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Understanding Motivations in Designing for Older Adults

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Abstract. A wide spectrum of research has been done in designing technologies for older people that address different aspects of the ageing process, such as physical, mental and emotional health. Recently, technology-based interventions that promote physical activity have gained momentum. Prior to designing the interventions, the key question we need to answer is why older people would use them. This requires consideration of personal, as well as socio-technical context of engagement. In this paper we describe our work in understanding personal and socio-technical factors of user engagement in using technologies for older people that promote physical activity and social interaction. We use the results to identify, articulate and validate user scenarios for our intervention design.

1 Introduction

The general context of our work is to foster physical activity with older adults , in which they do not very often engage in at a satisfactory level (Sun 2013). Although physical activity cannot stop the biological ageing process, there is evidence that regular exercise can minimize the physiological effect of ageing, thus increasing life expectancy and limiting the development and progression of chronic diseases (Nelson 2007). By taking advantage of the role of physical abilities and psychological factors in physical activity of older adults, we aim to foster active ageing by designing technology that provides physical and motivational support to older users.

Most of the existing technology-based interventions address ageing around a dominant stereotype, which describes older adults as people in need and technology as the solution to their problems (Gregor et al. 2002, Wilkinson and De Angeli 2014). However, there is strong evidence that this stereotype often leads to inappropriate design of artefacts, which older people may refuse to use or, in the worst case scenario, may be hampered by (Vines 2015). Studies on healthcare technologies move towards a better understanding of ageing as a process rather than old age as a state, where systems should help people move smoothly through later life as circumstances and capacities change (Light 2016). Being part of this paradigm shift, an important issue we need to address is to understand motivations of older people to participate in technology use prior to designing the interventions.

In this paper we instantiate a framework for understanding individual preferences and socio-technical context of engagement in healthcare interventions for ageing that promote physical and social activities. Our goal is to understand individual, social and technological factors to motivate engagement. We argue that addressing the goal above is crucial to design effective intervention strategies for older adults, which build on physical activity and social interaction.

2 Background

We overview some of the relevant and recent research concerned with the motivation of older people to participate in technology-based health interventions and technology-enabled social interaction.

Waycott et al. (2016) argue that much can be gained by looking beyond the

technology itself and examine the socio-technical context in which people choose to not participate or discontinue a social isolation intervention. So far, focus on user participation has been in the design process, with limited interrogation of issues surrounding how users participate in the evaluation and use

of new technologies. Researchers have called for more detailed reflections about both positive and negative experiences with technical interventions. Questioning values is another important practice of examining whether the values that technologies embody need to align with the personal values of the people who come to use them.

Vines et al. (2015) propose a general agenda for ageing research. They argue for embracing diversity of individual experiences and reflecting upon how personal histories impact technology use. They also point out that participation can be increased by engaging with older adults prior to the design process where fine- grained measures of "success" in later life can be identified and used to identify useful interventions to design.

Light et al. (2016) reflect on latest practices of using technologies for ageing. They emphasize the matter of engagement when designing technologies as a way to support emotional health during use.

Schorch et al. (2016) give an insider's perspective on older people as informal caregivers. One of the motivations that emerged from their study is self-recognition of the informal caregivers as care experts over time. An important design implication is the need for social activity support and coordination.

3 User Engagement

We conducted a study to elicit and explore the physical and social activities that older adults like to take part in, the factors that influence their intention to take part in the activity and the barriers to taking part. The study was organized as semi-structured interview with 18 participants. Ten of them were interviewed in Italy (6 females, 4 males; age ranging from 65 to 102 years old, mean 75; 5 from rural areas, 5 from urban areas), and 8 in the UK (4 females, 4 males; age ranging from 60 to 87, mean 70, 8 from urban areas). The aim of the study was to understand factors that can encourage older adults into sustained and varied physical and social activity. In the following we describe the theoretical foundation and summarize results of the study.

3.1 Theoretical Framework

To analyse user intention to perform a specific behaviour we use The Integrated Behaviour Model (IBM) (Montano et al. 2008). The model offers granularity of motivational factors, which we believe is crucial to fully understand the complexity and diversity of motivations to engage with physical and social activities. It describes the intention to engage in a given behaviour as a function of the attitude, the perceived norm and personal agency related to that behaviour.

The three components originally come from the Theory of Planned Behaviour (TPB) (Ajzen 1991). The distinctiveness of IBM is that it elaborates this model and specifies the kind of inputs for attitudes, norms and agency, along with additional factors that influence behaviour (e.g. knowledge and skills to perform the behaviour, salience of the behaviour, environmental constraints and habits). The attitude can be defined as a person's overall reaction to the behaviour. It is determined by the experiential, emotional responses (affective) and the beliefs about the outcomes (instrumental) associated with a given behaviour. The perceived norm reflects the social pressure one feels to perform (or not to perform) a particular behaviour. This is based on what people think other people think one should do (injunctive norm) and the perception about what others are doing (descriptive norm). The personal agency consists of two constructs: perceived control and self-efficacy. Perceived control is determined by the perception of the degree to which various environmental factors may facilitate (or prevent) carrying out the behaviour. Self-efficacy is the perceived confidence in the ability to perform the behaviour (Montano et al. 2008).

