FACING FEAR AND ANGER: IMPAIRED FACIAL EXPRESSION RECOGNITION AND NEURAL ABNORMALITIES IN COCAINE-DEPENDENT INDIVIDUALS

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Introduction: Cocaine dependence has been associated with emotional dysfunction as well as social inhibition. Given the drug's powerful effect on emotional state, chronic use may impact the neural networks used for emotional processing, and this impact may manifest in altered behaviour.
Objectives: To test the hypothesis that stimulant-dependent individuals less accurately identify expressions intended to elicit inhibitory or avoidant responses (ie fear, anger, disgust), and that this behaviour may, in part, be related to differences in the underlying neural networks for processing these emotions.
Aims: To detect differences in facial expression classification and corresponding neural networks in cocaine-dependent individuals versus healthy controls.
Method: Cocaine-dependent men (N=32) and age-matched, healthy men (N=29) completed two computerized facial classification tasks (Benton Facial Recognition test and Emotion Hexagon task) and underwent structural MRI scanning.
Results: Performance on the Benton task did not differ between groups. There were significant differences between cocaine-dependent individuals and controls in accurately classifying fear and anger as well as differences in misclassifications of these two 'inhibitory' emotions. No group differences were observed when classifying facial expressions of happy, surprise, sad, and disgust. A multivoxel analysis method (Partial Least Squares) confirmed the involvement of neural networks implicated in fear and anger perception, but showed significant differences between the groups.
Conclusion: The Benton task confirmed that differences in facial expression classification are not attributable to differences in facial processing. Cocaine-dependent individuals were less accurate at identifying 'inhibition' emotions and showed significant abnormalities in the brain systems implicated in fear and anger.