dependents to healthy volunteers ages 59 to 95 (mean 75). We asked them to elaborate on challenges specifically related to diet, healthy eating, social contact, and participation. In addition, we elicited their attitudes toward and experiences with technology. An Internet-connected tablet (iPad) was demonstrated, and participants were invited to try it during focus group interviews. Results concerning technology experiences are reported in this paper.

One of the focus groups, three men and three women aged 76 to 95 (mean 88.5), participated in consecutive workshops and individual interviews. These participants were recruited from a publicly financed day-care center for older people in Eastern Norway. They attended activities and shared meals one to three times per week. All the participants lived alone in their own homes. During the workshops, the participants tried Internet-connected tablets (iPad) and freely available applications. Two of the participants could not fully exploit the potential of the technology due to reduced eyesight and did not participate in the following workshops or in the individual interviews. Three men and one woman completed the second and third workshop. Experiences from the first workshop informed the second and third workshop. At the end, the participants who completed the three workshops were interviewed to further elaborate on their technology experiences.

Interviews and workshops were tape-recorded with the participants' consent. The empirical data were subject to an inductive content analysis [15] with coding within and across the data sets. The codes were sorted into preliminary categories, and

furthermore, preliminary categories were collapsed into three main categories equivalent to the suggested types of technology users presented in this paper (Figure 1).

2. Results

In general, all participants showed a certain degree of interest and curiosity regarding new technology. Some saw the current digitalization of society as a problem; others saw opportunities. The latter discussed opportunities like being able to communicate with others through video communication or social media, or using Internet-based technology for entertainment. The former feared that technology-based communication had drawbacks, such as the loss of face-to-face contact, increased flow of uncensored information, or safety risks. Some of the focus group participants saw their high age per se as a barrier for learning and using technology:

> "I think am too old [to try ICT]" (Care-dependent).
> Others showed a higher receptiveness for technology:
> "Well, we will have to trust technology more and more in the future" (Healthy volunteer).

Many of the participants recognized technology's potential and had a positive attitude about its general development. However, regarding socializing, they preferred face-to-face before technology-supported contact:

> "I do think it is a good thing that we have the Internet, by all means. For people who are ill and aged and more or less bound to their homes, it can be a way of keeping in contact with others. I can see that. But personally, I appreciate the [person-to-person] conversation" (Healthy volunteer).

As illustrated by the above quotation, our findings also imply that technology can be used as a means for communication with others when the ability to meet others is reduced because of frailty or poor health. For those who have a choice, they prefer to meet each other in person.

From the empirical material, we suggest three categories of technology experiences as user types: the Excluded, the Entertained, and the Networker. These categories refer to participants' varying experiences with the use of technology, from a feeling of technological incompetence and exclusion on one hand to mastering technology and claiming increased life satisfaction on the other. Figure 1 illustrates the three suggested types of technology users.

The Excluded exemplifies older people who in general were reluctant to use technology or had mistrust toward Internet-based technology in particular. Mistrust was mainly directed toward the digitalization of society and, thus, experiencing external pressure to use technology. Many services earlier provided by people are now electronic and demand effort from the user to be carried out, e.g, bank services:

> "I hate that it shouldn't be possible to communicate face-to-face. And that you are always met with that.…Every time I go to the bank and request to talk to a person: don't you use Internet bank services? No, they look at me as if I was an idiot from another country" (Man, workshop participant, aged 95).

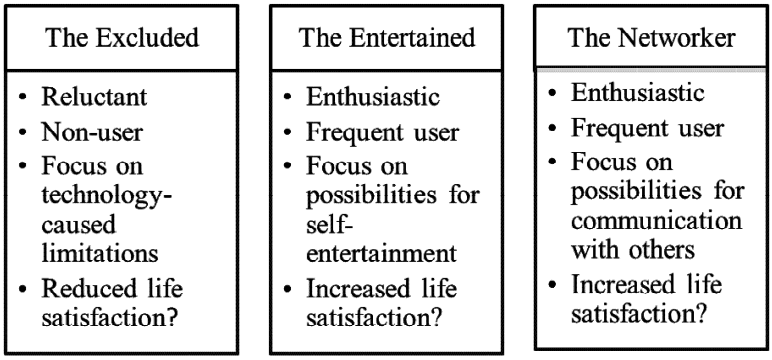

Figure 1. Outline of a typology of older users of technology to facilitate active aging.

A common attribute of this type of technology user seems to be that he or she is actually a non-user of technology. Some had tried to learn how to use technology through a course, but did not pursue course materials by using technology at home. Others showed no interest in learning or using technology at all. Many participants, however, recognized technology's rapid development and possibilities, but were worried the development was too rapid for older people. With no alternatives, they feared being excluded from activities they used to master themselves. These findings may imply that the Excluded group is at risk of experiencing reduced life satisfaction.

