

OVERLAPPING ORBITOFRONTAL VOLUME LOSS INVOLVED IN STIMULANT DEPENDENCE AND WEIGHT GAIN

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Introduction: Stimulant dependence is commonly associated with decreases in cortical volume in inhibitory control regions, such as the orbitofrontal cortex (OFC). Obese individuals similarly show abnormalities in frontal gray matter, with volume reductions correlating with BMI. These structural deficits may contribute to underlying problems with impulsivity or self-control present in both groups.

Objectives: Shared structural abnormalities relating to over-consumption of food or drugs of abuse could shed light on similar neurocognitive impairments associated with these behaviors (loss of control, poor decision-making), and could provide evidence for the classification of over-eating as an addictive disorder.

Aims: To identify overlapping regions of gray matter volume loss associated with both stimulant dependence and increased BMI, specifically in the OFC.

Methods: Structural MRI scans of stimulant dependent and healthy control individuals were compared using voxel based morphometry analysis. OFC volume was correlated with BMI in all participants, as well as years of drug use in stimulant dependent individuals.

Results: Both stimulant use and BMI negatively correlated with bilateral OFC gray matter volume. Additionally, select OFC regions showed decreases relating to both variables, indicating an overlap between volume loss associated with years of use and BMI in both stimulant dependent and control individuals.

Conclusions: Overlapping decreases in OFC gray matter volume that correspond to both overeating and drug use severity indicate underlying commonalities between these two behaviors. This suggests there may be shared cognitive deficits maintained in the OFC, such as poor inhibitory control or decision-making abilities, that preclude these types of behaviors.