Worried? Talk It Out

How Talking and Meditating Changes the Brain

By LEE DYE

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Scientists are developing new evidence that helps explain why just writing about fear and depression, or talking with a friend, can help make the pain go away.

It turns out that verbalizing our worries or fears has a measurable impact on various parts of the brain. So does simply sitting on the floor and meditating about such mundane things as breathing.

Ever since Sigmund Freud postulated that talking about our problems was good therapy, experts have argued over whether he was right. Psychoanalysis has a checkered past, and while many believe it works, not everyone agrees. Now, there's new evidence that at least something is going on in the human brain when fears are put into words, or when meditation creates a state of mind that is free from distraction.

"Lots of people have known that therapy works, or writing in a journal helps, but lots of other people don't believe that," said psychologist Matthew D. Lieberman of the University of California, Los Angeles. "Now we're beginning to understand the mechanism for how that works, and that may allow someone who is more skeptical to make sense of it."

It may also lead to better ways to treat patients who are emotionally disturbed, he added.

Lieberman and scientists at a number of institutions are using functional magnetic resonance imaging (fMRI) to scan the brains of people as they verbalize fear, or as they meditate. The effect is surprisingly similar.

Thirty people participated in Lieberman's study, which is published in the current issue of Psychological Science. They were shown a series of photographs, such as angry faces or passive faces, and the angry faces produced a response in the part of the brain called the amygdala, which is sort of the brain's alarm system. But that response changed when the participants described the photographs.

"When you attach the word 'angry,' you see a decreased response in the amygdala," Lieberman said. But simultaneously there is an increase in activity in another part of the brain, the right ventrolateral prefrontal cortex, which is believed to inhibit emotional response.

"The amygdala is a very old region of the brain that we share with many other animals," he said. "Rodents have an amygdala that functions very much like ours and it's a primitive system for detecting threat and ambiguous things in the environment. We quickly turn our attention to them and mobilize resources to deal with them."

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It activates all sorts of stress hormones, sending adrenaline through the system, and that's a good thing because it prepares the body to act. But too much of that can be bad for the body, causing diseases related to stress.

"So the amygdala being turned on occasionally is an incredibly adaptive feature that we and other animals have, but when the amygdala is turned on too often or too intensely that's not good for us," Lieberman said.

It's significant that when the participants in the study verbalized their thoughts when shown an angry face, the activity in the amygdala decreased, and activity in the prefrontal cortex increased.

"The prefrontal cortex seems to be involved in turning off emotional stuff," Lieberman said. So it puts the brakes on the emergency response alarm sent out by the amygdala, thus reducing stress.

It works, he suggests, "when people are explicitly making sense of their own feelings, usually by putting them into words."

Meanwhile, Richard Davidson, professor of psychology and psychiatry at the University of Wisconsin School of Medicine and Public Health, has been using the same technique to study the neurological effect of meditation. Participants in his study ranged from meditation newcomers to Tibetan monks with 54,000 hours of meditation experience.

Those brain scans also showed an increase in activity in the prefrontal cortex, which is involved in the control and regulation of attention. The Wisconsin researchers, who published their work in a recent issue of the Proceedings of the National Academy of Sciences, even resorted to a little psychological warfare to see whether they could distract the attention of the participants. It wasn't hard to derail the newcomers, because meditation isn't as easy as it sounds, but the monks had no trouble at all.

"Most people, if they heard a baby screaming, would have some emotional response," Davidson said. But the monks remained nonplussed. "They do hear the sound we can detect that in the auditory cortex but they don't have the emotional reaction." In other words, less amygdala, more prefrontal cortex, the same result that the UCLA researchers found.

Davidson's research grew out of a scientific relationship with the Dalai Lama, spiritual leader of Tibetan Buddhists, and he has studied them for 15 years.

Lieberman hopes that the research will eventually lead to a more enlightened approach to treating patients with severe emotional problems. If the amygdala, for example, is running out of control, there's little chance that the prefrontal cortex will be able to correct the course. And if the prefrontal cortex isn't up to the task, "talk therapy isn't going to work because the machine doesn't work right," he said.

Of course, it isn't practical to give every patient a brain scan to see whether medication, or therapy, is the right course.

"It would be ridiculous to have somebody get a $1,000 scan to see if they should be getting $80 therapy," Lieberman said.

"The hope is that in five or 10 years we'll have some simple tasks, and have patients do a simple emotional task," to determine whether the problem lies in the amygdala or in the prefrontal cortex, he said. "That
would be a very cheap instrument for health providers."

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