



Abstract

- Autism Spectrum Disorder (ASD) impacts multiple areas of cognitive development leading to atypical behavioral manifestations in these individuals.
- This study focuses on regional differences in grey matter volume (rGMV) in the ASD brain as well as its interaction with overall severity of clinical symptomatology and co-morbid depression.

Background

Significant deviations from typical social and cognitive behavior mark Autism spectrum disorder. These individuals exhibit distortions in sensory behaviors (Marko 2011), poor social engagement, and poor non-verbal communication, to name a few.

Existing literature suggests a high prevalence of other affective disorders in autistic individuals (Pezzimenti 2019). **Therefore, understanding the grey matter regions implicated in ASD becomes imperative for ensuring effective treatment designs.**

❖ Here, in a young adult sample, we explore ...

- rGMV differences between ASD and typically developed controls (TD).
- rGMV differences in ASD brains in relation to co-morbid depression severity (BDI)
- rGMV differences in ASD brains in relation between BDI × Clinical Autism severity (ADOS).

Methods

- Total **90 subjects (45 ASD & TD; matched demographics)** T1 structural MRI scans (sMRI) were used from ABIDEII (Di Martino 2014) and preprocessed using the CAT toolbox (Gaser & Kurth 2017).
- Pre-processed images were used for **Voxel-based morphometric** analysis with the standard pipeline of Statistical Parametric Mapping, implemented on SPM12 + Cat12, run on MATLAB 2022a.

