relationships were observed for the neuroticism PRS, with a (weak) specific effect only for anxiety once modelling general psychopathology.

**Discussion:** Psychopathology during adolescence can be described by a general psychopathology construct that captures common variance as well as by specific constructs capturing remaining non-shared variance. Schizophrenia risk genetic variants identified through genome-wide association studies mainly index negative rather than positive symptom psychopathology during adolescence. This has potentially important implications both for research and risk prediction in high-risk samples.

**S140. VOICE-SELECTIVE FORWARD MODEL ABNORMALITIES IN NONCLINICAL VOICE HEARERS**  
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**Background:** Auditory verbal hallucinations (AVH) are one of the cardinal symptoms of psychosis but they are also present in 6–13% of individuals in the general population. Impaired predictive internal forward modelling has been proposed to underlie the experience of AVH in psychotic patients, but it remains unclear whether similar abnormalities are also present in nonclinical voice hearers. The current study was designed to answer the question of whether and how hallucination predisposition modulates sensory prediction of tones and voices using event-related potentials (ERP) of the electroencephalogram (EEG).

**Methods:** Participants with low (n=15) and high (n=17) hallucination predisposition, classified based on their Launay-Slade Hallucination Scale (LSHS) scores, were tested in an auditory task involving presentation of self-triggered and externally triggered tonal or own voice stimuli.

**Results:** Participants with low and high hallucination predisposition displayed comparable N1 suppression effects to self-triggered tones (no significant group effect – p>0.05) but the latter displayed enhanced N1 (group x condition x ROI interaction - F(4, 120)=7.971, p<0.001) and reduced P2 (group x condition x ROI interaction - F(4, 120)=5.626, p<0.001) responses to their self-triggered voice. Further, pre-stimulus alpha power was enhanced for self-triggered voices compared to tones in individuals with high hallucination predisposition (group x stimulus type interaction - F(1, 30)=4.479, p=0.043). Anomalies in forward modelling were specifically associated with LSHS auditory hallucination scores (r=-0.471, p=0.003).

**Discussion:** Together, these findings suggest that altered forward model of one’s own voice is core to AVH. These results also provide partial support for the continuum model of psychosis, suggesting that psychotic symptoms form a continuum in the general population. A voice-specific, rather than a generalized, forward model dysfunction may explain why hallucinated voices are the most common type of auditory hallucinations.

**S141. TRANSGENIC OVEREXPRESSION OF THE TYPE III ISOFORM OF NEUREGULIN 1 IN MICE INDUCES ABNORMALITIES ON AUDITORY EVENT RELATED EEG BIOMARKERS RELATED TO SCHIZOPHRENIA**  
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**Background:** Genetic, post-mortem and preclinical studies in transgenic mice repeatedly implicate neuregulin 1 (NRG1) as a critical component in the pathophysiology of schizophrenia. Its predominant neuronal receptor, ErbB4, is primarily expressed in fast-spiking interneurons enabling the maintenance of normal excitatory/inhibitory balance (E/I balance) of neuronal networks. Changes in E/I balance can be assessed in-vivo via special electroencephalography (EEG) techniques and have become an important preclinical and clinical readout to investigate the underlying mechanisms of psychiatric disorders. In fact, patients with schizophrenia show aberrant processing of sensory information leading to deficits in auditory event-related potentials (AERP), the detection of deviant auditory stimuli (mismatch negativity, MMN) and the 40Hz auditory steady-state response (ASSR) as well as to increased basal gamma oscillation.

Patients with Schizophrenia carrying NRG1 haplotype risk alleles appear to overproduce the NRG1 type III isoform in their brain. In the transgenic mouse, NRG1 type III overexpression (HANI mice; Velanac et al., 2012) results in altered synaptic activity and in behavioural changes like reduced prepulse inhibition and impaired cognition compatible with a schizophrenia-related phenotype (Agarwal et al., 2014). In the present study, the potential disruption of the E/I balance in HANI mice has been investigate via EEG recording.

**Methods:** Superficial electrodes were implanted above the auditory cortex and the frontal cortex. We used a novel wireless neurologger system for the recording of EEG data in awake freely moving mice. Data analysis was performed with commercially available software which is also used in clinical setting.

