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Dynamic functional hippocampal markers of residual depressive symptoms in euthymic bipolar disorder

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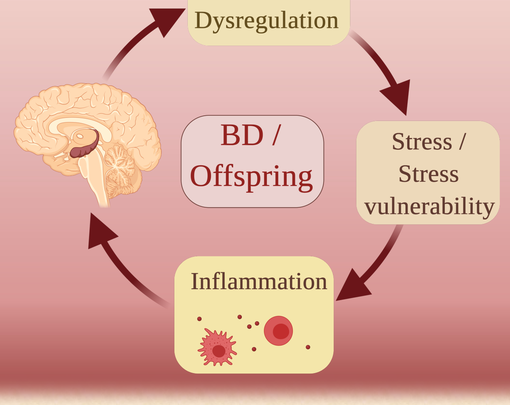
INTRODUCTION

- Hippocampal (HIP) **structural** and **stationary functional** connectivity (FC) abnormalities in Bipolar Disorder (BD)
- **Microglial** overactivity in BD patients' **HIP**
- Chronic **inflammatory** state is believed to impair **HIP** neurogenesis

Hypothesis



Objectives

- To assess the **HIP volume** in BD patients (and offspring)
- To investigate HIP dynamic functional connectivity (**dFC**) in BD patients (and offspring)
- To explore interactions between **clinical** scores, **stress/inflammation** markers, **functional** and **structural** HIP MRI indices

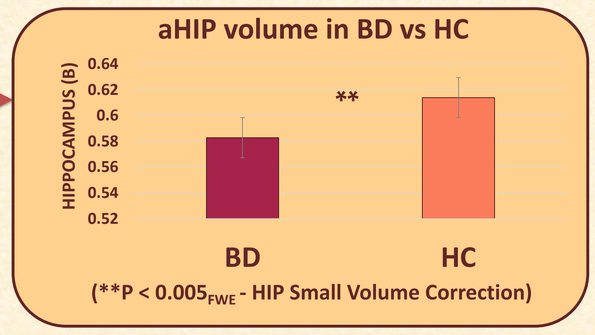
METHODS AND RESULTS

Participants

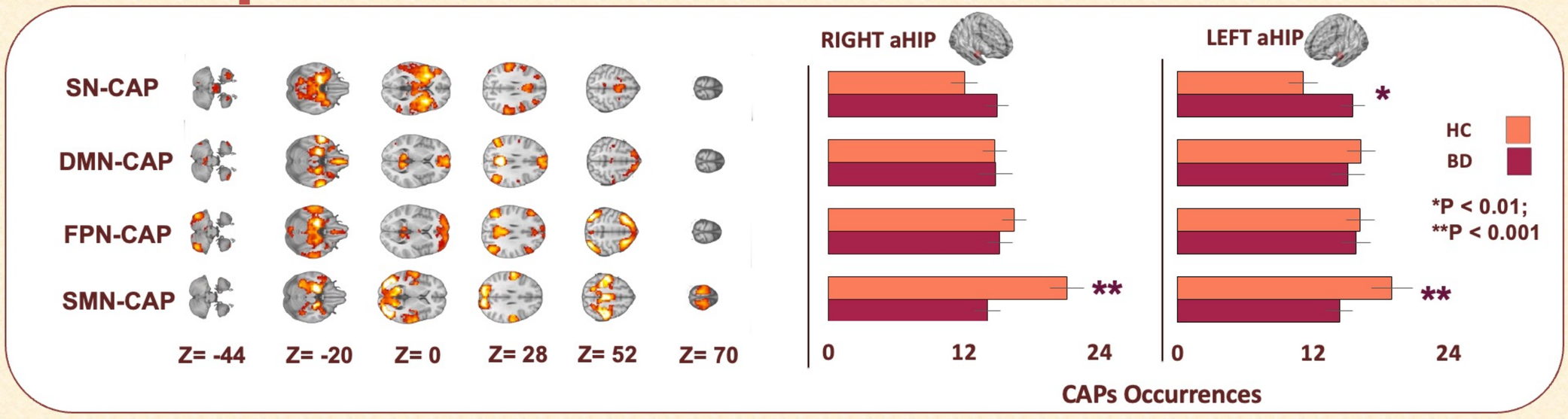
50 participants (25 euthymic BD and 25 **age-** and **sex-matched** healthy controls, HC; 48% females; age range: 15 - 58y)

