

Talking computers and diversity in older audiences

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P. Wright, Talking computers and diversity in older audiences. Gerontechnology 4(4):187-189. Digital documents, such as those on the world wide web, can present information using rich multimedia forms including video and audio, and can let people choose how information is presented. Older adults are diverse, so individuals will differ in their preferences for reading text on screen, or listening to it, or combining reading and listening. Recent studies suggest that giving people simple onscreen options for selecting whether they want to listen, can accommodate this diversity more effectively than categorising users by age and presenting only the 'older adults' version. The take-home message is to support diversity among older adults by facilitating individuals' choices about how multimedia information is presented.

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The information and communication technologies (ICT) are an indispensable part of everyone's life. Whether television, phones, cameras or computers, ICT facilitates and enriches modern life. As ICT becomes digital it fosters new patterns of interaction ranging from listeners emailing or texting radio and TV presenters, to shopping online. Governments, both local and national, use the internet to explain about local community services or to enable tax returns to be submitted online. Although the 'digital divide' may currently be related to age, it has been suggested that adults over 65 are the fastest growing segment of computer users¹. So now is an appropriate time to ask how to exploit multimedia's potential for informing the general public, particularly the older members of the public.

Other Editorials in Gerontechnology have pointed to the role of smart technologies in assisting older people². This approach can be extended to presenting multimedia information in the ways that people will find most useful. The need

for this approach was apparent when people used an interactive 'What if ...?' display to explore how the risk of coronary heart disease and stroke varied when certain lifestyle factors were changed³. Older adults explored more with a plain, table-style interface whereas younger adults, particularly males, explored more with a game-playing interface. Software that categorised users could present older adults with the appropriate interface.

DIVERSITY

However, a different conclusion about the desirability of categorising users was reached in recent UK studies, which were funded by the Economic and Social Research Council within their programme *People at the Centre of Communication and Information Technologies*⁴. These studies, looked at people's multimedia choices when doing a variety of reference and procedural tasks, which are the main categories of public information provided on the internet. The researchers noted that although there was often a dominant pattern of modality

choices for a particular task, there were also large minorities (e.g. 25%-33%) in most tasks. Therefore more people will be satisfied if they can choose their own multimedia combinations, rather than having to accept the majority's choice. Similar diversity in modality choice was reported when older people used pedestrian navigation aids⁵.

Of course there is nothing new in pointing out that older people are diverse. They differ in health, wealth and educational background, and these are factors which may lead people to differ in the way they prefer to have information presented. Failing eyesight may mean that people need to adjust the text for legibility, or perhaps they may prefer to listen. Poor education can mean that reading has never been some people's preferred option. One advantage of digital information is that it can accommodate individual differences by letting people exercise control over how material is presented to them. In particular, advances in the technology of text-to-speech synthesisers mean that materials which may have originated as printed documents could now be spoken if the user wished. People can also have choices about the display of graphic materials (e.g. choosing to view/hide them). Since some older people are prone to distractibility⁶, the option to hide unwanted information may be very helpful.

TALKING COMPUTERS

When people could choose to listen to the text it was noticed that older people, unlike younger adults, did not always make choices in their own best interest. ('Best interest' was assessed by monitoring performance when there was no choice about how the material was presented.) Sometimes the older people persevered with the initial settings of the information display, rather than adjusting the settings for their per-

sonal requirements. Sometimes they seemed to be still making the choices that were beneficial to younger adults. For example, in a reference task where information on different pages had to be compared, older people often turned the voice off, although when there was no choice they were more accurate with the voice on. Perhaps the voice aided memory for older people, although it slowed the reading of younger adults. Advising older people about the modality combinations which they may find most useful could help individuals deal with the information more comfortably. Not all tasks benefited from spoken text. In a procedural task when there was no choice, the voice reduced the accuracy of older people. So considerable contextual information would be needed by 'smart' software to accommodate this diversity.

The concept of customisation by the user is not new and several applications, including web browsers, offer easy access to magnification of text on screen. Some applications also offer the option of text-to-speech output, but this can be complicated to set up. When modality options were on screen all the time, older people changed their minds across tasks about wanting to listen. So very easy access to switching the voice on/off is needed.

Many text-to-speech systems now exist. Some allow choice of male/female voice and speaking rate, and some are multi-lingual⁷. Among the critical factors determining comprehensibility is how well prosody is modelled, since prosodic cues facilitate parsing the utterance⁸. The intelligibility of the speech synthesis is used in the present studies was enhanced for some words (e.g. Welsh place names) by providing the software with a parallel text in which the spelling was adjusted to give the correct pronunciation. In general, having the software

refer to a pronunciation glossary would serve the same purpose.

NEXT STEPS

People can also choose how to input material. The research investigating people's modality choices used a touch screen so that no-one was disadvantaged by their lack of familiarity with computers and mice. Some people may prefer voice input for navigation through digital documents, and voice recognition technology could make this feasible. It is not yet known whether this option would be attractive to older people, perhaps because it is less effortful, or unacceptable because it is an unfamiliar mode of interaction⁹.

To reduce the confusability of describing interfaces as *adaptive* (changed by the intelligence of the software to fit the user category) or *adaptable* by the users themselves, the term '*congenial*' has been suggested for the multimedia configuration that people personally select¹⁰. The label seeks to capture both 'cognitive congeniality', where the older person customises the information to suit whatever cognitive strengths and limitations they may have, and also 'affective congeniality', i.e. fitting with the person's aesthetic preferences and promoting feelings of satisfaction with using the interface. Human-Computer Interaction researchers are currently pushing the boundary of interface evaluation beyond the traditional forms of usability to include a multi-faceted approach to the 'user experience'¹¹. In similar spirit, gerontechnology highlights the need to expand beyond the constraints of group norms¹² and recognise the importance of accommodating individual differences among the older users of multimedia documents.

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