

Altered structural covariance networks across hippocampal subfields and amygdala nuclei in schizophrenia

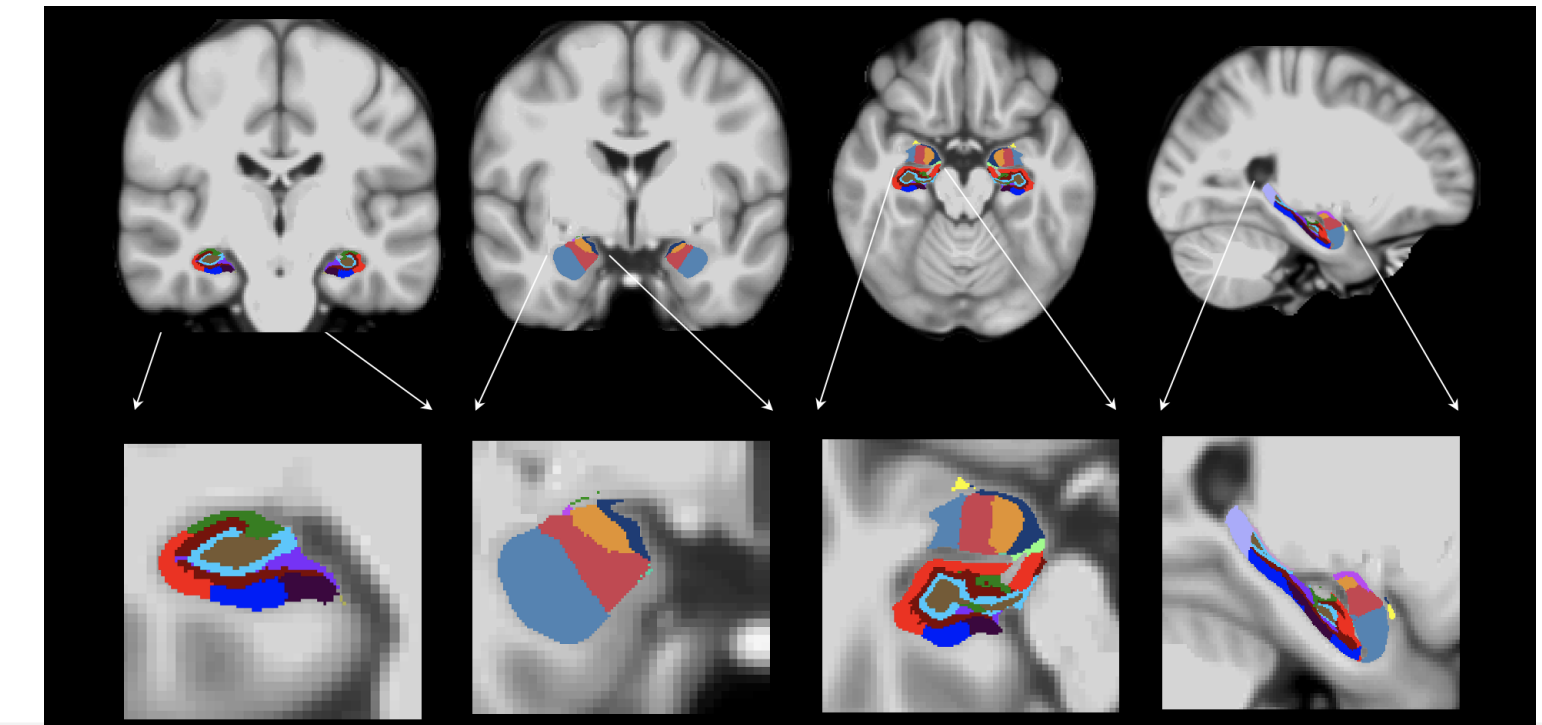
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Introduction

- **hippocampal subfields and amygdala nuclei** → cognitive functions, functional interconnections (McDonald and Mott 2017)
- hippocampal subfields and amygdala nuclei are specifically altered in schizophrenia (Armio et al. 2020, Hu et al. 2020, Zheng et al. 2019)
- figure shows color coded subfields and nuclei of hippocampus and amygdala

