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Differences in the eye movement patterns during reading in healthy people and patients with Mild Alzheimer Disease (MCI)

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During normal reading eye movements follow a reproducible pattern. Each eye movement ends up in a fixation point, which allows the brain to process the incoming information and to program the following saccade. The cognitive control of eye movements is a thriving area of research, primarily because of the thorough understanding of the oculomotor system, and the ease with which eye movements can be measured. The study of eye movements to stimuli of high cognitive load as read could also shed light on the inner workings of complex behaviors such as attention, inhibitory control, working memory, and decision-making processes. We analyzed the eye movement behavior of 40 healthy readers (Controls) and 40 patients with probable Alzheimer disease AD. The predictabilities of preceding words in highly-predictable sentences served as task-appropriate cues that were used by Controls readers. People used stored information of familiar texts for enhancing their reading performance. Differences on the eye movements' patterns are encountered and studied for each of the two groups. Each of them has its particular signature in the eye movement analysis (gaze duration, number of fixations, predictability effect, etc.). These findings might be relevant for expanding the options for the early detection and monitoring in the early stages of AD.