

# Self-reported cognitive difficulties may indicate early signs of cerebrovascular disease, research shows

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Middle-aged adults at risk for cardiovascular disease (CVD) can perceive and complain about related cognitive difficulties long before standard neuropsychological screening tools detect any problems, according to a recent study from The University of Texas at Austin.

“The topic of subjective complaints is widely debated among researchers, some of whom feel very strongly that these complaints relate more to emotional state and personality than to objective functioning,” says Andreana Haley, lead author of the study, which was published in the *Journal of the International Neuropsychological Society*. “Complaining patients are sometimes dismissed in clinics as the ‘worried well.’”

To test the hypothesis that self-reported [cognitive difficulties](#), such as forgetfulness, inattentiveness and difficulties with verbal fluency, reflect early changes in [brain](#) function, Haley and a team of researchers from the Department of Psychology and University of Texas Imaging Research Center examined these commonly dismissed complaints in relation to the blood oxygen level dependent (BOLD) response to a simple cognitive task in middle-aged adults at risk for CVD.

Patients with CVD are at an increased risk for vascular cognitive impairment and vascular dementia as well as Alzheimer’s disease, Haley says.

The findings show there is something to reported cognitive difficulties and that people are good judges of relative changes in their own functioning even when nothing concrete shows up on typical clinical measures of cognitive ability.

“We chose to employ BOLD functional MRI in our study because it is a safe and non-invasive measure of [brain function](#) proved to be sensitive to early brain vulnerability associated with genetic risk for Alzheimer’s disease, HIV infection or multiple sclerosis,” Haley says. “Of course, the BOLD signal is very complex, so understanding of the physiological mechanisms underlying the observed changes will require further studies involving additional measures.”

The cognitive challenge chosen for the participants in the study was a verbal working memory task that has been shown to cause predictable activation patterns in the brain. During the task, a series of individual consonants was presented on a computer screen to participants who were asked to determine if the letter on the screen was the same as, or different from, a previously presented letter.

Throughout the experiment, researchers observed that an increased report of cognitive difficulties in participants was associated with lower BOLD response to the memory challenge despite largely intact brain function. This effect was detected in regions of the brain relevant to the task and where higher activation intensity equates to a better working memory.

“While lower brain response to a cognitive task at equal levels of performance is sometimes interpreted as better processing efficiency,” Haley says, “we now have sufficient reasons to believe that in patients with CVD, these changes are more likely to indicate early brain vulnerability.”

As cognition is one of the most important determinants of quality of life in old age, prevention of cognitive decline is integral to ensuring the successful aging of a growing population.

Provided by University of Texas at Austin

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