Reliable neural underpinnings of rumination

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What is the neural mechanism underlying rumination?

Rumination: Repetitive thinking about negative personal concerns and/or about the implications, causes, and meanings of a negative mood

Rumination is not only a feature, but also a risk factor for depression

Rumination inducement task

Symptoms could be mapped to brain networks
RfMRI: brain networks
Zhu et al., 2012. Biological Psychiatry

The Default Mode Network (DMN)

Why?

Resting state
Rumination state

Subsystems of DMN
Andrews-Hanna et al., 2014

Reproducibility
Chen et al., 2020. NeuroImage

Forty-one traveling subjects across 3 different scanners
• Rumination’s dynamic features may be characterized with specific dynamic network architectures.

What is the dynamic nature of rumination’s neural mechanisms?

Next, from volume to surface — DPABI/Surf.
The over-constraint from FPCN to DMN may make self-generated thoughts restricted to some narrow themes.

Forty-nine MDD patients vs. 47 HCs

Degree centrality, permutation test with TFCE, p < 0.025
Forty-nine MDD patients vs. 47 HC

Betweenness, FDR q < 0.05

Chen#, Jia# et al., 2016. Nat Rev Neurosci

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