Results: ASD < TD

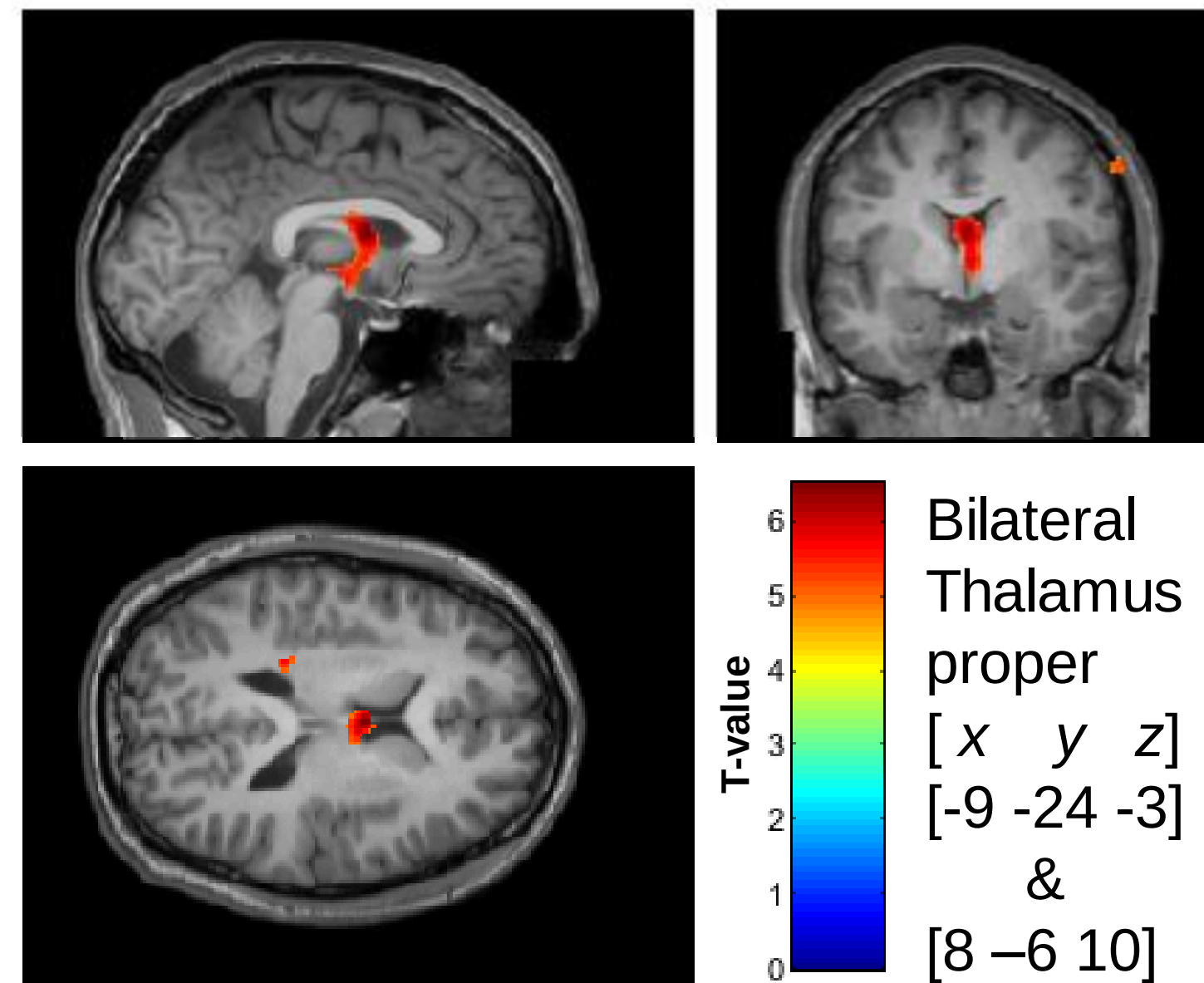


Fig1a: Brain region with rGMV in ASD < TD. pFWE < 0.05. Ke = 46

Results: ASD > TD

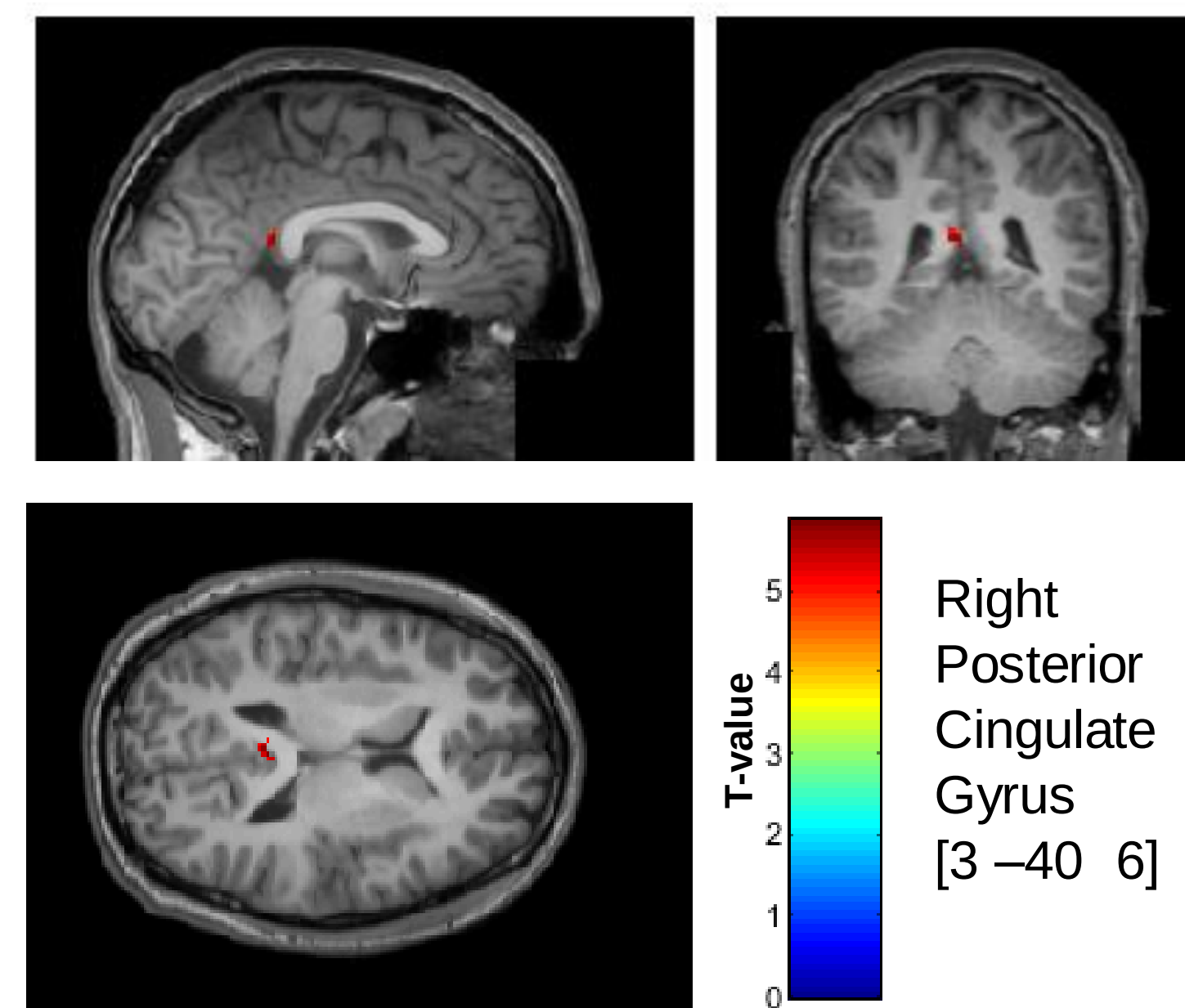