The Entertained group comprises users of technology who express enjoyment of and try new features provided by the technology. He or she uses technology mainly for personal entertainment, such as finding and reading news or watching TV programs or video clips on the Internet. A computer or a tablet may also contain pictures or memories for reminiscing. The focus is on self-entertainment; he or she can maintain a level of activity independent of others. This type of user uses technology on a frequent or daily basis. A collage of short excerpts from one of the participants shows that the tablet he owns has become important for him:

> "It [the iPad] means a lot. I can take it out and watch [what I want]. I have become very fond of it in just six months. The iPad covers most of what I want; I think it [the iPad] is phenomenal. The possibilities are infinite" (Man, workshop participant, aged 85).

The Networker is a user who is enthusiastic about technology and uses technology mostly to communicate, specifically with family or friends. Video communication applications were the communication channel mostly used. Typically, he or she communicated with family who did not live nearby and whom they did not have the opportunity to meet often. Others did, however, use video communication even when their family lived nearby. One participant preferred video communication to the telephone:

> "Sometimes I call them by telephone and ask them to log on to Skype" (Woman, workshop participant, aged 86).

This participant told us that she had made an effort to recruit older friends and had succeeded in recruiting two of them. One of her arguments was that using technology, such as a tablet, is beneficial for them:

> "I tell them [friends] all the time that, 'You have to get one of those' [iPad]. Because it keeps the mind fit" (Woman, workshop participant, aged 86).

Overall, the tablet seemed relatively easy to use, even for the reluctant and inexperienced participants. Representatives of the two latter types of technology users regarded the tablet used in workshops as easy to use and easy to carry and bring with them. They often preferred the tablet to a PC. They used the tablet frequently or even daily, they were enthusiastic, and some even claimed increased life satisfaction. The findings might indicate that, for the Entertained and the Networker, technology seems to positively affect his or her quality of life.

3. Discussion

As we explored the potential of technology for active aging among older people, we learned about introducing tablets (iPad) to these often inexperienced users, specifically, their self-reported experiences with technology use and hands-on try-outs of such tablets in focus groups and workshops. Our findings show that they experienced technology differently in terms of general attitudes toward it, knowledge, and previous and current use of technology. Our analysis suggests patterns of technology use in the material across and within focus groups, workshops, and interviews. These findings describe different types of technology users among older people.

Technology can facilitate independence, autonomy [16], and social participation [12]. It has even been asserted that there is a relationship between technology use and quality of life for older people [17], corresponding with our findings. Inclusion in society is one of the pillars of active aging [1]. The Excluded represents the type of technology user for whom technology might be a disadvantage because it makes participation in certain areas of society difficult. There is an ongoing digitalization of society and public services [18]. This development causes problems for the Excluded. For the Excluded, technology might deactivate rather than activate. For the Entertained and the Networker, however, technology facilitates activities.

Everyday activities contribute to maintaining a certain degree of activity level, which is important to avoid possible functional decline [19]. For older people who are active through doing daily life tasks themselves, for example, paying bills or withdrawing money from the bank, digitalization of such services lessens their opportunities to stay active if they refrain from adapting to technology. In addition, they may lose their feeling of mastery that, in turn, may decrease their feeling of wellbeing, because for those mastering technology, one might assume a feeling of wellbeing [12]. It is, however, not obvious that the Entertained and the Networker use their tablets, smartphones, or computers to do bank services or use the public digital services offered to citizens and thereby participate more or are more included than The Excluded. Nevertheless, they can make use of technology's potential, increasing the ability to adapt and participate. They show enthusiasm and eagerness to learn [17], and their frequent use of technology for purposes they enjoy or need [7] may have a positive effect on their quality of life.

Older people and even the oldest of the old have been found to show enthusiasm or interest regarding technology [4], which is in line with our findings. If not enthusiasm, then at least curiosity seemed to be present among most of our participants. These signs of interest are the first step toward learning and using technology [17]. Moreover, support and encouragements from others, such as family or friends, are found to have an impact on starting to use or continuing to use technology [7]. One of the participants had succeeded in recruiting friends to start using a tablet. Therefore, it is not necessarily given that the Excluded will remain excluded. It is never too late to learn [20], but barriers like functional decline, reduced health, lack of interest, frustration, mistrust, or anxiety toward technology in sum are important reasons for not doing so [13, 17]. Hence, for those unable or unwilling to learn or use technology, the potential that lies in technology is limited [13, 16].

4. Conclusion

We identified three types of technology users on the basis of their own experiences and technology tryouts. The three types of technology users underscore that older people have varying experiences regarding technology. These findings lead us to suggest that the potential that lies in technology equally varies. For the Excluded, the potential is limited, opposed to the Entertained and the Networker, whose interest, enthusiasm, and experiences increase technology's potential to facilitate active aging.

Identifying and understanding an individual's ability or willingness to exploit technology's potential for active aging may, for example, have implications for how health-care services can be deployed by information and communication technology. Individual considerations and tailoring mindful of each individual's needs and preferences are necessary before implementation to fully exploit this potential. Further research will focus on how older people's use of technology (iPad), in interaction with services, volunteers, and next of kin support active aging and potentially postpone the demand for increased services.

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