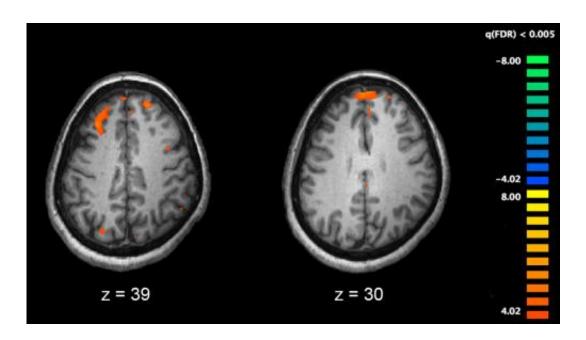# First physiological test for schizophrenia and depression

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Functional magnetic resonance imaging (fMRI) and other brain imaging technologies allow for the study of differences in brain activity in people diagnosed with schizophrenia. The image shows two levels of the brain, with areas that were more active in healthy controls than in schizophrenia patients shown in orange, during an fMRI study of working memory. Credit: Kim J, Matthews NL, Park S./PLoS One.

Researchers have found a new way of using proteins in nerve cells to identify people with depression and schizophrenia. The method, reported in *Experimental Physiology*, will help identify people whose depression or schizophrenia involves signalling via a receptor called NMDAR, and

differentiate between the two diseases. At present, there are no diagnostic tests to help distinguish them.

NMDA receptor signalling may be decreased in schizophrenia patients and increased in those with depression. The authors hope that this research is the first step towards producing a test to identify certain forms of depression and schizophrenia. Distinguishing this specific form of these diseases could allow for earlier and more accurate diagnoses as well as more targeted treatment.

Depression is thought to affect over 300 million people worldwide[1] and schizophrenia affects as many as 51 million people[2]. Both diseases have severe impacts on sufferers' lives[3].

The researchers infused patients with a high concentration salt solution to induce the release of the hormone arginine-vasopressin (AVP), and then measured the level of the hormone in their blood. Previously, animal studies had shown that the release of AVP in response to the salt solution depends on NMDA receptor signalling. In this study, they found that AVP release can distinguish schizophrenia from depression.

Depressed patients showed an increased release of the hormone, while patients with schizophrenia showed a decreased response. Clinically, it is difficult to distinguish between these two diseases in their early phases, because symptoms are non-specific and relatively mild. This hormone test may be a simple way to distinguish and identify patients with NMDA receptor malfunction in each disorder. The study was a collaboration among Yale University, The John B. Pierce Laboratory, New Haven and the VA Medical Center, West Haven, Connecticut.

Handan Gunduz-Bruce, co-author of the paper, said, "This is the first objective, physiological marker for two major psychiatric disorders that, once fully developed into a clinical test, can allow for earlier and more

accurate diagnosis, and selection of more appropriate medications for patients."

More information: A translational approach for NMDA receptor profiling as a vulnerability biomarker for depression and schizophrenia. DOI: 10.1113/EP086212

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