# Cognitive behavioral therapy may affect neural processing in agoraphobia

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Patients suffering from panic disorder and agoraphobia are significantly impaired in daily life due to anxiety about getting into a situation due to apprehension about experiencing a panic attack, especially if escape may be difficult. Dysfunctional beliefs and behavior can be changed with cognitive behavioral therapy; however, the neurobiological effects of such an intervention on the anticipation and observation of agoraphobia-specific stimuli are unknown.

A study published in *Psychotherapy and Psychosomatics*, compared changes in neural activation by measuring the blood oxygen level-dependent signal of 51 patients and 51 healthy controls between scans before and those after treatment (group by time interaction) during anticipation and observation of agoraphobia-specific compared to neutral pictures using 3-T fMRI.

Results showed a significant group by time interaction was observed in the ventral striatum during anticipation and in the right amygdala during observation of agoraphobia-specific pictures; the patients displayed a decrease in ventral striatal activation during anticipation from pre- to posttreatment scans, which correlated with clinical improvement measured with the Mobility Inventory. During observation, the patients displayed decreased activation in the amygdala. In addition, these activational changes were not observed in the matched healthy controls.

For the first time, neural effects of cognitive behavioral therapy were shown in patients suffering from panic disorder and agoraphobia using disorder-specific stimuli. The decrease in activation in the ventral striatum indicates that cognitive behavioral therapy modifies anticipatory anxiety and may ameliorate abnormally heightened salience attribution to expected threatening stimuli. The decreased amygdala activation in response to agoraphobia-specific stimuli indicates that cognitive behavioral therapy can alter the basal processing of agoraphobia-specific stimuli in a core region of the fear network.

**More information:** André Wittmann et al. Effects of Cognitive Behavioral Therapy on Neural Processing of Agoraphobia-Specific Stimuli in Panic Disorder and Agoraphobia, *Psychotherapy and Psychosomatics* (2018). DOI: 10.1159/000493146

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