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Problem Space Research: Accessible Design for Older Adult Users

Though it is well known that adults over the age of 65 would not describe themselves as confident in adopting new electronic devices, the number of seniors using the newest digital technologies has steadily grown in the last decade and, for some types of devices, the rate at which seniors are adopting these technologies has also increased (Pew). Studies and my own personal observations show that older adults are very willing to learn a new technology if it makes a familiar commodity or activity more accessible to them (Sayago). Additionally, they are also very motivated to learn how to operate systems in the same way that any other user might, on principle of independence (Sayago). By reducing the barriers created by diminishing personal capability due to age, willingness to integrate beneficial technologies can be boosted among older adults.

The input devices that we rely on for personal computers are rather difficult for seniors to use, though willing to do so. The standard mouse requires hand-eye coordination and dexterity, both capabilities that diminish with age. Actions like the double-click become difficult when the user's ability to make quick finger movements is reduced. Surprisingly enough, some users overcome this difficulty by relying more

heavily on the keyboard, which is easier to operate but requires knowledge about special key functions (Sayago). Alternative modes of input are often researched to replace the mouse and keyboard due to these accessibility concerns, but acceptability plays a huge role in the adoption of these alternative modes (Portet). Senior users are less willing to make use of these systems in a way unlike younger users, which gives the impression of disability. Luckily, many new modes of input have been introduced into mainstream electronics within the last several years, many of which are much more accessible to older users. Touch-based computers, tablets, and phones still require significant dexterity to operate, but are seeing increasing usage by older adult users (Pew). Voice-based input systems have developed significantly within the last decade, and are now widely available and widely used in the form of devices like the Amazon Echo. Though these technologies were previously employed to a large degree for providing accessibility, they are now widely accepted as a means of input and are consequently found much more acceptable by senior users. Grandparents on both sides of my family have now adopted one or more of these devices, and they have quickly become integrated into their home routines. This contrasts greatly with their adoption processes with the personal computer and smartphone, which proved much more difficult. With these developments in physical interfaces, older adults are less likely to have difficulty operating a device before encountering other barriers to use.

The primary deterrent for older adults learning to use digital technologies is just that: learning. Though difficult for younger users to notice, the cognitive load of interacting with current virtual interfaces and especially internet-based content is very

high. Users have tens of potential actions available to them per any given view or webpage, and content changes location frequently. Navigation of such an interface efficiently depends heavily on the user's memory. Older users are less able to retain this vast quantity of information as readily, and commonly adapt to this interface through note-taking and frequent practice. Unique lingo and terminology also accompanies computer use, which creates additional memorization requirements. Younger users, who are familiar with this vocabulary tend to do poorly at expressing instructions in terms familiar to the older users (Sayago). Buttons are labelled with these unfamiliar terms and oftentimes represented by icons, which also fail to communicate the action to be performed. Internet content presents the greatest challenge to seniors by virtue of the volume of information presented. Web content tends to contain significant irrelevant and malicious information (advertisements, phishing and spam content), which are identified by users, both young and old, as a major hurdle in navigating through online interfaces (Sa-nga-ngam).

Decreasing the cognitive load in technological adoption seems to be the elephant in the room of accessibility. User interface design can make use of fewer images and labels that use familiar terms to increase clarity. Web content can be refined to reduce informational noise. In systems specifically for older users, greater care can be taken to reduce the number of steps that must be taken to perform a desired action. Views should properly display all available routes to the information and activities provided by the system, but should not overload the user with options.

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