



# A meta-analysis on the uncinate fasciculus in depression

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## Background

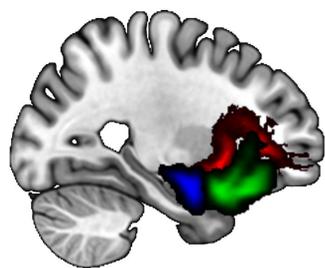
- **Major depressive disorder (MDD):** linked to dysfunctional emotion regulation strategy use
- **Uncinate fasciculus (UNC):** a white matter tract strongly associated with emotion regulation
- **UNC theorized to play a role in pathophysiology of MDD**
- **Existing literature largely inconclusive** in determining whether MDD is related to altered UNC microstructure
- **Meta-analytically integrate existing empirical literature** to address this question

## Aims

- #1. Is depression related to altered UNC microstructure?**
- #2. Is disrupted UNC myelination a cellular mechanism of depression?**

## Methods

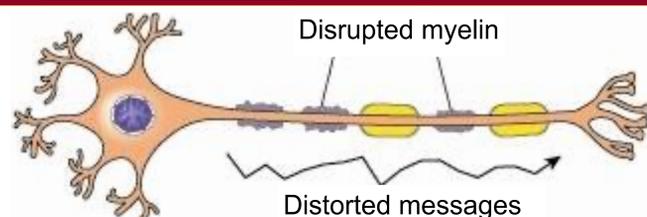
- Conducted a PubMed literature search with terms: **“depression”** & **“white matter”**
- Total sample:  $N_{HC} = 18331$  &  $N_{MDD} = 4948$
- Included **diffusion tensor imaging (DTI)** studies with a **region-of-interest approach** for **UNC**



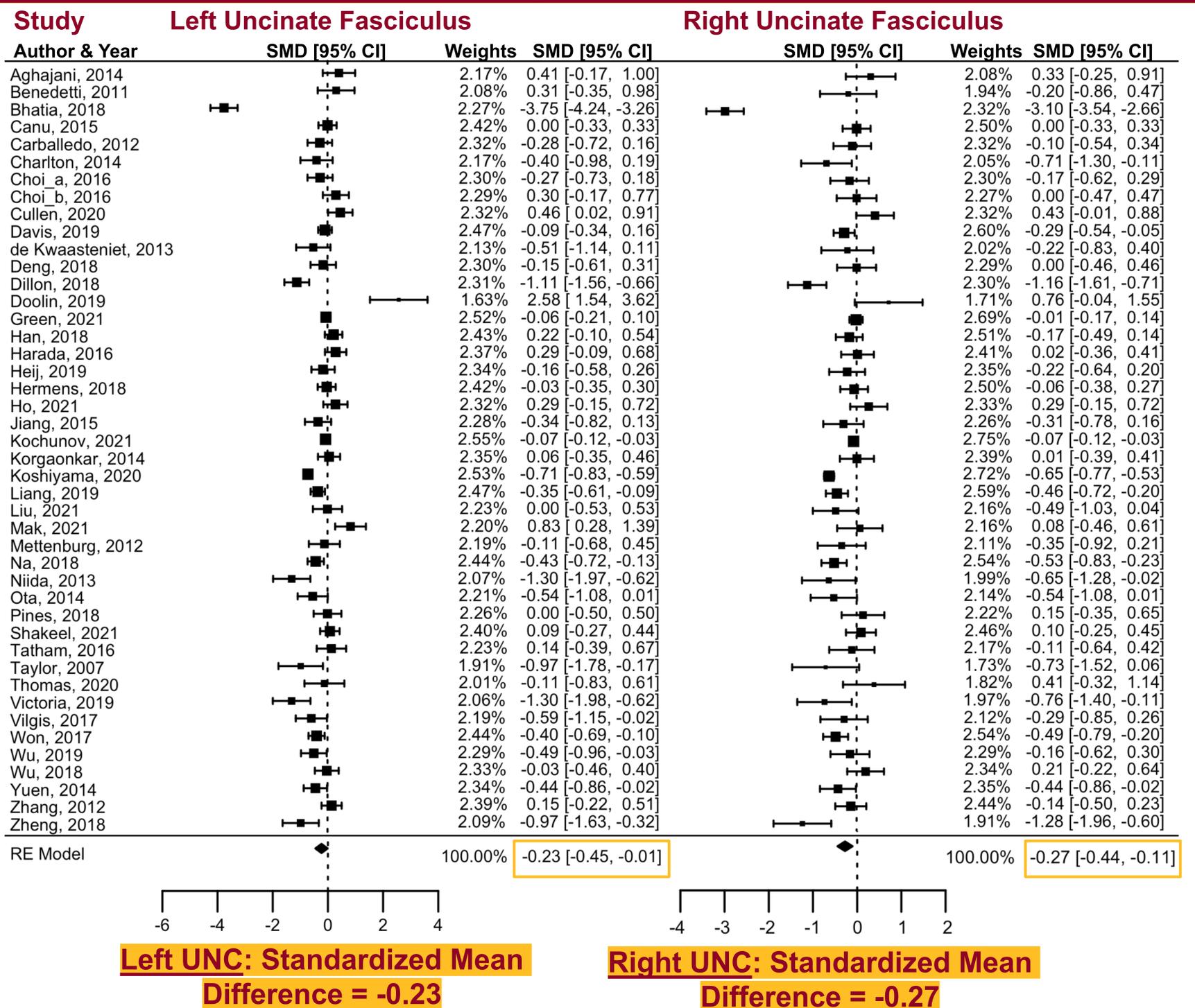
UNC connects amygdala to ventromedial prefrontal cortex

- Focused on DTI properties
  - **Fractional anisotropy (FA):** Associated with coherence of white matter tracts
  - **Radial diffusivity (RD):** Approximates myelination

## Finding #2: Disrupted UNC myelination is not a cellular mechanism of depression!



## Finding #1: Depression is related to lower fractional anisotropy in the left and right uncinate fasciculus.



## Discussion

- Our results support a link between depression and altered UNC microstructure.
- However, our data **do not support disrupted UNC myelination as a cellular mechanism.**
- Future work should investigate *whether* and *how* altered UNC microstructure contributes to emotion regulation deficits.

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