Fat Finger Worries: How Older and Younger Users Physically Interact with PDAs

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Each month, the world's elderly population grows by 795,000. By the year 2030, the world's older population will grow by 847,000 per month[1]. Researchers in the HCI community have taken notice of this trend and are working on applications to help older people live independent and productive lives. Personal Digital Assistants (PDAs) [2, 3] and smart phones[4] are some of the devices researchers use to create *assistive technologies* for older people. We are developing a PDA application to help older people with end-stage renal failure monitor their nutrition.

When we started our nutrition monitoring project, we were cautioned that older people may not be able to use PDAs given the adverse effects age has on vision, dexterity, and coordination[5, 6]. If elderly populations have difficulties using traditional personal computers, as has been found in some studies[7-10], how will they fare when interacting with the smaller screen and buttons of a PDA? The lack of literature available on how elderly physically interact with PDAs lead us to create this initial study comparing how older and younger people physically interact with PDAs.

The poster presents our initial work investigating whether elderly people (75-85 years old) can use PDAs without difficulty. Younger people (25-30 years old) were the control group. The control group consisted of ten participants 25-30 years old (two female, eight male). The older group had ten participants 75-85 years old (five female, five male). Participants were paired based on computer and PDA experience.

Participants were asked to complete three traditional PDA tasks (pushing buttons, viewing icons, and recording voice messages) and two non-traditional tasks (scanning bar codes with two kinds of scanners). The scanning tasks were included in the study to (1) determine if it is a convenient method to input nutrition information and (2) give insight into how participants may fair in other non-traditional PDA tasks such as taking digital pictures. We designed all of our applications to have quantitative measurements such as the number of incorrect button presses, preferred icon size, or number of incorrect recordings/scannings. We did not enforce any maximum amount of viewing time because we wanted the participants to feel comfortable reading the icons and avoid the stress associated with timed events. Researchers have found placing time constraints on older people increase the number of errors [11].

The key findings of our study were that:

- There were no differences in success rates between older and younger participants during the button press and voice recording task.
- Younger participants preferred smaller icons (5mm or 10mm), whereas older participants preferred larger icons (20mm).
- Older participants scanned objects more with both scanners, but had the same success rate (obtaining a valid UPC number with the scanner) as younger participants.

Our results can be used as a guideline for creating applications for diverse age groups.

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