**Results:** Overexpression of NRG1 abolished MMN, significantly increased the P1 and N1 amplitude of AERP, increased basal gamma oscillation and reduced phase-lock coherence in the 40 Hz ASSR compared to the wildtype littermates.

**Discussion:** In this study we showed for the first time that overexpression of NRG1 leads to deficits in event-related EEG biomarkers supporting the notion that the NRG1-ErbB4 pathway is involved in maintaining the E/I balance, sensory stimulus processing and ultimately cognitive function. Our results indicate that the NRG1 III tg mouse model represents a tool with high translational potential to investigate pathological mechanisms related to schizophrenia.

**S142. RESTING STATE NETWORKS ALTERATION IN BIPOLAR DEPRESSION**  
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**Background:** While functional MRI and PET studies have shown altered task-related brain activity in bipolar depression, recent studies suggest that such differences might also be found in the resting state (RS). Here we used ICA based analysis to investigate RS (MRI data to compare connectivity of 11 well known networks (Auditory, Cerebellum, DMN, Executive Control, Fronto-parietal 1, Fronto-parietal 2, Salience, Sensorimotor, Visual1, Visual2, Visual3 network) between patients with bipolar depression and healthy controls suggesting deficits in related neuropsychological functions.

**Methods:** We obtained RS (MRI series (3T, 3x3x3mm resolution, 45 slices, TR 2.55s, 210 volumes) in 22 bipolar patients (mean age 38.4±11.3), on stable medication and 22 matched healthy controls (36.8±11.7). Subjects were asked to lie in the scanner keeping eyes closed with no further specific instructions. Data were pre-processed; we applied FSL MELODIC (pICA) yielding IC, we used FIX to auto-classify ICA components which represent artifacts and an automated routine to select for each subject the component matching the anatomical definition of resting state networks. SPM12 was used for second level analysis, we used two sample t-test to perform with commercially available software which is also used in clinical setting.

**Results:** Our method reliably identified all networks in every controls and patients. We found significant differences in the anatomical pattern of areas. Patients showed decreased functional connectivity in comparison to healthy controls in portions Cerebellum, DMN, Fronto-parietal1,
Fronto-parietal2, Visual1, Visual2 and Visual3 networks; in addition, patients showed increased functional connectivity in comparison to healthy controls in portions of Cerebellum Frontoparietalt1 networks. The power spectrum of the bipolar patients and healthy control time courses don’t differ significantly in any of the brain networks, but there is a slight difference between the average slope between bipolar and healthy subject, Total Av. Bip = -0.88743 and Total Av. HC = -0.90282.

**Discussion:** Well-known resting state networks were reliable identified from RS fMRI in Bipolar depression patients. The differences in anatomical distribution point to possible alterations in functional connectivity in Bipolar depression, which suggests disruption in cerebellum, DMN, fronto-parietal and visual neuropsychological related activity.

**S143. NEURAL CORRELATES OF INTENTION AND BELIEF INFERENCE RELATIVE TO EMOTION ATTRIBUTION TO OTHERS IN SCHIZOPHRENIA AND PSYCHOSIS PRONENESS: ACTIVATION LIKELIHOOD ESTIMATION META-ANALYSIS**

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**Background:** Social cognition can be briefly defined as the ability to interact with and understand others. It involves several cognitive processes that are considered as critical for an adapted social functioning. In patients with schizophrenia (SCZ) and subjects prone to psychosis (PP), a number of studies have revealed impairments in the abilities to infer beliefs, intentions or emotions of others. Cognitive tasks specifically addressing these abilities have also revealed abnormal neural processing in these subjects. However, these studies have not yet been compared in order to identify shared or distinct functional brain networks underlying these processes in the two subject groups.

Therefore, we aimed to determine whether the neurofunctional correlates of intention/belief attribution are distinct from those of emotional inference in SCZ and PP compared to healthy controls (HC). We further attempted to identify neuroimaging markers of psychosis endophenotype in mentalizing tasks. Finally, we examined shared and distinct brain regions involved in intention/belief attribution relative to emotional inference in SCZ.

