

(GLM) regression. We used *AtlasViewer* for reconstructing HRF image onto the Colin27 digitalised brain model. And we also used SPSS for statistical analysis between stimuli types and HRF means. **Results: Fig 2** Significant HRF differences were measured in the dominant hemisphere dorsolateral prefrontal cortex (DLPFC) between the influence of each emotionally negative and positive stimuli ( $p < 0.001$ ). The level of DLPFC activity was positively influenced by emotionally positive stimuli ( $p < 0.001$ ).

Image:

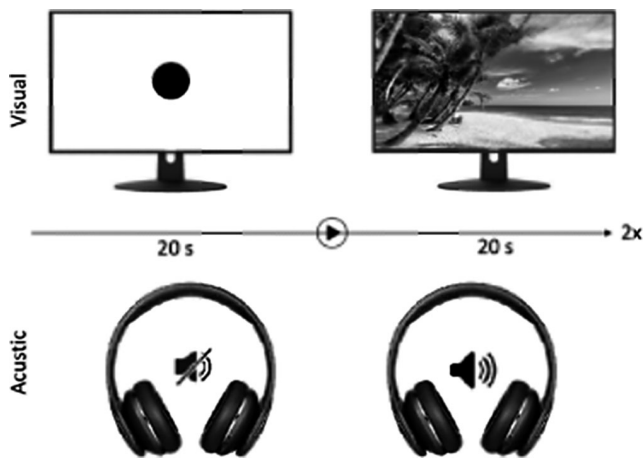


Image 2:

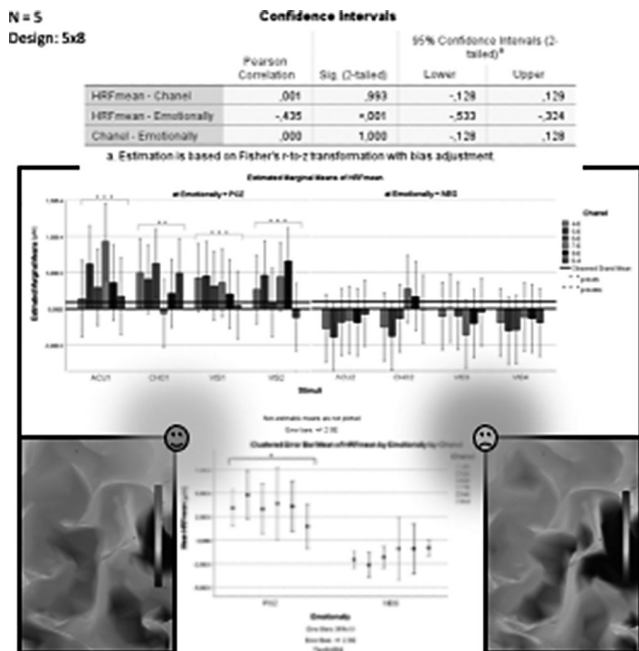
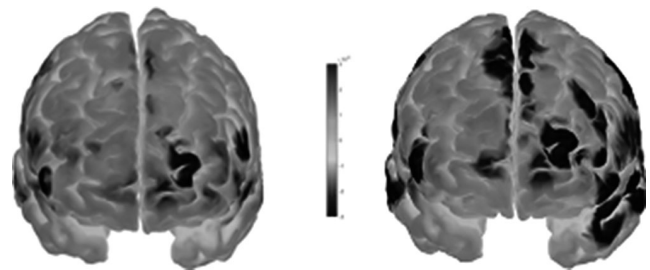


Image 3:



**Conclusions: Fig 3** Our fNIRS experimental system is a suitable tool to measure and model the pattern of prefrontal cortical activity. Based on the measured hemodynamic values, we detected a significant activity difference in the dominant hemisphere DLPFC during emotionally positive and negative stimuli, the extent of which is positively influenced by emotionally positive stimuli. The left DLPFC appears to be a promising target for our next studies of anhedonia.

**Disclosure of Interest:** None Declared

EPV0619

**A Machine Learning Model for Predicting Major Depressive Disorder Using Diffusion-Tensor Imaging Data**

J. H. Lee\* and D.-K. Lee

Department of Mental Health Research, National Center for Mental Health, Seoul, Korea, Republic Of

\*Corresponding author.

doi: 10.1192/j.eurpsy.2024.1283

**Introduction:** Major Depressive Disorder (MDD) stands as a prevalent psychiatric condition within the general population. Despite extensive research efforts, the identification of definitive diagnostic biomarkers for depressive disorders remains elusive. Currently, machine learning methods are gaining prominence in the diagnosis of medical illnesses.

**Objectives:** This study aims to construct a machine learning-based prediction model for Major Depressive Disorder (MDD) by harnessing diffusion tensor imaging (DTI) data.

**Methods:** The DTI datasets comprising MDD (N=83) and Healthy Control (N=70) groups were procured from the cohort study of Anxiety and Depression conducted at the National Center for Mental Health in South Korea. A machine learning method using a decision tree algorithm was employed to select relevant brain regions and establish a robust diagnostic model. Features associated with white matter (WM) tracts were chosen through recursive feature elimination.

