

Memory decline linked to an inability to ignore distractions

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One of the most common complaints among healthy older adults relates to a decline in memory performance. This decline has been linked to an inability to ignore irrelevant information when forming memories. In order to ignore distracting information, the brain should act to suppress its responses to distractions, but it has been shown that in older adults there is in fact an increase in brain activity at those times. In a new study published in the April 2010 issue of Elsevier's *Cortex* researchers at the University of California San Francisco have shown that even prior knowledge of an impending distraction does not help to improve the working memory performance of older adults.

Drs. Theodore Zanto and Adam Gazzaley studied 21 adults aged between 60 and 80 years while they performed a [working memory](#) task in which they were shown random sequences of pictures containing faces and scenes. From a given sequence, participants were asked to remember either only the faces (ignoring scenes) or only the scenes (ignoring faces). In a second round of testing, the participants were given prior information about which specific pictures in the sequence would be relevant and which to ignore. The participants' brain activity during the tasks was recorded using electroencephalograms (EEGs).

Previous research from this laboratory has indicated that the increase in [brain activity](#) in response to distractions occurs very soon (within 200 milliseconds) after the [distraction](#) appears. Since there is only a very short amount of time allotted for the brain to identify an item as irrelevant and suppress any further neural processing, it was suggested

that [older adults](#) might benefit from prior knowledge of the impending distraction. However, results from the new study have proved that this is not the case.

Interestingly, the researchers found that later stages of neural processing (500-650 milliseconds after item presentation) do show signs of suppression, confirming that the "suppression deficit" is related to early stages of neural processing. The findings suggest that a working memory decline in older adults is indeed due to an inability to ignore distracting information, which furthermore cannot be improved with preparedness.

More information: Cortex is available online at www.sciencedirect.com/science/journal/00109452

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