

Brain 'hyperconnectivity' linked to depression

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People with depression have hyperactive brain activity, according to a study published online Tuesday that offers new insight into the brain dysfunction that causes depression.

Researchers at the University of California-Los Angeles studied the functional connections of the brain in 121 individuals, ages 21-80, who had been diagnosed with depression. They used quantitative electroencephalography to measure the synchronization of [brain waves](#) (electrical signals from the brain) to study networks among the different brain regions.

"All the depressed patients showed increased connectivity," says psychiatrist Andrew Leuchter, lead author of the study, published in the international online journal [PLoS ONE](#). "We know from [brain science](#) studying normal individuals that the connections are turning off and on all the time. If you take a snapshot of a depressed person's brain, you're going to find the connections turned on at any given time."

Similar research with fewer individuals, and using a different [measurement tool](#), was published in 2010 in the scientific journal [Proceedings of the National Academy of Sciences](#). Psychiatrist Yvette Sheline, director of the Center for Depression, Stress and Neuroimaging at Washington University School of Medicine in St. Louis, found that depressed subjects had increased connectivity to one specific brain region she studied.

"Any time you use a larger sample you have much more reliable data," says Sheline, whose work used fMRI to study brain connectivity in 24 people. The UCLA research studied a range of [brain regions](#) and, with 121 participants, is considered the largest of its kind.

Leuchter says the brain needs to be able to process lots of different types of information and regulate many different processes.

"What our research shows is that the depressed brain appears to be less versatile. It's connecting all the regions all the time and is not able to shut down those connections in a normal way," says Leuchter, who also directs UCLA's Laboratory of Brain, Behavior and Pharmacology. "We don't know whether this hyperconnectivity is responsible for the symptoms."

Among symptoms associated with depression are anxiety, poor attention and concentration, memory issues and sleep disturbances.

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