

Designing Interactions for the Ageing Populations

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Workshop Schedule

- 09:00-09:15 Brief welcome to the workshop by the organizers and discuss the agenda
- 09:15-09:35 Get to know each other (everybody including organizers may give a one minute introduction of themselves)
- 09:35 – 10:30 Madness paper talk (18 papers, 3 mins each paper)
- 10:30-11:00 Coffee Break
- 11:00-11:30 Show-and-Tell Session
- 11:25-12:30 Group discussion: Participants will freely choose one among the three topics, and remain to the same group till the end
- Name of the topics and moderator names: TBD
- 12:30-14:00 Lunch Break
- 14:00-15:00 Group discussion (with same moderators and topics)
- 15:00-15:30 Coffee Break
- 15:30-15:45 Group moderators will summarize their findings
- 15:45 – 16:15 Wrap up on what the future might look like on mobile interaction of elderly, actions for follow-up activities.

Lost in Transition: The Importance of Conceptualizing Aging as a Process in Accessibility Research

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[Workshop on Designing Interactions for the Ageing Populations](#)

Abstract

Later life is full of transitions, yet most Human-Computer Interaction (HCI) research has focused on older age as a state, rather than as a dynamic, ever-changing phase of life. This static perspective is reflected in technology design in the HCI community, specifically in accessibility; our technologies do not change with us or have the awareness of our life phase to change alongside us. In this paper, we explore the benefits and challenges of adopting a process-oriented view towards aging, specifically through the life course perspective [4]. The life course perspective is a theory that explains the heterogeneity of older adults by examining how previous life experiences impact later ones. We discuss opportunities in accessibility research that can be explored through a life course perspective and offer ideas for technology design based on this dynamic view of aging.

Author Keywords

Older adults; life course perspective; accessibility.

ACM Classification Keywords

K.4.2. Social Issues: *Assistive technologies for persons with disabilities.*

Introduction

Many people face transitions in late life, including retirement, shifts in identity, family structure, roles within the family and community, as well as changes in living arrangements. In addition, some older adults face changes in physical, cognitive, and sensory abilities. These changes can be temporary or permanent, and based on contextual or individual factors. Changes can come in the form of losses or gains in abilities and skills, unfolding over the short or long term.

Unfortunately, much HCI research has focused on older age as a binary state—e.g., one is either 65+ or not (e.g., [1,7]). Although this research is informative, it lacks perspective on the inherently dynamic nature of older age. It also feeds into technology designs for older adult caricatures and is insensitive to changing needs. For example, some HCI research, including our own, compares older adults' technology performance against that of younger individuals [1,5,7]. Framing older adults as a unified group relative to "everyone else" assumes that researchers are able to find broad patterns in this age group while overlooking its heterogeneity.

In contrast to these prevailing views, the life course perspective allows older age to be examined in terms of the interaction between personal biography and socio-historical context, and can help researchers avoid oversimplifying the aging experience [9]. Not only does the life course perspective offer a critical alternative to the dominant discourses in HCI aging research as identified by Vines et al. [13], it also lends itself to viewing aging as a phase marked by important transitions.

In this paper, we argue for adopting the life course perspective for studying accessibility for older adults, specifically for the transitions that older adults undergo and the implications for the design of interactive technologies. Here we provide some background on the life course perspective, opportunities for studying and improving upon accessibility research through this perspective, as well as some challenges with using it.

The Life Course Perspective on Older Age

In contrast to viewing stages of life as universal and tied to chronological age, the life course perspective considers how a person's social and historical contexts influence life events and how early life experiences affect later ones [4]. The life course perspective's intellectual origins are in 1950s developmental psychology. Inspired by findings from longitudinal studies, sociologists looked to developmental psychologists to understand the complexities of developmental patterns in human lives [3]. Sociologists adopted this developmental perspective to account for the differences in aging experiences based on micro and macro social and structural factors [12].

The life course perspective explains the heterogeneity of older adults as a group and why individuals of the same cohort experience older age differently. For example, the concepts of cumulative disadvantage and multiple jeopardy describe how deficits accumulate throughout the lives of individuals who occupy several disadvantaged social positions simultaneously [9,12]. Another advantage of this perspective is that it is not fatalistic because it factors in human agency and people's ability to change their own life trajectories at key transition points.

The life course perspective has informed fields such as medicine, statistics, and gerontology. In medicine, for example, Ben-Shlomo and Kuh [2] investigated how health trajectories and the outcome of chronic diseases can be predicted based on life experience, level of income, lifestyle, and coping strategies employed earlier in life. They argued that a life course perspective can enrich oversimplified models of chronic disease pathways, which mainly consider the patient's recent past and leave out key contextual factors.