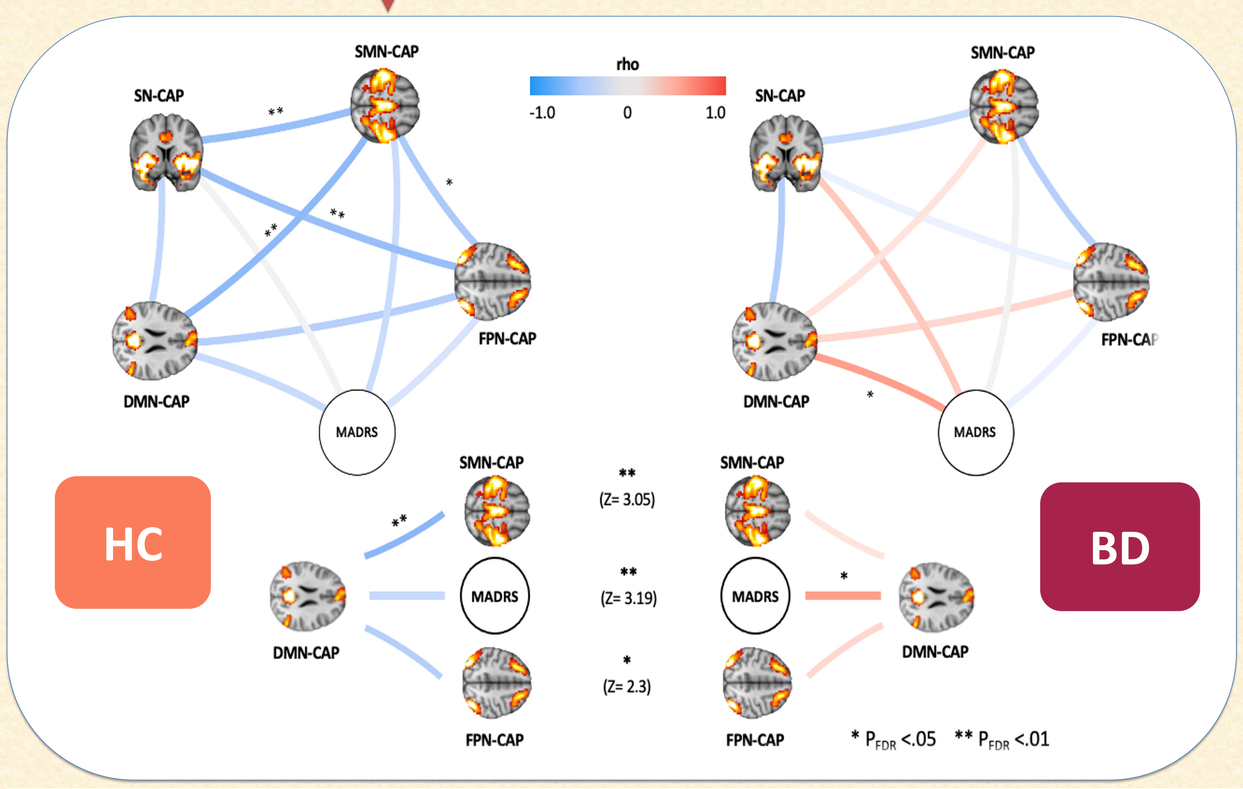
Structural MRI analysis:

Voxel-based morphometry (VBM, in SPM12) of the **HIP** based on the Harvard-Oxford atlas



dFC fMRI analysis : co-activations patterns (CAPs) - **seed**: aHIP





DISCUSSION

- ⬇ **SMN-HIP** dFC: 1) **motor symptoms** and executive dysfunction in non-manic BD; 2) biases towards internal thoughts at the cost of **engaging** with the **external world**
- ⬆ **SN-left-HIP** dFC: **higher selective focus** on features related with **autobiographical verbal memory** and purported **marker** of **high risk** for **psychosis**
- Large-scale network **dysfunction**: more internally-oriented (**DMN**) elaboration of sensory information (**SMN**), attentional processes/cognitive control (**FPN**) in **BD** than HC, correlating with **depressive symptoms**

NEXT STEPS

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34 BD
23 Offspring
73 HC

→ Hippocampal
1) CAPs rs-FC
2) Subfields volume/morphology (Freesurfer)

→ Correlation between clinical BD scores, stress/inflammation markers, functional and structural HIP MRI indices