

social interactions. Yet, alterations of gamma oscillations in ASD have received little attention in the literature.

**Objectives:** The aim of the current study was to investigate resting state gamma oscillations in the EEG in order to delineate alterations in ASD as compared to typically developing (TD) subjects in the intrinsic activity of the neural networks that have been linked to social cognitive functioning.

**Methods:** Resting-state EEGs were obtained in an ongoing study investigating ASD (N=19) and TD subjects (N=15), based on eyes closed condition. EEGs were recorded using a 128-channel BioSemi system. EEG absolute power was investigated in the gamma 30-48Hz frequency band.

**Results:** Gamma activity was significantly ( $p < 0.05$ ) diminished in multiple brain regions in ASD as compared TD subjects. The diminished gamma activity had a distinctive topographical distribution, which included the left and right inferior temporal gyrus, the right superior temporal gyrus, the TPJ and the right extrastriate areas. Additionally, we found a hemispheric asymmetry in the occipital brain areas with a decrease of gamma activity on the right and an increase in the left hemisphere as compared to TD.

**Conclusions:** Diminished gamma activity in the above brain areas may represent a cortical dysfunction which can be present due to a reduced capacity to process socially relevant information and a decreased capacity to omit irrelevant stimuli.

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## EPP1001

### Identifying a predictive model of cognitive impairment in bipolar disorder patients: a machine learning study

C. Monopoli<sup>1\*</sup>, L. Fortaner-Uyà<sup>1,2</sup>, F. Calesella<sup>1,2</sup>, F. Colombo<sup>1,2</sup>, B. Bravi<sup>1,2</sup>, E. Maggioni<sup>3,4</sup>, E. Tassi<sup>3</sup>, I. Bollettini<sup>1</sup>, S. Poletti<sup>1,2</sup>, F. Benedetti<sup>1,2</sup> and B. Vai<sup>1,2</sup>

<sup>1</sup>IRCCS San Raffaele Hospital, Psychiatry and Clinical Psychobiology Unit; <sup>2</sup>University Vita-Salute San Raffaele; <sup>3</sup>Politecnico di Milano, Department of Electronics - Information and Bioengineering and <sup>4</sup>Department of Neurosciences and Mental Health, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy

\*Corresponding author.

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**Introduction:** Bipolar patients (BP) frequently have cognitive deficits, that impact on prognosis and quality of life. Finding biomarkers for this condition is essential to improve patients' healthcare. Given the association between cognitive dysfunctions and structural brain abnormalities, we used a machine learning approach to identify patients with cognitive deficits.

**Objectives:** The aim of this study was to assess if structural neuroimaging data could identify patients with cognitive impairments in several domains using a machine learning framework.

**Methods:** Diffusion tensor imaging and T1-weighted images of 150 BP were acquired and both grey matter voxel-based morphometry (VBM) and tract-based white matter fractional anisotropy (FA) measures were extracted. Support vector machine (SVM) models were trained through a 10-fold nested cross-validation with subsampling. VBM and FA maps were entered separately and in combination as input features to discriminate BP with and without

deficits in six cognitive domains, assessed through the Brief Assessment of Cognition in Schizophrenia.

**Results:** The best classification performance for each cognitive domain is illustrated in Table 1. FA was the most relevant neuroimaging modality for the prediction of verbal memory, verbal fluency, and executive functions deficits, whereas VBM was more predictive for working memory and motor speed domains.

**Table 1.** Performance of best classification models.

	Input feature	Balance Accuracy (%)	Specificity (%)	Sensitivity (%)
<b>Verbal Memory</b>	FA	60.17	51.31	43
<b>Verbal Fluency</b>	FA	57.67	62	53.33
<b>Executive functions</b>	FA	60	63.33	56.67
<b>Working Memory</b>	VBM	56.50	56	57
<b>Motor speed</b>	VBM	53.50	47.67	59.33
<b>Attention and processing speed</b>	VBM + FA	58.33	49.17	67.5

**Conclusions:** Overall, the tested SVM models showed a good predictive performance. Although only partially, our results suggest that different structural neuroimaging data can predict cognitive deficits in BP with accuracy higher than chance level. Unexpectedly, only for the attention and processing speed domain the best model was obtained combining the structural features. Future research may promote data fusion methods to develop better predictive models.

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## EPP1002

### Brain functional connectivity and local coherence in non-converters with clinical high risk for psychosis

Y. Panikratova, E. Abdullina\*, I. Lebedeva, M. Omelchenko, D. Tikhonov and V. Kaleda

Mental Health Research Center, Moscow, Russian Federation

\*Corresponding author.

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**Introduction:** Investigation of resilience mechanisms in patients with clinical high risk for psychosis (CHR) may inform clinical practice for the development of early intervention programs. Resilience mechanisms in CHR who did not transit to psychosis for a long period of observation may be more pronounced than in CHR converters.

**Objectives:** We aimed to compare CHR who did not convert to psychosis for  $7.3 \pm 1.7$  years, patients with first-episode psychosis (FEP), and healthy controls (HC) in terms of brain functional connectivity and local coherence.

**Methods:** Twenty-seven CHR (mean age  $27.5 \pm 3.1$ ), 24 FEP (mean age  $20.6 \pm 3.6$ ), and 27 HC (mean age  $27.3 \pm 4$ ) underwent resting-