

# Declines in other thinking and learning skills may precede memory loss in Alzheimer's disease

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Cognitive abilities other than memory, including visuospatial skills needed to perceive relationships between objects, may decline years prior to a clinical diagnosis in patients with Alzheimer's disease, according to a report in the October issue of *Archives of Neurology*.

"Recent studies have focused on identifying the beginning of the transition from healthy aging to dementia," the authors write as background information in the article. "As new interventions become available, it will become important to identify the disease as early as possible." Loss of episodic [memory](#)—remembering events in one's life that can be explicitly stated—is commonly linked to Alzheimer's disease, but it is not the only aspect of cognition (thinking, [learning](#) and memory) that is affected.

David K. Johnson, Ph.D., of the University of Kansas, Lawrence, and colleagues assessed 444 individuals who did not have dementia when they were enrolled in the study, between 1979 and 2006. Upon enrolling, each participant underwent a [clinical evaluation](#) and a psychometric assessment including tests of four cognitive factors: global cognition, verbal memory, visuospatial skill and working memory. Participants were then evaluated at least one additional time before November 2007.

Over an average follow-up of 5.9 years, 134 individuals developed dementia and 310 did not; 44 with dementia died and underwent brain

autopsies that confirmed a diagnosis of Alzheimer's disease. Using data from the psychometric assessments, the researchers constructed models to evaluate the decline in various cognitive areas before individuals were diagnosed with [dementia](#). "A novel finding was that visuospatial abilities demonstrated an inflection point [sudden change to a steeper slope of decline] three years before clinical diagnosis," the authors write.

Declines in overall cognitive abilities followed in the next year, whereas inflection points for verbal and working memory were not seen until one year before clinical diagnosis. Similar results occurred in only the subgroup of individuals with Alzheimer's disease diagnosis confirmed by autopsy.

"There are several implications of this study," the authors conclude. "Some of the earliest signs of preclinical disease may occur on tests of visuospatial and speeded psychomotor skills. Furthermore, the greatest rate of preclinical decline may occur on executive and attention tasks. These findings suggest that research into early detection of cognitive disorders using only episodic memory tasks, such as word lists or paragraph recall, may not be sensitive to either all of the earliest manifestations of disease or the most rapidly changing domain."

"In summary, converging longitudinal evidence suggests that after a sharp departure from the relatively flat course of normal aging there is a preclinical period in [Alzheimer's disease](#) with insufficient cognitive decline to warrant clinical diagnosis using conventional criteria but that can be seen with longitudinal data from multiple domains of cognition and not just [memory](#)," they conclude.

More information: *Arch Neurol.* 2009;66[10]:1254-1259

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