Fig1b: Brain region with rGMV in ASD > TD pFWE < 0.05. Ke = 17

Results: Effect of BDI in ASD

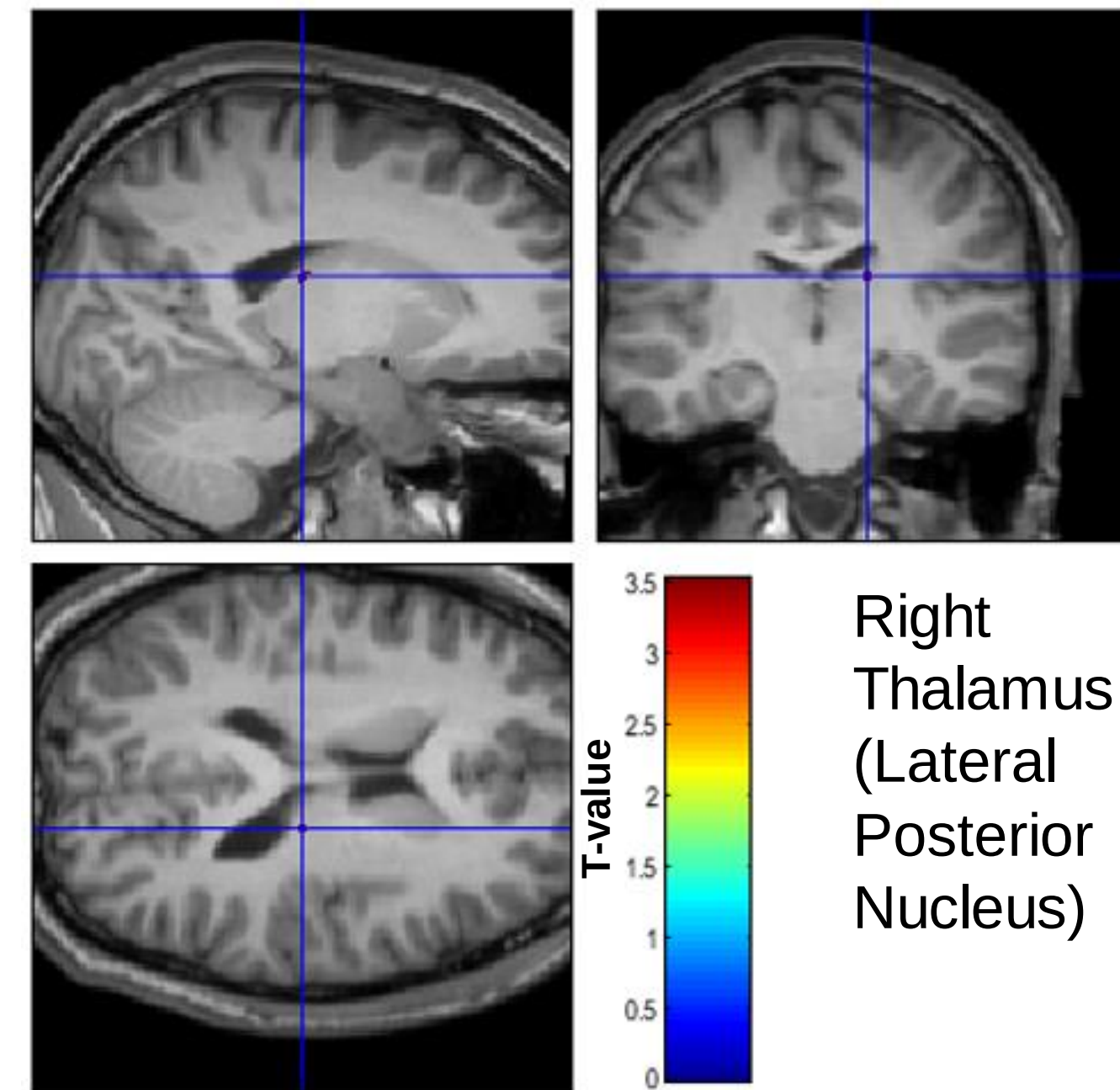


Fig 2: Relation between rGMV and co-morbid Depression in ASD brain. pFWE < 0.05. Ke = 5

