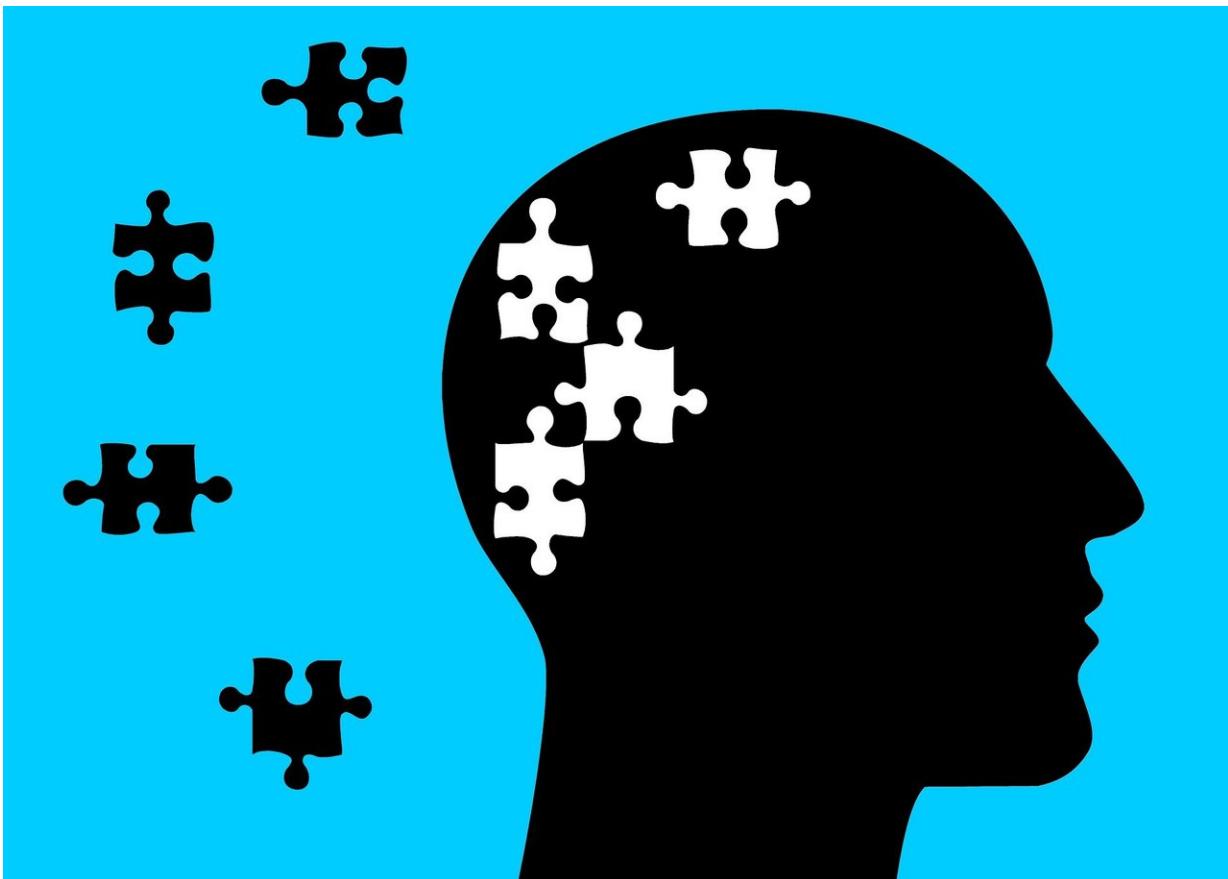


Brain imaging indicates how well depression will respond to treatment

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Working with international partners, a MedUni Vienna research group has shown that imaging techniques carried out prior to treatment indicate

the potential success of drug therapy in depressive patients. They showed that the activity of a region of the forebrain determines the potential success of treatment with antidepressants. This finding promises to significantly shorten treatment time for depressive patients in the future.

According to the World Health Organization (WHO), depression is the most common illness among adults and its treatment presents a huge challenge to medicine. Although effective [antidepressants](#) are now available, they fail to achieve the desired success in a significant percentage of patients. Not every patient responds to treatment with [antidepressants](#), drugs often have to be changed several times and so the process can often last for months before symptoms improve and the patient is fully recovered.

Being able to predict whether antidepressant treatment will work is a top priority in psychiatric research, particularly since there is currently a lack of suitable technical examination techniques.

Brain activity determines success of treatment

In the study, the study team at MedUni Vienna's Department of Psychiatry and Psychotherapy (Head: Siegfried Kasper) treated 22 depressive patients with the drug Escitalopram over an eight-week period. This most commonly prescribed antidepressant causes a rise in serotonin in the neuron.

During the course of treatment, four [high-resolution](#), functional MRI scans were performed at the High-Field MR Center of Excellence of MedUni Vienna/Vienna General Hospital. "Patients who had sufficiently strong forebrain activity responded to treatment with an antidepressant, while treatment was unsuccessful in patients who did not," says Principal Investigator Lukas Pezawas, summarising the results. The study showed that this region of the brain supports the action of the antidepressant on

emotional regions of the brain and its activity is an essential prerequisite for success of the treatment.

The study highlights the fact that new imaging techniques can be used to predict success of a treatment. "These results inform our understanding of why an antidepressant is effective in some patients but not in others. This has far-reaching consequences for further medical approaches. It is also conceivable that, in future, it will be possible to use drugs or psychotherapy to further improve recovery rates achieved with currently available antidepressants," explains Pezawas.

More information: Bernhard M. Meyer et al. Prefrontal networks dynamically related to recovery from major depressive disorder: a longitudinal pharmacological fMRI study, *Translational Psychiatry* (2019). [DOI: 10.1038/s41398-019-0395-8](https://doi.org/10.1038/s41398-019-0395-8)

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