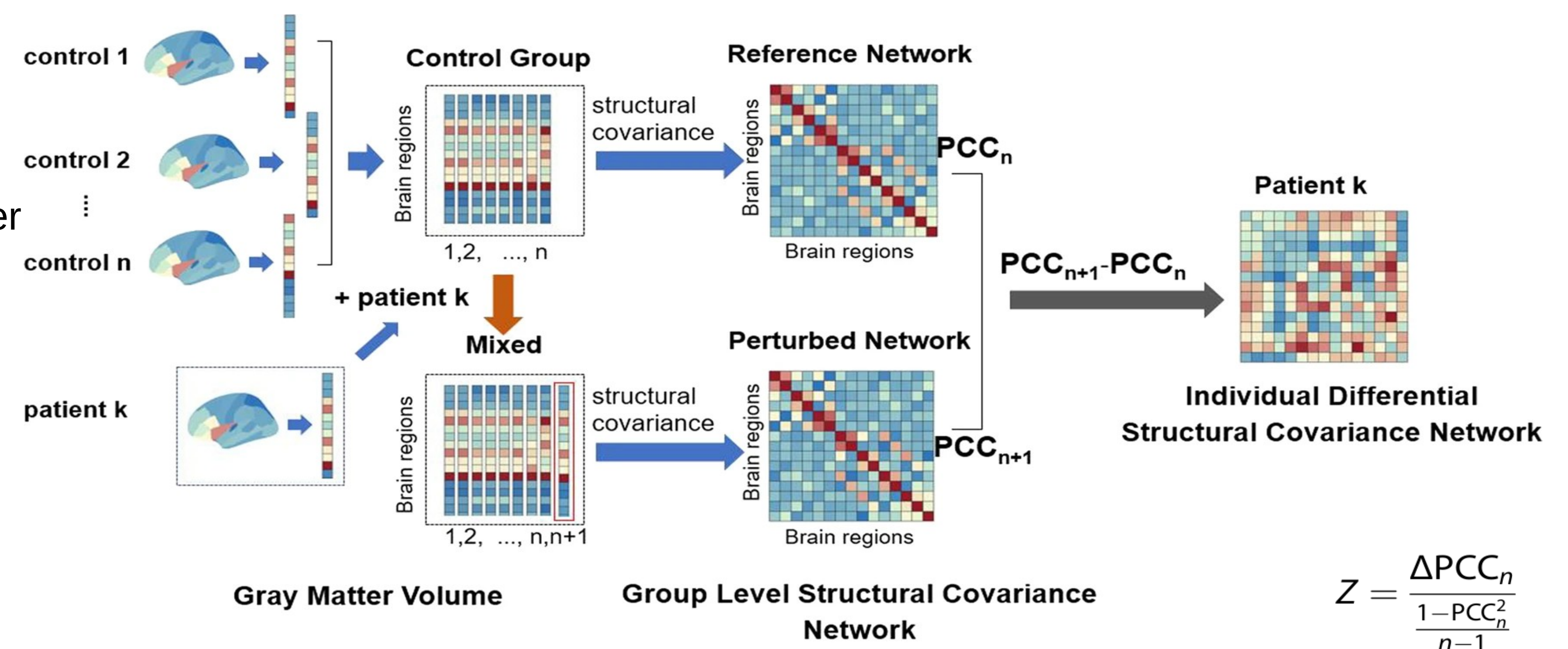


Hypothesis

Structural covariance across hippocampal subfields and amygdala nuclei is altered in patients with schizophrenia

