

Eye-tracking test could facilitate earlier Alzheimer's diagnoses

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With the steady increase in the life expectancy of Europe's population, researchers estimate that the number of people affected by age-related diseases, such as Alzheimer's disease, will increase dramatically in the next few years. This makes improving our understanding of the disease and its early diagnosis an important priority. New research, led by Lancaster University in the United Kingdom, in partnership with Royal Preston Hospital, Lancashire Teaching Hospitals NHS foundation trust, and published in the *Journal of the American Aging Association*, shows that people with Alzheimer's disease have difficulty with one particular type of eye-tracking test.

That a simple eye-tracking test could hold the key to earlier Alzheimer's diagnosis is an important finding, according to Dr Trevor Crawford from the Department of Psychology and the Centre for Ageing Research, Lancaster University. He noted that these new results were potentially very exciting as they demonstrated, for the first time, a connection with the [memory impairment](#) that is so often the first noticeable symptom in Alzheimer's disease.

'The diagnosis of Alzheimer's disease is currently heavily dependent on the results of a series of lengthy [neuropsychological tests](#),' Dr Crawford said. 'However, patients with a [dementia](#) often find that these tests are difficult to complete due to a lack of clear understanding and lapse in their attention or motivation.

'Over the last 10 years researchers in laboratories around the world have

been working on an alternative approach based on the brain's control of the movements of the eye as a tool for investigating [cognitive abilities](#) such as attention, cognitive [inhibition](#) and memory.'

In the study, 18 patients with Alzheimer's disease, 25 patients with Parkinson's disease, 17 healthy young people and 18 healthy older people were asked to follow the movements of light on a [computer monitor](#), and in some instances they were asked to look the opposite way, away from the light.

What the research group found were stark contrasts in the eye-tracking measurements taken from the research sample. In particular, patients with Alzheimer's made mistakes on the task where they were asked to look away from the light and were unable correct those errors, despite the fact that they were able to respond perfectly normally when they were asked to look towards the light. These uncorrected errors were 10 times more frequent in the Alzheimer's patients compared to the control groups.

Researchers also measured memory function among those Alzheimer's patients who found the test difficult and were able to show a clear correlation with lower memory function.

'This study takes this work forward because we found strong evidence that the difficulty in noticing and correcting the errors was probably caused by a problem in the memory networks of the brain that allow us to store the spatial position of objects in the environment,' Dr Crawford explained. 'The light tracking test could play a vital role in diagnosis as it allows us to identify, and exclude number alternative explanations of the test results.'

More information: Crawford, T.J., et al. The role of working memory and attentional disengagement on inhibitory control: effects of aging and

Alzheimer's disease'. *AGE*, 2012.

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