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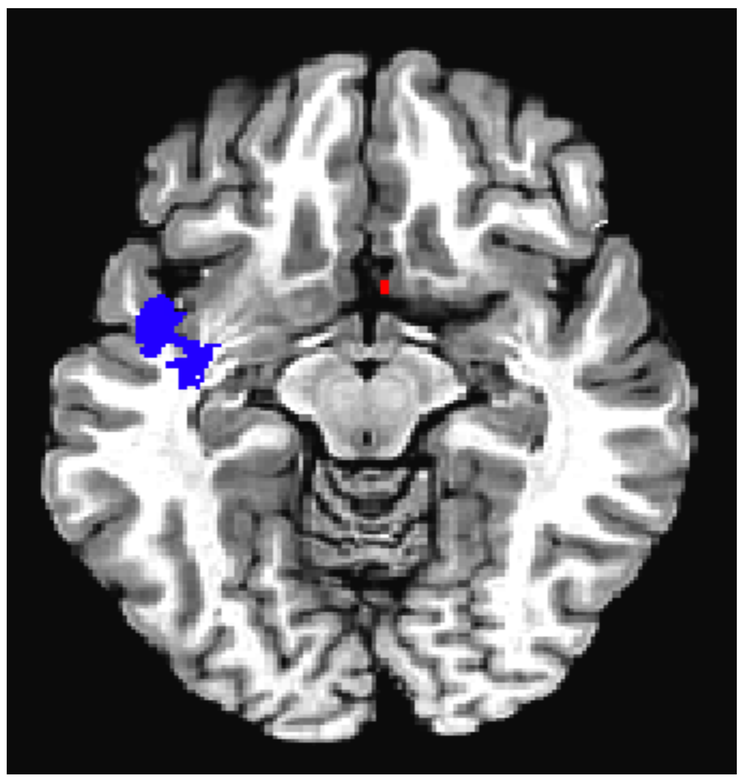
The Neural Effects of Antidepressants on Adults with Major Depressive Disorder: A Meta-Analysis

Caudate Nucleus

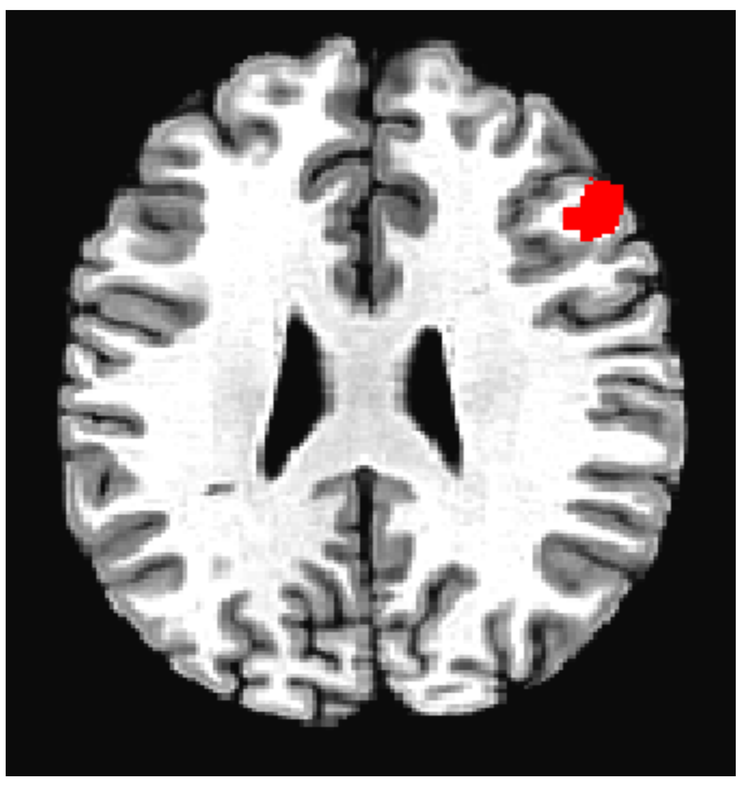
Dorsolateral Prefrontal Cortex

Our meta-analysis indicates that adults with MDD taking antidepressants displayed significantly different activation levels in several brain regions, compared to adults with MDD not taking antidepressants, during task-based fMRI.

Para-Insular Cortex



Dorsolateral Prefrontal Cortex



INTRO

- Over 322 million adults worldwide suffer from major depressive disorder (MDD; World Health Organization [WHO], 2017).
- There is a lack of research on the impact of antidepressants on brain activation
- Hamilton et al. (2012) found abnormal neural activation in adults with MDD compared to age-matched healthy controls

METHODS

- We applied multilevel kernel density analysis (MKDA) to analyze 37 previously published fMRI studies that contrasted neural activation of adults with MDD versus healthy controls (HC).
- We extracted whole-brain activation coordinates displaying significant between-group differences presented in Talairach or Montreal Neurological Institute space
- We conducted a double subtraction procedure to examine effects of medication; this procedure involved subtracting neural activation of patients with MDD taking medications versus HCs (n=580) and neural activation of unmedicated patients with MDD versus HCs (n=675), as follows: Effects of Medication = (medicated MDDs-HCs) – (unmedicated MDDs-HCs)