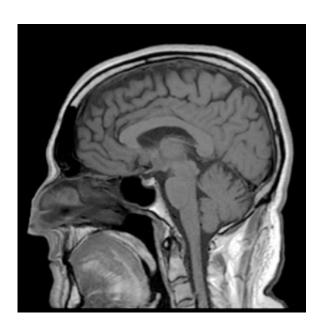# Word recognition 'could be the key' to early diagnosis of Alzheimer's

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Scientists say they have a better understanding of why people with Alzheimer's struggle to recognise and understand words - and their research has the potential to be developed into a test which could help clinicians make an early diagnosis.

In the early stages, the two most common complaints from people with Alzheimer's disease are difficulty remembering events and understanding and producing words.

Academics from the Universities of York and Oviedo, Spain, wanted to look at whether a patient's ability to recognise words is impaired in the early stages of the disease, and if it is, what properties of words make them easier or harder for a patient to recognise.

The research, which was done in northern Spain with colleagues at the Hospital Cabueñes in Gijón, is to be published in the *Journal of Neuropsychology*.

A test of word recognition based on the findings could contribute to diagnosis, Professor Andrew Ellis, from the Department of Psychology at York, said.

He added: "The biggest potential impact is in diagnosis. It might be a useful addition to the armoury of clinicians trying to do diagnosis.

"Alzheimer's disease isn't easy to diagnose in the early stages. There are other forms of dementia that are relatively common and it can be hard to distinguish between them in the early stages. A word recognition test based on these findings could contribute to diagnosis, but more work would need to be done."

As part of the study, participants were shown real words on a computer screen mixed with invented words. On each trial of the experiment, there was one real word on the screen and three non-words. The participant's task was simply to point to the real word on the screen.

Researchers chose the task primarily because it assesses whether words look familiar or not and does not require the patients to explain the meanings of words, something they struggle to do.

They conducted the study in Spanish but an example in English would be to point to the word EAGLE when it appears on the screen with SLINT,

OMPUL and CROOM. The researchers chose words which they expected healthy older people to be able to recognise.

Forty people with mild or moderate Alzheimer's disease aged 66 to 91 years took part in the study, and 25 healthy controls matched to the patients on age, gender and years of education. The healthy controls picked out the real words with little difficulty, from which the scientists infer that the patients would also have known these words before the onset of their dementia.

In contrast, the patients with Alzheimer's disease missed about one in five of the real words. When the researchers looked at which properties of the words made them easier or harder for patients to recognise, they found that patients recognised common words better than less common words , words with concrete meanings better than words with abstract meanings and words learned early in life better than words learned in later childhood or adulthood. Other factors including the length of the words did not affect performance.

Professor Ellis added: "A lot of work has been done with Alzheimer patients using the task of naming pictures of objects.

"In this study we wanted to look instead at whether their ability to recognise words is impaired in the early stages of the disease. If word recognition is impaired, we wanted to know what properties of words make them easier or harder for Alzheimer patients to recognise.

"We speculate that the damage responsible for the problems in word recognition and production that we and other researchers have identified, stem particularly from loss of cells in an area at the front of the left temporal lobe that is crucially involved in processing the meanings of concepts and words.

"The study is fundamental rather than applied research. Its purpose is to teach us more about how Alzheimer's disease affects the ability to use words, but it also has the potential to inform the clinical assessment of dementia."

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