

# Small hippocampus associated with depression in the elderly: Risk factor or shrinkage?

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Imaging studies have repeatedly found that people with depression have smaller hippocampal volumes than healthy individuals. The hippocampus is a brain region involved in learning and memory, spatial navigation, and the evaluation of complex life situations or "contexts". However, because in prior studies hippocampal volume was only measured in people once they became depressed, it has been unclear whether a small hippocampus renders a person vulnerable to developing depression, or whether it is a consequence of depression.

A new study published in *Biological Psychiatry* has approached that problem by following a large population of elderly individuals over a 10 year period.

Researchers performed an initial imaging scan on subjects to obtain a baseline measurement of their hippocampal volume and then performed follow-up scans 5 and 10 years later. During this time, they also repeatedly assessed the individuals for both depressive symptoms and depressive disorders.

Corresponding author Dr. Tom den Heijer explains their findings: "We found that persons with a smaller hippocampus were not at higher risk to develop depression. In contrast, those with depression declined in volume over time. Our study therefore suggests that a small hippocampal volume in depressed patients is more likely an effect of the depression

rather than a cause."

"The principal importance of this type of research is that it may provide insight into age-related impairments in the function of the hippocampus," reflected Dr. John Krystal, Editor of [Biological Psychiatry](#). "For example, in Alzheimer's disease, memory problems and disorientation are prominent symptoms, reflecting among other things the impaired function of the hippocampus."

Future studies will be needed to better understand whether current treatments protect the hippocampus and hippocampal function.

**More information:** The article is "A Study of the Bidirectional Association Between Hippocampal Volume on Magnetic Resonance Imaging and Depression in the Elderly" by Tom den Heijer, Henning Tiemeier, Hendrika J. Luijendijk, Fedde van der Lijn, Peter J. Koudstaal, Albert Hofman, and Monique M.B. Breteler. The authors are affiliated with Erasmus Medical Center, Rotterdam, the Netherlands. den Heijer is also from Sint Franciscus Gasthuis, Rotterdam, the Netherlands. Luijendijk is also from Bavo, Europoort, the Netherlands. The article appears in *Biological Psychiatry*, Volume 70, Number 2 (July 15, 2011)

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