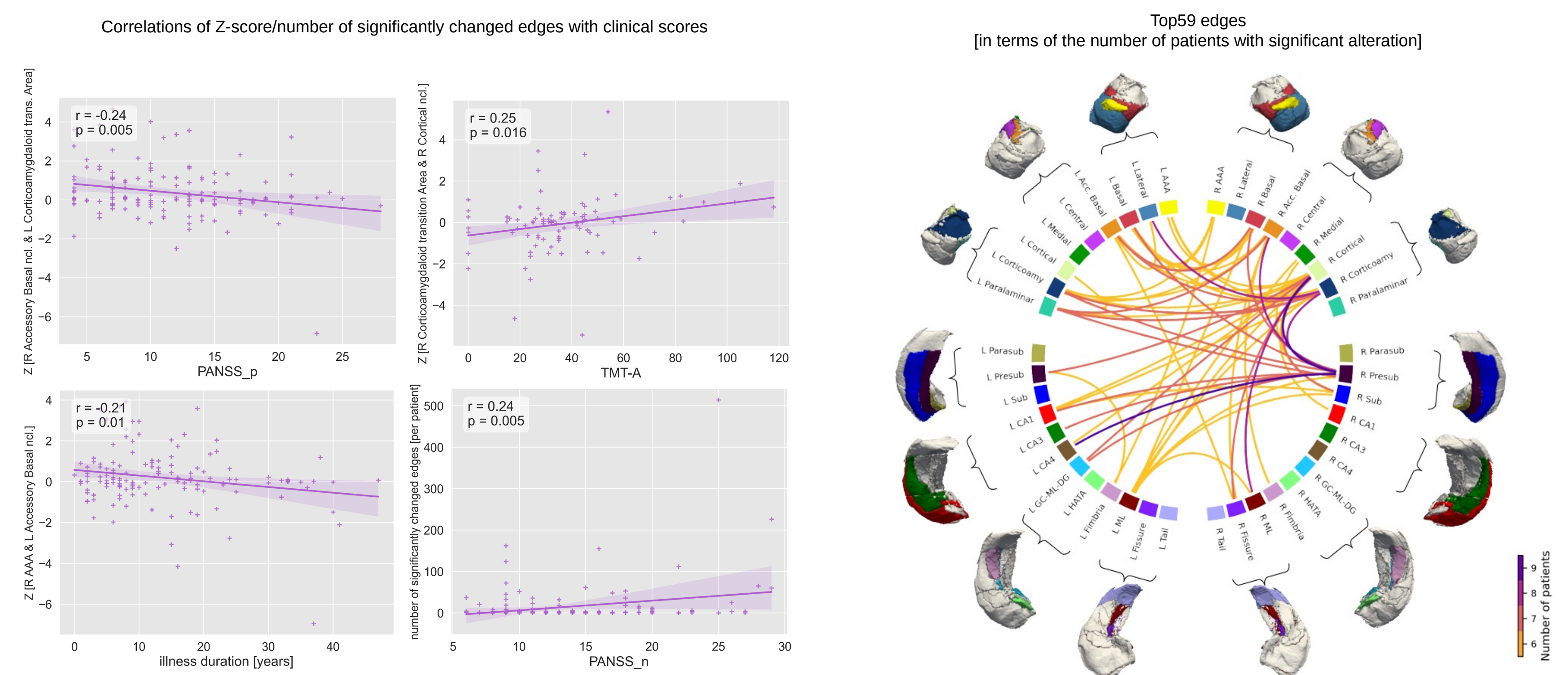
Methods

- 139 patients with schizophrenia, 152 healthy controls
- fsl anat of T1w from two sites (Munich, COBRE)
- NeuroHarmonize (Pomponio et al. 2020)
- GM volume of hippocampus and amygdala derived using FreeSurfer
- subject-specific difference in structural covariance between two ROIs to the control network (Liu et al. 2021)
- Z-score of ΔPCC_n was calculated → p-value from Z-score (fdr)
- in each patients' network: identify edges that were significantly different from the control network
→ Top59 edges (in terms of # of patients with significant change)
- Correlation between clinical scores and number of changed edges



Results

- **high heterogeneity** in IDSCN
- 641 covariance edges out of 1764 were changed in at least 2 patients
- **Top59 edges** (6 - 9 patients with significant change in this edge)
- Z-score correlates with illness duration, positive symptoms and cognitive impairment
- Number of changed edges in individual patient correlates with negative symptoms



Conclusion

- Altered structural covariance networks across hippocampal subfields and amygdala comprise a **large heterogeneity in structural deviations**
- The most altered edges in schizophrenia **are linked with both, psychotic and cognitive symptoms**

References

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