We use the IBM not as a prescriptive model (i.e. what should be done), but rather as a descriptive model that - based on extensive empirical research - identifies the psychological factors that are highly likely to contribute to behaviour intention, implementation and change. The model guided the design of the interview schedule for our study.

3.2 Study Results

We analyse the results against the components of the IBM.

Attitudes - Analysing the attitudes towards the activities people still engage in, the ageing variable could almost go unnoticed. Older participants elaborated on physical and mental well-being, gratification and reward. Physical activities, such as walking or hiking, were described as sources of serenity (mental well-being) and a way to stay fit (physical well-doing). Furthermore, participants elaborated on cognitive capabilities, spatial abilities, attention and concentration (e.g. while describing a path or the ability to recognise a plant), as well as social experiences (e.g. when they walk with others, friends or acquaintances). These varied positive attitudes, relating to senses and cognition, counteracted the risk of physical, social and psychological decline.

Norms - Reflecting on the norms that regulate their activities, participants presented a view of themselves and their actions as strongly situated in the social and material world. In these reflections we noticed an interesting dichotomy. If on the one hand, family members seemed to have a main influence in the selection of an activity (injunctive norm), same-age peers became influential in defining the norms regulating the activities in practice (descriptive norms). Relationships with peers were perceived as being influential in practice because they were framed

into a mutual exchange among people with similar life experiences. On the contrary, relationships with family members reflected an asymmetrical role, with somebody being in charge of helping the other. The majority of interviewees reported to still play this role (i.e. with children and grandchildren), while others declared to need help from family members or caregivers because of physical impairments.

Agency - The effect of ageing came out strongly when considering the perception of personal agency. All participants were well aware of a general decline of their physical abilities, but they appeared to be determined and resilient (self-efficacy). The majority of the participants reported a high internal locus of control, which helped them to face the difficulties related to ageing (perceived control). The narratives about agency reflected a view of ageing as a natural process. Even when talking about health impairments as a barrier to specific activities, ageing was not perceived as negative. On the contrary, resilience, persistency and proactivity were main topics. Participants took pride in emphasising what they actually did and stressed their persistent will to be active. When considering the agency of older adults, it is important to consider their social relationships. Results highlighted that older adults build their agency with respect to their social relationships, all the more by comparing with age peers.

3.3 Design Implications

Reflecting on the results of the study, we identified two main directions in designing health interventions that promote physical activity and social interaction.

Design for resourceful ageing – By grounding design in resourceful ageing (Heil and Marks 1991), the focus shifts from creation of tools in support of older people to construction of devices which improve self-efficacy. So, on the one hand, it is of interest for designers to investigate possibilities for exposing the positive image of the elderly as active and resilient, making visible their skills, knowledge, abilities while respecting their will. On the other hand, designers have the opportunity to work on the creation of a sustainable ecosystem of human and material resources, while amplifying their social value with technological tools. The framework of resourceful ageing suggests design trajectories related to volunteering and family caregiving, which we plan to use in designing scenarios. Engagement of older adults in volunteering has been discussed in literature. It has been reported that volunteers gave account to higher levels of well-being and life satisfaction compared to non-volunteers, suggesting that volunteering can play an important role in maintaining good health in later life (Musick et al. 1999).

Design for pleasure – As indicated by our results, pleasure and enjoyment play a crucial role in motivating older people. By elaborating on this trajectory we will

go beyond the dominant medical model according to which older people need to be monitored, helped and assisted towards independent active persons involved in different kinds of activities for emotional and mental well-being (Cozza and De Angeli 2015).

4 Conclusion and Future Work

In this paper we describe the results of the research we conducted to understand motivations of older adults to engage in interventions that promote physical activity and social interaction. The results indicate that attitudes of older people are strongly positive and embodied. Well-being and well-doing are the main motivators to be active. Reflections on social norms highlight a differential role for family and same-age peers. Finally, considerations about agency suggest that older adults perceive ageing as a natural process, which can be dealt with proactively and resiliently. Although the results cannot be generalized due to the limitation of our sample, most of the results were unexpected providing a portrait of the elderly in contrast with the stereotype as people in need, but as independent active persons involved in different kinds of activities in both social and private contexts.

Based on the results, we set design guidelines according to which our immediate work is concerned with articulating engagement factors in the design of scenarios and validating the scenarios with older adults.

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