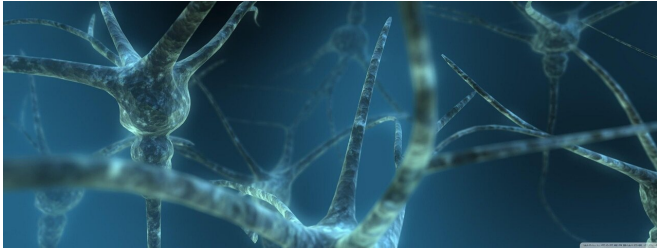


Forensic memory detection tests less effective in older adults

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New research led by the University of Kent's School of Psychology has found that some brain activity methods used to detect incriminating memories do not work accurately in older adults.

Findings show that concealed information tests relying on electrical activity of the brain (electroencephalography [EEG]) are ineffective in [older adults](#) because of changes to recognition-related brain activity that occurs with aging.

EEG-based forensic [memory](#) detection is based on the logic that guilty suspects will hold incriminating knowledge about crimes they have committed, and therefore their brains will elicit a recognition response in the EEG when confronted with reminders of their crimes.

The team of researchers at Kent led by Dr. Robin Hellerstedt and Dr. Zara Bergström conducted the study with 30 participants under the age of 30 and 30 participants over the age of 65. All participants undertook a concealed information test to detect if they recognized details from a mock crime they had just committed, which would indicate criminal guilt. However, only [young adults](#) showed a strong EEG recognition response to reminders of the crime, with such responses being absent in the older group. This failure to detect memories with EEG brain activity occurred even though the older

group had the same knowledge about the [crime](#) as the younger group, and had just as good general recognition memory ability.

The research published by *Cortex* therefore suggests that EEG-based forensic memory detection tests have limited [practical applications](#) with less validity in older adults than younger populations.

Dr. Bergström said: 'Our research demonstrates that EEG-based forensic memory detection in older age is impaired, even with methods that compensate for potential age differences in frequency, timing and location of brain responses.

'Further investigation is needed to examine the ability of these tests to detect concealed memories of real crimes, and whether memory detection in older age is a reflection of permanent changes in [brain](#) functioning or is influenced by motivational processes that can vary across situations. Findings could have implications for processes within the criminal justice system, such as the use of polygraph techniques, which may be vulnerable to similar limitations.'

More information: Robin Hellerstedt et al, Aging reduces EEG markers of recognition despite intact performance: Implications for forensic memory detection, *Cortex* (2021). DOI: [10.1016/j.cortex.2021.03.015](https://doi.org/10.1016/j.cortex.2021.03.015)

Provided by University of Kent

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