Using the Life Course Perspective in Accessibility for Older Adults

HCI research tends to use chronological age as a proxy for certain abilities and skills with technology [13]. Yet, research suggests that the 65 and older age group is more heterogeneous than any other age group [12]. To account for the heterogeneity of older age in HCI research, Vines et al. [13] identify the life course perspective as an opportunity to design for individual biographies instead of generalized findings. Foong [6] also argues for the use of the life course perspective in HCI research with older adults, saying that there is an opportunity to study critical transitions in later life [6]. However, the life course perspective has yet to inform to HCI *accessibility* research specifically, by, for example, examining ability changes in later life. As older adults increasingly stand to benefit from innovations in accessible computing, the life course perspective seems particularly well suited to the intersection of technology, accessibility, ability, and aging.

Building on previous work [6,13], we explore the benefits of using the life course perspective in accessibility research with older adults. In this section, we discuss three main ways in which the life course

perspective can inform the design process for accessible researchers: (1) account for older adults' attitudes towards and acceptance of their own changing abilities; (2) identify study participants based on common life transitions those participants are experiencing; (3) leverage adaptive interfaces to accommodate changing abilities. We now describe each of these uses of the life course perspective in turn.

Account for attitudes towards and acceptance of changing abilities

As people age, they perform more impression management (i.e., they try to portray themselves in a good light) [10]. Research suggests that older adults will try to conceal signs of decline to appear independent and competent [8,11]. Research also suggests that older adults contextualize impairments relative to other losses, such that an ability loss may seem more or less trivial relative to other experiences in life, such as loss of family members or major traumas in early life [11].

The adoption of accessible technologies might be related to older adults' perceptions of their impairments. If they do not see themselves as "disabled" or do not want others to see them as such, they will not adopt technologies that are meant to be used by individuals with impairments. Therefore, designers must portray accessibility features in such a way that they reflect older adults' acceptance of and attitudes toward their own changing abilities.

Identify participants based on common life transitions

Rather than recruiting based on chronological age, researchers can recruit based on the similarity of transitions individuals have experienced in their lives.

For example, older adults whose abilities changed in early life may accept and manage their impairment differently than older adults who are experiencing a similar impairment as the result of age-related decline (e.g., hearing or vision loss).

Because experience of an impairment might differ drastically based on the onset of a change in abilities, it could be beneficial to account for life events surrounding abilities while recruiting older adults. Designers can collect additional information on the participant's impairments, such as when the change in ability happened, as well as strategies they have developed to manage it. For controlled lab experiments, participants can be grouped based on onset of an impairment.

Leverage adaptive interfaces to accommodate changing abilities

The design of accessibility features in many technologies reflects a binary conception of ability: individuals are either "able" or "disabled," so accessibility features are often activated with an on/off toggle switch. In addition, this design often puts the burden of changing the accessibility settings on the user, which reflects a focus on disability [14].

Adaptive interfaces are one area of exploration for designers who are interested in transition-focused technology. These technologies can detect a change in ability and automatically adapt the interface to accommodate this change. A smartphone, for example, may monitor input and subtly increase the dwell time (duration the finger must be on the screen) to activate a button, so as to reduce accidental selections for a user who is developing a tremor.

Challenges using the life course perspective

Despite the advantages of using the life course perspective, challenges may also arise. Transitions in abilities would be best captured by longitudinal studies, but these studies can be costly and time-intensive. An alternative is to recruit participants going through different stages of the same transition. However, recruiting in this way can be logistically difficult because stages of a transition are often only knowable in hindsight.

Another known challenge in using the life course perspective is distinguishing cohort and age effects [9]. For example, one common research question in HCI is why are some older adults technology averse? Technology aversion might be an age effect since the interest in keeping up with technological advancements might decrease with age. Technology aversion in older age might also be a cohort effect: individuals who were introduced to technologies later in life may not be as comfortable with them as people who were introduced at an earlier age. As illustrated with this example, age and cohort effects can be very difficult to untangle, yet differentiating these factors is a central part of the life course perspective.

Conclusion

Aging research is starting to be viewed through a critical lens in the HCI community. In line with this trend, we argue for the use of the life course perspective in studying and designing at the intersection of accessibility and aging. There are several advantages to adopting the life course perspective for accessibility research, including a focus on life transitions and contextual factors that influence inequalities in the aging experience.

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