

How the Brain Reacts to Stress

Massage therapy has been shown to reduce stress—and any regular client will attest to massage's stress-relieving benefits.

New research shows how the brain reacts to stress. Psychologists at the University of Alabama at Birmingham (UAB) are able to see in detail for the first time how various regions of the human brain respond when people experience an unexpected or traumatic event. The study could lead to the creation of biological measures that could identify people with post-traumatic stress disorder (PTSD) or identify PTSD sufferers who would benefit from specific treatments.

In the study, UAB researchers used functional magnetic resonance imaging (fMRI) to see how activity in the parts of the brain associated with fear, learning and memory respond when research participants were startled by a loud static sound and when they were able to correctly predict when the sound would occur.

"When the noise is unexpected, the brain's response is larger," said UAB psychologist David Knight, Ph.D., principal investigator on the study, which is currently in press online and will appear in the January 2010 issue of the journal *NeuroImage*. "But when participants are able to predict when they are going to hear the unpleasant static noise, you can see the regions of the brain quiet down so that a smaller emotional response is produced."

An analysis of the brain scans showed that unpleasant events produced activity within the frontal lobe of the brain. The amount of activity was reduced when participants expected the unpleasant event, but not when the event was unexpected. Further, the amount of activity within these brain regions controlled the emotional response that was expressed.

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