Results: ADOS × BDI in ASD

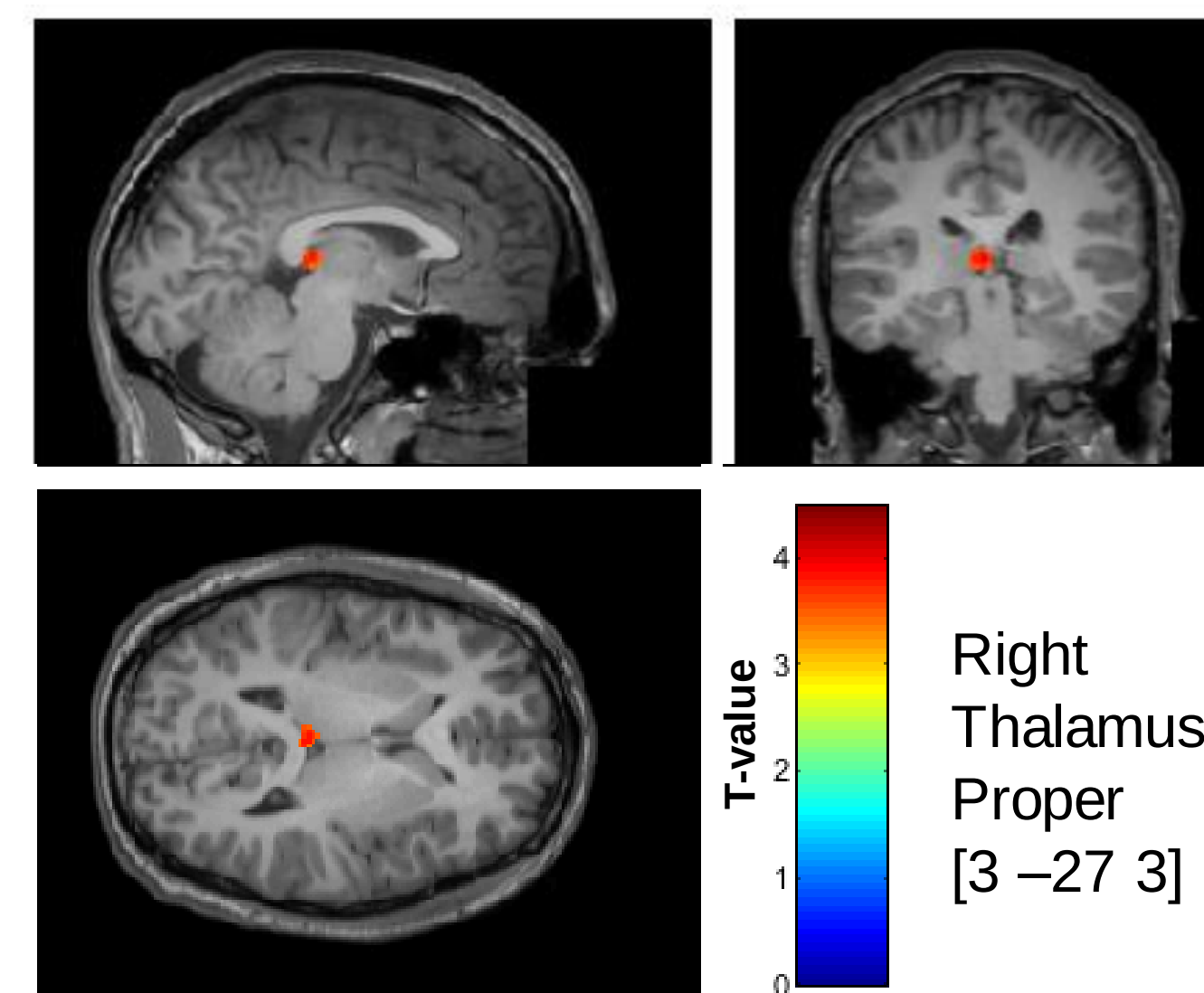


Fig 3: Relation between rGMV & ADOS × BDI in ASD brain. p < 0.001 uncorrected.

