

Depressed? Fearful? It might help to worry, too

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University of Illinois Psychology professors Wendy Heller and Gregory Miller found that worry alters patterns of brain activity associated with depression and fear, and may lessen some of the negative effects of both. Credit: Photo by L. Brian Stauffer, U. of I. News Bureau.

A new study of brain activity in depressed and anxious people indicates that some of the ill effects of depression are modified - for better or for worse - by anxiety.

The study, in the journal *Cognitive, Affective & Behavioral Neuroscience*, looked at depression and two types of anxiety: anxious arousal, the fearful vigilance that sometimes turns into panic; and anxious apprehension, better known as worry.

The researchers used functional Magnetic Resonance Imaging (fMRI) at

the Beckman Institute's Biomedical Imaging Center to look at [brain activity](#) in subjects who were depressed and not anxious, anxious but not depressed, or who exhibited varying degrees of depression and one or both types of anxiety.

"Although we think of depression and anxiety as separate things, they often co-occur," said University of Illinois psychology professor Gregory A. Miller, who led the research with Illinois psychology professor Wendy Heller. "In a national study of the prevalence of psychiatric disorders, three-quarters of those diagnosed with major depression had at least one other diagnosis. In many cases, those with depression also had anxiety, and vice versa."

Previous studies have generally focused on people who were depressed *or* anxious, Miller said. Or they looked at both depression and anxiety, but lumped all types of anxiety together.

Miller and Heller have long argued that the anxiety of chronic worriers is distinct from the panic or fearful vigilance that characterizes anxious arousal.

In an earlier fMRI study, they found that the two types of anxiety produce very different patterns of activity in the [brain](#). Anxious arousal lights up a region of the right inferior temporal lobe (just behind the ear). Worry, on the other hand, activates a region in the left frontal lobe that is linked to speech production.

(Other research has found that depression, by itself, activates a region in the right frontal lobe.)

In the new study, brain scans were done while participants performed a task that involved naming the colors of words that had negative, positive, or neutral meanings. This allowed the researchers to observe which brain

regions were activated in response to emotional words.

The researchers found that the fMRI signature of the brain of a worried and depressed person doing the emotional word task was very different from that of a vigilant or panicky depressed person.

"The combination of depression and anxiety, and which type of anxiety, give you different brain results," Miller said.

Perhaps most surprisingly, anxious arousal (vigilance, fear, panic) enhanced activity in that part of the right frontal lobe that is also active in depression, but only when a person's level of anxious apprehension, or worry, was low. Neural activity in a region of the left [frontal lobe](#), an area known to be involved in speech production, was higher in the depressed and worried-but-not-fearful subjects.

Despite their depression, the worriers also did better on the emotional word task than those depressives who were fearful or vigilant. The worriers were better able to ignore the meaning of negative words and focus on the task, which was to identify the color - not the emotional content - of the words.

These results suggest that fearful vigilance sometimes heightens the brain activity associated with depression, whereas worry may actually counter it, thus reducing some of the negative effects of [depression](#) and fear, Miller said.

"It could be that having a particular type of [anxiety](#) will help processing in one part of the brain while at the same time hurting processing in another part of the brain," he said. "Sometimes worry is a good thing to do. Maybe it will get you to plan better. Maybe it will help you to focus better. There could be an up-side to these things."

Provided by University of Illinois at Urbana-Champaign

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