

Emotion-Cognition Interactions in Schizophrenia

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Research on emotional processing in schizophrenia suggests relatively intact subjective responses to affective stimuli “in-the-moment”. However, neuroimaging evidence suggests diminished activation in brain regions associated with emotional processing in schizophrenia. We asked whether given a more vulnerable cognitive system in schizophrenia, individuals with this illness would show increased or decreased modulation of working memory (WM) as a function of the emotional content of stimuli compared to healthy controls. In addition, we examined whether higher anhedonia levels were associated with a diminished impact of emotion on behavioral and brain activation responses. In the present study, 38 individuals with schizophrenia and 32 healthy individuals completed blocks of a 2-back WM task in a functional MRI scanning session. Blocks contained faces displaying either only neutral stimuli or neutral and emotional stimuli (happy *or* fearful faces), randomly intermixed and occurring both as targets and non-targets. Both groups showed higher accuracy but slower reaction time for negative compared to neutral stimuli. Individuals with schizophrenia showed intact amygdala activity in response to emotionally evocative stimuli, but demonstrated altered dorsolateral prefrontal cortex (DLPFC) and hippocampal activity while performing an emotionally-loaded WM task. Higher levels of social anhedonia were associated with diminished amygdala responses to emotional stimuli and increased DLPFC activity in individuals with schizophrenia.

Emotional arousal may challenge dorsal-frontal control systems, which may have both beneficial and detrimental influences. Our findings suggest that disturbances in emotional processing in schizophrenia relate to alterations in emotion-cognition interactions rather than to the perception and subjective experience of emotion per se.