Moreover, we observed a great variability of link density during resting state in patients but not in controls, and it diminishes in response to task.

**Discussion:** Patients present abnormalities in networks related to stress response showing an alteration in fronto-temporal connectivity, and a poor and random modulation of these networks at rest. Current and previous findings suggest abnormal fronto-temporal connectivity that ultimately would lead to psychotic symptoms emergency in response to an environmental stressor and, even, could be related to hypervigilance and misattribution feeding into the paranoid cognition characteristic of patients with schizophrenia.

F170. SCHIZOPHRENIA POLYGENIC RISK SCORE ASSOCIATED WITH LEFT TEMPORAL GYRIFICATION

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**Background:** Brain structural changes in schizophrenia are thought to arise in part from genetic liability, as shown in studies of twins and siblings. Polygenic risk scores (PGRS) derived from large-scale genome-wide association studies (GWAS) have allowed to use measures of genetic liability calculated from large numbers of individual single nucleotide polymorphisms (SNPs). Initial studies on PGRS and structural imaging have, however, failed to provide clear associations. We used three separate measures of brain morphometry (voxel-based morphometry, cortical thickness, and gyration) in a sample of healthy subjects to associate them with PGRS for schizophrenia in order to test the hypothesis that gyration, a putative indicator of early brain development.

**Methods:** We analysed high-resolution MRI scans (3 Tesla, T1-weighted MPRAGE, 1x1x1 mm resolution) from n=153 healthy subjects with not current or previous psychiatric condition recruited from the local community. DNA from each subject was analysed using the PsychChip, and polygenic risk scores were calculated for schizophrenia, as well as bipolar disorder and major depression (for assessment of relative liability has not reached at consistent consensus despite a few interesting and promising results. In this study, we investigated whether or not various measures of dMRI (FA, AD, RD, and TR) are altered in patients with schizophrenia by comparing them in both patients and healthy controls with public neuroimaging data from SchizConnect (http://schizconnect.org).

**Results:** The number of abnormal lesions was notably increased in patients group, in terms of RD (p=0.01063) and TR (p=0.009329). Meanwhile, no statistically significant differences related to FA and AD were observed. On the other hand, it was found that the largest absolute Z-score was elevated in patients group, in terms of AD (p=0.03371), RD (p=0.0001762), and TR (p<0.0001). Otherwise, no significant differences related to FA were observed.

**Discussion:** In this study, we found a few remarkable differences of familiar measures, especially TR, between brains of patients with schizophrenia and healthy controls. This suggests that there should be some subtle changes in the brains of patients with schizophrenia, including microstructural destruction.

F171. ALTERED DIFFUSIVITY IN THE BRAIN OF PATIENTS WITH SCHIZOPHRENIA: A DIFFUSION WEIGHTED MAGNETIC RESONANCE IMAGING STUDIES WITH PUBLIC NEUROIMAGING DATA

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**Background:** In recent decades, numerous in vivo brain imaging studies utilizing diffusion weighted MRI (dMRI) technique have focused on altered diffusivity in brains of patients with schizophrenia. However, the literature has not reached at consistent consensus despite a few interesting and promising results. In this study, we investigated whether or not various measures of dMRI (FA, AD, RD, and TR) are altered in patients with schizophrenia by comparing them in both patients and healthy controls with public neuroimaging data from SchizConnect (http://schizconnect.org).

**Methods:** The final data set was consisted of 121 schizophrenia patients and 119 healthy controls. After verifying 161 anatomical regions of interest (ROIs), we estimated the mean value and standard deviation of fractional anisotropy (FA), axial diffusivity (AD), radial diffusivity (RD), and trace (TR) in each ROI among the healthy controls. After that, we calculated the Z-score of each single ROI in every individual brain of both patients and healthy controls. The Z-score information of each person is then integrated into two location-independent measures. One is the total number of “abnormal” lesions, in which the absolute Z-score is above the cut-off value estimated by the Bonferroni correction, and the other is the largest absolute Z-score. After all, by using Welch two-sample t-test, we compared these two measures between the groups of patients and healthy controls.

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**Discussion:** In this study, we found a few remarkable differences of familiar measures, especially TR, between brains of patients with schizophrenia and healthy controls. This suggests that there should be some subtle changes in the brains of patients with schizophrenia, including microstructural destruction.
Although pMMN and dMMN are not reduced at the group scale. A subset of 28 FESz and 28 matched HC underwent structural MRI.