Nature of ADOS × BDI in ASD

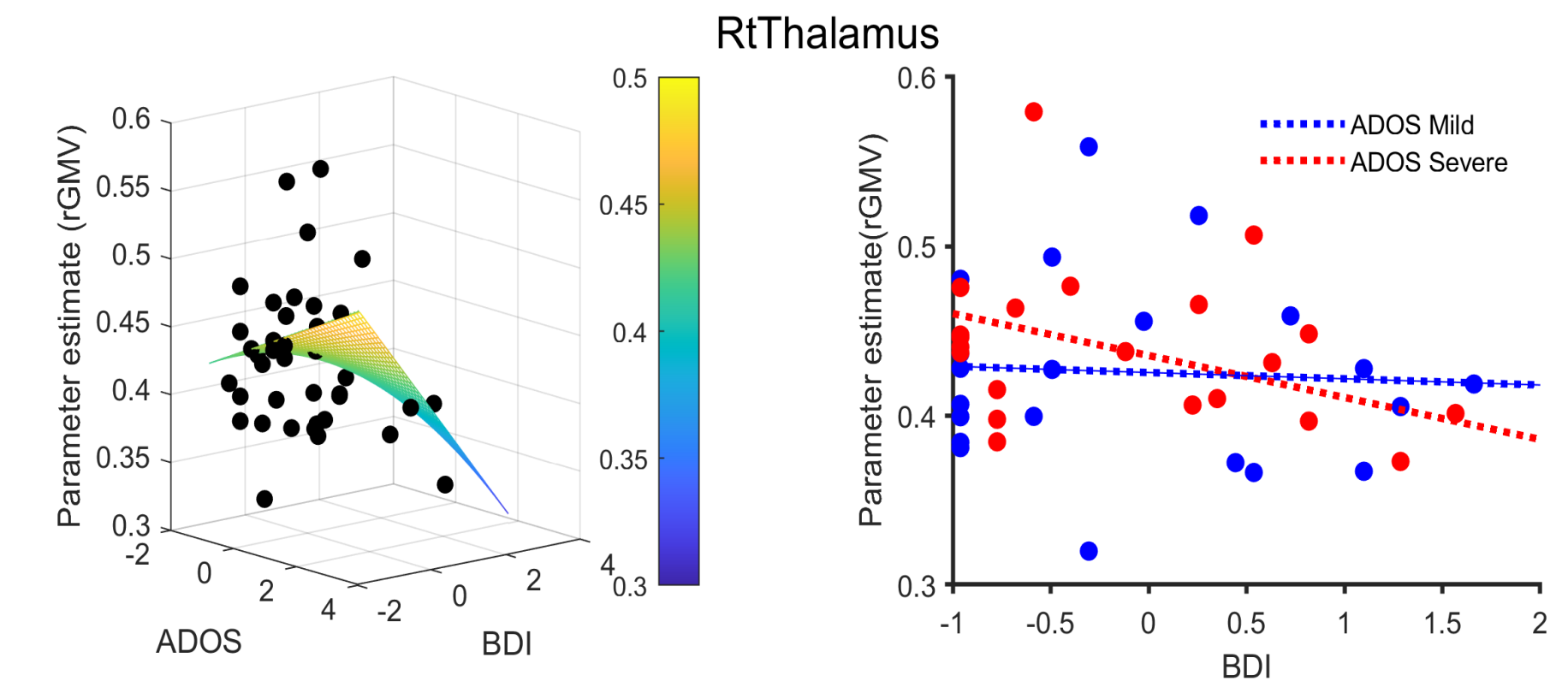


Fig4: Relation between rGMV & interaction b/n co-morbid Depression and Autistic symptomatology in ASD brain. pFWE < 0.05

CONCLUSION

- This study showcases the involvement of **bilateral thalamus** which may lend support to the exhibition of sensory distortions commonly found in ASD subjects.
- Our study also supplements the existing knowledge about ASD brains.
- Brain regions found can help us devise new diagnostic and treatment strategies.

REFERENCES

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