

Developers of gadget interfaces must consider interactive skills, reactions of older users

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Dr. Thea Blackler.

Queensland University of Technology researchers have found the reasons why parents and grandparents often complain their children can pick up a gadget and use it straight away or that they need them to set up the new TV or "work" a new device.

Dr Thea Blackler, project director, said the results of a series of studies from QUT's PAS (People and Systems) lab suggested designers of

everyday gadgets such as [microwaves](#), cameras, and [smart phones](#) would have to consider the needs of the growing older population when designing user controls or interfaces.

"We found that older people (60-plus) struggle with using contemporary products. They show slower, less intuitive interaction with more errors than younger people," Dr Blackler, from QUT Creative Industries Faculty, said.

"Past research has found that prior experience with a product is the leading contributor to intuitive use but the new research found that older people were less familiar and used fewer functions on the products they already had in their own homes than younger people.

"When participants were given tasks on products they didn't own - two alarm clocks and two cameras - both the middle aged and the older [age groups](#) were less able to use them quickly and intuitively than the younger group."

Dr Blackler said the finding that middle-aged people (40-59) were familiar with the products they owned but were similar to older people in applying previous experience to new products to gain proficiency suggested that they also began to struggle with novel interfaces.

"Middle-aged and older people will form an increasingly important market. From this research we have developed a Familiarity Identification Tool to help designers and researchers discover the 'familiarity' of their target users," she said.

"However, our results suggest past experience or [familiarity](#) is not the whole reason for the age differences."

Dr Blackler said it was well-established that physical declines such as

changes in vision and hearing, as well as a reduction in dexterity, could affect the way older people conducted all sorts of daily tasks.

"The research team found cognitive declines were also affecting older people's intuitive use of technology," she said.

"Although older people vary tremendously, many suffer some level of cognitive decline at some stage and we found that lower scores on working memory tests correlated strongly with slower, less accurate and less intuitive use of interfaces."

The team looked for factors that could mitigate the difficulties older people had with using the interfaces on everyday technologies.

They tested 50 participants in three age groups ranging from 18 to 75-plus on different types of interfaces: words-only; symbols-only and words and symbols.

"We found that a words-only interface worked better for people aged 65 and over; people in the younger and middle-aged groups performed faster and more accurately on words and symbols interfaces."

The team then studied the relationships between age, interface complexity and intuitive use by asking participants to complete two tasks with a virtual pet on an iPad.

One task used a simple 'flat' interface while the other used a 'nested' or multi-layered/menu-based interface.

"Age had a significant effect on time to complete the tasks, with the 73+ age group taking significantly more time when compared with the four younger age groups on either interface," Dr Blackler said.

"All age groups took more time to complete the tasks on the nested

interface, (possibly because there were more steps). However, all three age groups over 50 had significantly less intuitive uses, supporting previous research that older people find nested interfaces more difficult to use.

"However, these two groups did not make significantly more errors compared to younger groups on both interface types, which suggested that older people tend to trade speed for accuracy."

The research team has proposed a model, based on the findings, for an adaptable interface design as a strategy for developing intuitively learnable product interfaces.

This model has potential to minimise the necessity for developing products exclusively for [older people](#), and could help designers develop product interfaces that are more inclusive in nature.

Provided by Queensland University of Technology

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