

Declining intelligence in old age linked to visual processing

August 4 2014

Researchers have uncovered one of the basic processes that may help to explain why some people's thinking skills decline in old age. Age-related declines in intelligence are strongly related to declines on a very simple task of visual perception speed, the researchers report in the Cell Press journal *Current Biology* on August 4.

The evidence comes from experiments in which researchers showed 600 healthy older people very brief flashes of one of two shapes on a screen and measured the time it took each of them to reliably tell one from the other. Participants repeated the test at ages 70, 73, and 76. The longitudinal study is among the first to test the hypothesis that the changes they observed in the measure known as "inspection time" might be related to changes in intelligence in old age.

"The results suggest that the brain's ability to make correct decisions based on brief visual impressions limits the efficiency of more complex mental functions," says Stuart Ritchie of the University of Edinburgh. "As this basic ability declines with age, so too does intelligence. The typical person who has better-preserved complex thinking skills in older age tends to be someone who can accumulate information quickly from a fleeting glance."

Previous studies had shown that smarter people, as measured by standard IQ tests, tend to be better at discerning the difference between two briefly presented shapes, the researchers explain. But before now no one had looked to see how those two measures might change over time as

people grow older. The findings were rather unexpected.

"What surprised us was the strength of the relation between the declines," Ritchie says. "Because inspection time and the intelligence tests are so very different from one another, we wouldn't have expected their declines to be so strongly connected."

The results provide evidence that the slowing of simple, visual decision-making processes might be part of what underlies declines in the complex decision making that we recognize as general [intelligence](#). The results might also find practical use given the simplicity of the inspection time measure, Ritchie says, noting that the test can be taken very simply on a computer and has been used with children, adults, and even patients with dementia or other medical disorders.

"Since the declines are so strongly related, it might be easier under some circumstances to use inspection time to chart a participant's cognitive decline than it would be to sit them down and give them a full, complicated battery of IQ tests," he says.

More information: Paper: *Current Biology*, Ritchie et al.: "A strong link between speed of visual discrimination and cognitive ageing."

Provided by Cell Press

Citation: Declining intelligence in old age linked to visual processing (2014, August 4) retrieved 27 April 2024 from

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