

Eye movement when reading could be an early indicator of Alzheimer's disease

March 27 2014

Researchers have suggested that alterations in eye movements when reading could be linked to impairments in working memory and an early indication of Alzheimer's disease according to a new study published in the *Journal of Clinical and Experimental Neuropsychology*.

The study focussed on a group of 18 [patients](#) with a diagnosis of probable Alzheimer's disease. Eye movements were recorded at the Universidad Nacional del Sur (UNS), Bahía Blanca, Argentina. The visual stimulus were sentences in Spanish designed to represent a large variety of grammatical structures. The eye movement modelling and analyses were carried out for an interdisciplinary group of researchers of Argentina (UNS, CIC, CONICET) and of Germany (UniPotsdam).

Researchers found that the patients showed a decreased ability to predict the next words in a sentence based on contextual information, including sentence meaning and grammatical structure, when compared to the [control group](#).

The patients also showed signs of less focussed visual exploration, including slower [eye movements](#) when reading, and longer fixations both when processing new information and when reading sentences for the second time.

The researchers expected to find that once readers could predict the context of the sentence based on structure and meaning, they could infer what words should come next and therefore skip more upcoming words.

However, the patients with probable Alzheimer's disease skipped words less frequently than the control group, suggesting problems for Alzheimer's patients in integrating and using word stored information, presumably due to impairments in the working memory and in retrieval memory.

The researchers note that when patients with early Alzheimer's disease are performing tasks such as reading and writing, certain movement coordination and planning difficulties that may be present are commonly unnoticed.

They go on to propose that an in-depth analysis of eye movement and processes including word predictions may provide key markers for early disease symptoms.

More information: 'Registering eye movements during reading in Alzheimer's disease: Difficulties in predicting upcoming words' by Gerardo Fernández, Jochen Laubrock, Pablo Mandolesi, Oscar Colombo & Osvaldo Agamennoni, published in the *Journal of Clinical and Experimental Neuropsychology*, Volume 36, Issue 3. [DOI: 10.1080/13803395.2014.892060](https://doi.org/10.1080/13803395.2014.892060)

Provided by Taylor & Francis

Citation: Eye movement when reading could be an early indicator of Alzheimer's disease (2014, March 27) retrieved 13 May 2024 from <https://medicalxpress.com/news/2014-03-eye-movement-early-indicator-alzheimer.html>

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