Methods: Structural MRI brain-scans were acquired in adolescent offspring (8–19 year) of parents with schizophrenia (oSZ; N=50), bipolar disorder (oBD; N=82), and without a mood or psychotic DSM-IV disorder (oHC; N=53), as part of the Dutch Bipolar and Schizophrenia Offspring Study (DBSOS). Support vector machine (SVM) models were trained on the gray matter tissue density maps to predict to which offspring class (oHC/oBD/oSZ) an individual belonged. Prediction accuracy was assessed using cross-validation. To validate our prediction models, we applied them to the tissue maps from subjects from a sample of unrelated HC/BD/SZ adults. Secondly, validated prediction models built from the adult subjects’ MRI scans were applied to the tissue maps of the adolescents to predict illness class (HC/BD/SZ).

Results: The offspring-based model separated oHC/oSZ individuals with 77% accuracy (p<0.001), oHC/oBD with 68% accuracy (p<0.001), and oBD/oSZ with 64% accuracy (p<0.01). The adult-based models could separate the patients’ offspring from the healthy offspring with 66–70% accuracy, but oBD from oSZ with lower accuracy (59%). In addition, the offspring models could separate adult patients from control subjects with comparable accuracy (66–68%) and separate the two patient groups with moderate accuracy (69%).

Discussion: The familial high-risk adolescents could be separated from controls with moderate to high accuracy (up to 77%), based on their MRI-scans. Moreover, the brain tissue patterns based on risk (adolescents) or illness (adults) were able to predict (risk) class in the other stage group. These results show (1) that high-risk individuals already show brain abnormalities, and (2) display similarities with abnormalities in ill adults, and (3) which can be used to detect (risk of) the disorder at the individual level. This suggests that MRI-scans, after further improvement and independent validation, may be of added value in the risk profiling of BD and SZ.

F173. PITCH AND DURATION MISMATCH NEGATIVITY, AUDITORY CORTEX GRAY MATTER, AND PRODROMAL ROLE FUNCTIONING IN THE FIRST EPISODE SCHIZOPHRENIA SPECTRUM

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Background: Primary auditory cortex, contained within Heschl’s gyrus, is implicated auditory processing deficits and auditory verbal hallucinations in schizophrenia. Previously we showed a pathological correlation between the magnitude of the pitch-deviant mismatch negativity (pMMN) response during a passive auditory task and reductions in gray matter volume in left Heschl’s gyrus (TGMV) but not right. Similar associations were observed for dMMN (rho = -0.4, p =.01). Furthermore, in the subset of FESz with sMRI, smaller pMMN at Fz was associated with less total gray matter volume in left Heschl’s gyrus (TGMV) (rho = -0.4, p =.03) but not right. Similar associations were observed for dMMN (rho = -0.47, p =.01). As well, role functioning and auditory cortex gray matter volumes were not correlated in FESz. There were no significant correlations within HC.

Discussion: Although pMMN and dMMN are not reduced at the group level, the size of both are associated with impaired functioning prior to psychosis and reduced gray matter volume of left hemisphere Heschl’s gyrus, containing primary and secondary auditory cortices. Thus, pMMN and dMMN although not sufficient as biomarkers of disease presence, are suitable as reliable biomarkers of disease progression. Presumably, poorer role functioning and less gray matter reflect more of the pre-psychosis progressive pathological process thought to occur in the prodromal phase of psychosis. Hence, pMMN and dMMN are likely to serve as sensitive and robust outcome measures for therapeutic interventions and to guide treatment strategies in the prodromic and during early psychosis.

F174. OBESITY AND BRAIN INTEGRITY IN SCHIZOPHRENIA AND BIPOLAR DISORDER: DIVERGENT PATTERNS OF WHITE MATTER MICROSTRUCTURE DAMAGE IN A TRANSDIAGNOSTIC APPROACH

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Background: Obesity is associated with both structural and functional changes of the central nervous system, and is frequent in psychiatric settings. The increased prevalence of obesity in schizophrenia (SCZ) and bipolar disorder (BD) is associated with illness severity, functioning impairment and cognitive deficits. It cannot be attributed to biases inherent in treatment-seeking samples, given that this association is detectable even in drug-naïve patients. Diffusion tensor imaging (DTI) analyses of major brain fibers in both disorders show shared abnormalities of white matter. DTI has been employed as a highly sensitive tool to investigate microstructural changes in white matter structure. While gray matter alterations in obesity point to a consistent reduction with increasing body mass index (BMI), volumetric changes in white matter are more complex and less conclusive. Fractional anisotropy (FA) is the most commonly used parameter as it is the best estimate of fiber integrity as well as axonal and myelin degeneration, and has been reported an association with BMI in depressed BD patients, but not explored in SCZ nor in comparison with a control group (CTR). The aim of this study was to analyze the relationship between obesity and brain alterations assessed by DTI in SCZ, BD and CTR.

Methods: In one-hundred fifty (N=150) individuals (SCZ:49; BD:35; CTR:66) were administered clinical rating scales, collected sociodemographic data and submitted to magnetic resonance imaging (MRI) acquisition in a 1.5 T machine. Linear regression models were performed independently for each group in order to test the relationship of BMI on

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