**Methods:** Using a neural coordinate-based Activation Likelihood Estimation (ALE) meta-analysis, we investigated differences in activation patterns between intention/belief and emotion attributions to others in SCZ and PP relative to HC.

**Results:** We selected 33 studies after a systematic review of the literature. Inferring intentions/beliefs in SCZ patients correlated with decreased functional activation in the medial prefrontal cortex (mPFC) and left posterior temporoparietal junction (TPJ). In PP subjects, precuneus, posterior cingulate gyrus, middle and superior temporal gyri displayed additional under-activation pattern, while posterior cingulate, right TPJ, left lateral PFC and insula were over-activated. In patients with SCZ thalamus and striatum, right dorsolateral PFC, right insula, and right transverse temporal gyrus were under-activated during emotion attribution to others, while left ventrolateral PFC, left insula, right lingual gyrus and areas in the cerebellum were over-activated. Finally, in PP subjects, right TPJ was under-activated while left parahippocampal, middle and superior temporal gyri, were over-activated during affective mentalizing. Conjunction analyses demonstrated under-activation in left rostral mPFC and left fusiform gyr in both SCZ and PP relative to HC during intention/belief inference tasks.

**Discussion:** Our results suggest abnormal neural functioning in fast emotional appraisal and subsequent cognitive modulation during emotion perspective taking in SCZ. In PP, abnormal activation was observed only in cortical regions well known as recruited in emotional top-down regulation. When there is no emotional content in perspective taking like in intention/belief attribution to others, two core regions appeared as under-activated in SCZ and PP, namely left rostral portion of mPFC and, to a lesser extent, the left fusiform gyrus, suggesting that these two regions play a role in top-down modulation of cognitive mentalizing and could be neuroimaging markers of psychosis endophenotype. Thus, abnormal functioning in these specific brain areas could be a valuable predictor for developing schizophrenia in at-risk subjects. Moreover, these brain regions could be targeted by non-invasive neuromodulation techniques in order to restore cognitive function.

**S144. THE ASSOCIATION BETWEEN BRAIN ACTIVITY IN THE PREFRONTAL CORTEX AND DEMOGRAPHIC VARIABLES: A LARGE-SAMPLE FUNCTIONAL NEAR-INFRARED SPECTROSCOPY STUDY**

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**Background:** A functional near-infrared spectroscopy (fNIRS) has an advantage of easy measurement of the activity in the surface of the cortex with a naturalistic position. Therefore, fNIRS has been used as an aid for differential diagnosis of depressive symptoms as a clinical application in Japan. However, the fNIRS diagnosis system is not considered gender, age, and task performance which could be associated with brain activity. We previously reported that the fNIRS brain activity was associated with gender, age, cognitive performance, age at onset, and clinical stages of psychosis. Therefore, we intend to explore the association between fNIRS brain activity in the prefrontal cortex and demographic variables using a large sample size.

**Methods:** Of 163 patients with schizophrenia and 470 healthy controls who were measured using a fNIRS instrument from April 2004 to April 2016, 224 measurements from 152 patients and 475 from 386 controls were analyzed after exclusion by the criteria. We analyzed the intensity and timing of brain activity during the letter version of a verbal fluency task in the subregion of the prefrontal cortex. The associations between brain activity and demographic variables were tested using general linear mixed models with the main effect of gender, age, group and interaction by group as fixed effects, and measurement time and interval by participant as random effects. We compared the models including all possible combination of the fixed effects. Then we further tested the associations between brain activity and measurement time, measurement interval, task performance, sleepness, premorbid IQ, handedness, and education year by adding the main effect of each variable and interaction by group into the best-fitted model.

**Results:** Model comparison showed that the best fitted and reliable model included the main effects of gender, age, group and family history of affective disorders, and interaction by group into the best-fitted model.

**Discussion:** To the best of our knowledge, this is the first study which investigated the association between brain activity and demographic variables in a large sample set assessed by the same instrument and task. In future, the improvement of the clinical application fNIRS system adding to demographic variables is needed.