**Results:** Demographic characteristics, including age, sex, and handedness, displayed no significant differences between the MDD and Healthy Control groups. However, the total score of the Beck Depression Inventory was notably higher in individuals with MDD compared to Healthy Controls. A diagnostic model

was crafted using the decision tree algorithms to distinguish between the two groups. The model demonstrated the following classification performance metrics: accuracy ( $65.6\% \pm 8.5$ ), sensitivity ( $66.6\% \pm 12.5$ ), and specificity ( $64.7\% \pm 13.6$ ). Furthermore, through recursive feature elimination, specific neuroanatomical features tied to brain structures such as the inferior cerebellar peduncle, posterior thalamic radiation, cingulum (hippocampus), uncinate fasciculus, and tapetum were identified.

**Conclusions:** Despite of limited performance of classification, a machine learning-based approach could provide insights into the development of a diagnostic model for MDD using neuroimaging data. Furthermore, these features, derived from DTI-derived data, may have implications for understanding the neural underpinnings of major depressive disorder.

**Disclosure of Interest:** None Declared

## EPV0621

### Correlations of altered functional connectivity in resting-state fMRI and symptom severity in tic disorders

J. B. Meeh<sup>1\*</sup>, L. Orth<sup>2</sup>, D. Leiding<sup>2</sup>, U. Habel<sup>2</sup>, I. Neuner<sup>2,3</sup> and P. Sarkheil<sup>1</sup>

<sup>1</sup>University of Muenster, Muenster; <sup>2</sup>RWTH Aachen University, Aachen and <sup>3</sup>Research Center Jülich, Jülich, Germany

\*Corresponding author.

doi: 10.1192/j.eurpsy.2024.1284

**Introduction:** Vocal and motor tics are characteristic for Tic disorders (TD) and Tourette's syndrome (APA 2022). Because of the pathophysiology of the disorders not being fully understood and the presence of the externally measurable symptoms; great attention has been paid to the cortico-striatal regions of patients with TD. In addition to the alterations in motor symptoms patients can experience a premonitory urge (PU) which can be felt before a tic (Reese *et al.* Behav. Ther. 2014; 45 177–186). Previous studies found an impact of these urges on sensory perception, attention and social cognition as well as an involvement of the brain regions insula, anterior cingulate cortex (ACC) and the temporoparietal junction (TPJ) (Seeley J. Neurosci. 2019; 39 9878–9882, Kucyi *et al.* J. Neurophysiol. 2012; 108 3382–3392, Uddin *et al.* Brain Topogr. 2019; 32 926–942). These findings lead to the idea of altered functional connectivity of the salience network (SN) in patients with TD.

**Objectives:** This study aims to investigate the connectivity changes of the SN in patients with TD. We examined functional resting-state scans of patients with TD and searched for possible correlations between the tic and PU severity and the connectivity of the SN.

**Methods:** 21 Patients (mean age: 30.9 years  $\pm$  10.0 [range = 19–57], 6 females) diagnosed with TD, and 20 healthy controls (mean age: 29.7 years  $\pm$  8.9 [range = 18–50], 5 females) underwent a resting-state fMRI scan. Functional and anatomical images were conducted on a 3T Siemens Prisma fit MRI scanner. PU and tic

severity were measured by the Premonitory Urges for Tics Scale (PUTS) and the Yale Global Tic Severity Scale (YGTSS). The connectivity analysis of the resting-state scans was done using the CONN toolbox v21.a. After pre-processing and de-noising steps, a whole-brain seed-based connectivity analysis was carried out with the seeds being the major cortical nodes of the SN. For the correlation analysis a linear regression of the YGTSS score/PUTS score and the brain connectivity of the seed regions was conducted.

**Results:** The PUTS score was  $25.3 \pm 5.4$  (range 10–33) and the YGTSS total tic score was  $23.1 \pm 7.9$  (range 10–38) for the patients. The connectivity analysis revealed a significant difference in connectivity between the groups for the ACC, the right insula and the TPJ. A negative correlation between the YGTSS scores and the connectivity of the left insula and the right superior frontal gyrus (SFG) was shown in the correlation analysis. No significant correlation was found for the PUTS scores in the investigated seed regions.

**Conclusions:** The right SFG mediates motor urgency and inhibitory control. Since we found a negative correlation between the insula and the right SFG regarding to higher YGTSS scores of the patients, our results might shed some light on the pathophysiology regarding lower inhibitory control in patients which experience higher tic severity.

**Disclosure of Interest:** None Declared

## EPV0624

### Altered Cortical Gyrfication Morphology in Nonsuicidal Self-injury

S. Choi\*, H. Moon and J.-W. Hur

Department of Psychology, Korea University, Seoul, Korea, Republic Of

\*Corresponding author.

doi: 10.1192/j.eurpsy.2024.1285

**Introduction:** Nonsuicidal self-injury (NSSI) is defined as deliberate and direct damage to one's body tissues without any suicidal intent. NSSI is now recognized as a major risk factor for suicide and is prevalent among adolescents, with prevalence rates ranging from 7.5% to 46.5%, leading to increased interest in the pathophysiology of NSSI. This study aimed to examine cortical gyrfication morphology, a neurobiological index of cortical folding and patterning, among unmedicated individuals with NSSI, which is prevalent in adolescents and young adults.

**Objectives:** The main objective of this study is to compare cortical morphological abnormalities between individuals with NSSI and controls in terms of the local gyrfication index (LGI), the ratio of the smooth cortical surface area at each vertex to the corresponding sulcal folds. In addition, we hypothesized that the LGI, a stable neurodevelopmental marker of cortical and subcortical circuit integrity, would correlate with clinical measures in youth with NSSI.

**Methods:** A total of 101 individuals with NSSI and 100 age-, gender-, and handedness-matched controls completed self-report