retinal functional responses of the photoreceptors and RGC in schizophrenia patients in comparison with healthy controls.

Methods: fERG conducted in scotopic (dark-adapted 0.01 and dark-adapted 3.0 ERG) and photopic conditions (light-adapted 3.0 ERG) and pERG were recorded in schizophrenia patients (n=29) and healthy controls (n=29). PERG provides the measurements of the 2 waves: the P50 wave which arises in RGC with a contribution of bipolar cells and relates to the spatial distribution and density of the RGC bodies and the N95 wave which represents ganglion cell activity.

Results: fERG results showed a decrease in the b-wave amplitude (t(51)=3.4, p<.05, d=0.63) (dark-adapted 0.01 ERG), a-wave amplitude (t(48)=4.7, p<.001, d=1.33) (dark-adapted 3.0 ERG), b-wave amplitude (t(48)=2.8, p<.05, d=0.78) (dark-adapted 3.0 ERG), a-wave amplitude (t(52)=2.8, p<.001, d=0.29) (light-adapted 3.0 ERG) in schizophrenia patients compared to controls. We found as well a significant decrease of the a-wave implicit time (t(52)=2.5, p<.05, d=1.19) (light-adapted 3.0 ERG) in schizophrenia patients compared to controls. PERG results showed a significant increase of the P50 (t(55)=2.1, p<.05, d=0.55) and a significant increase of the N95 implicit time in schizophrenia patients compared with controls (t(55)=4.2, p<.001, d=0.66).

Discussion: Our results replicate previous findings regarding photoreceptors and bipolar cells dysfunction in schizophrenia patients. PERG results demonstrate a delay in transmission of action potentials by the ganglion cells along the visual pathway via the optic nerve and the lateral geniculate nucleus to the visual cortex in schizophrenia patients which could support alterations in cerebral visual processing in schizophrenia.

T133. NEURAL CORRELATES OF EMOTIONAL PROCESSING IN PSYCHOSED RISK AND ONSET: A SYSTEMATIC REVIEW AND META-ANALYSIS OF FMRI STUDIES

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Background: Behavioural findings suggest that the emotion processing abnormalities typically observed in established schizophrenia are already present in patients with a first episode of psychosis (FEP). Evidence has been less consistent in people at clinical high risk for psychosis (CHR-p). While several studies have reported unaltered behavioural performance on emotion identification in people at CHR-p compared to healthy controls, some studies have shown poorer negative emotion recognition. A growing number of functional magnetic resonance (fMRI) studies have investigated brain response to emotion processing to elucidate the mechanisms underlying these processes in FEP patients and CHR-p individuals. Despite the marked expansion of this field over the last two decades, to date, no systematic review or meta-analysis has attempted to synthesise the evidence on the neural bases of emotion processing in these groups as potential markers of psychosis vulnerability and expression.

Methods: The PubMed and Ovid MEDLINE databases were searched for published English-language articles applying an emotion processing task during fMRI in a FEP and/or a CHR-p sample compared to healthy controls. References of included papers were also screened. For CHR-p studies, only those including participants by the basic or attenuated symptom presentation criteria were included. Individual study methodology and results were extracted and systematically reviewed. In addition, at present, statistical parametric mapping contrast maps (‘T-maps’) are being collected from study authors and will be meta-analysed using the Seed-based d Mapping method. The contrasts meta-analysed will be the ones most commonly reported in the studies identified, i.e. of all emotion over comparison conditions and of negative emotion over neutral conditions. These will be meta-analysed separately, as behavioural evidence suggests that emotion recognition performance in these populations might be valence specific.

Results: For the systematic review, 4,389 papers were identified through the search. 19 relevant fMRI papers were identified and their references were screened. 17 articles were included after full-text screening. Six out of twelve fMRI studies in the FEP population reported lower brain activation to emotion processing tasks compared to healthy controls. Four articles reported region-specific hyper- and hypoactivations and two studies found no significant difference. Of the seven studies in the CHR-p population, one study reported lower brain response to emotion relative to healthy controls, two studies found hyperactivations, one study found region-specific increases and decreases, and two studies reported no significant difference. The most consistent finding across studies was lower amygdala activation in FEP participants (n=6). Conversely, in the CHR-p population one article found an increase in amygdala response to emotion with age, consistently with one other article but contrasting with another study showing activity decreases in this region.

Discussion: To our knowledge, no previous systematic review or meta-analysis has synthesised the fMRI findings of emotion processing in both people at CHR-p and a FEP. The present systematic review shows that while more consistent hypoactivations are found in the FEP population, results are less consistent in CHR-p studies. The undergoing meta-analysis will quantitatively synthesise these findings. Elucidating the nature of emotion processing aberrances in early psychosis may help understand the functional changes across both vulnerability and symptom emergence phases and inform molecular investigations into its underlying mechanisms.

T134. THE ROLE OF THE DEFAULT MODE NETWORK IN SCHIZOPHRENIA AND AUDITORY VERBAL HALLUCINATIONS – AN INVESTIGATION OF DYNAMIC FMRI RESTING STATE CONNECTIVITY

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Background: There is a wealth of evidence showing aberrant functional connectivity (FC) in schizophrenia but with considerable variability in findings across studies. Dynamic FC is an extension of traditional static FC, in that such analyses allow for explorations of temporal changes in connectivity. Thereby they also provide more detailed information on connectivity abnormalities in psychiatric disorders such as schizophrenia.

Methods: The current study investigated dynamic FC in a sample of 80 schizophrenia patients and 80 matched healthy control subjects. Furthermore, relationships with auditory verbal hallucinations (AVH), a core symptom of schizophrenia, were explored. Two measures of AVH were used, one measure of current AVH severity assessed on the day of scanning, and one trait-measure where AVH were assessed repeatedly over the course of one year.

Results: Compared to healthy controls, schizophrenia patients showed increased dwell times in states with high connectivity within the default mode network (DMN). Current AVH severity did not show a significant relationship with dynamic FC. However, the trait-measure of AVH proneness over one year showed a significant relationship with dynamic FC. Patients with high AVH proneness spent less time in connectivity states characterized by strong anti-correlation between the DMN and task-positive networks.

Discussion: The results provide further evidence for a DMN dysfunction in schizophrenia, which could be linked to thought disturbances in relation to an increased internal focus of cognitive processing. The effects of
T135. ABERRANT EXECUTIVE CONTROL AND AUDITORY NETWORKS IN RECENT-ONSET SCHIZOPHRENIA - A GROUP ICA DUAL REGRESSION ANALYSIS

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Background: A great number of studies using resting-state functional MRI (rsfMRI) have been conducted for revealing altered functional connectivity in schizophrenia. Although the default mode network has been predominantly investigated, other resting-state networks (RSNs) can be networks of interest for unveiling the neurobiological basis of schizophrenia. Our study investigated changes in functional connectivity in the nine RSNs in recent-onset schizophrenia.

Methods: We performed a rsfMRI in 46 patients with recent-onset schizophrenia and 22 healthy controls. In the preprocessing steps, independent component analysis (ICA)-based automatic removal of motion artifacts was applied to eliminate motion-related components from an individual-level ICA. Group ICA and dual regression were performed for voxel-wise comparisons between the groups with the non-parametric permutation test using threshold-free cluster enhancement and a corrected-p < 0.05 for multiple comparisons. We used the Positive and Negative Syndrome Scale scores for the correlation analysis of symptom severity with functional connectivity in the patient group.

Results: The control group had areas with a significant group difference in activity compared to that of the patient group in which it existed in the left supplementary motor cortex and supramarginal gyrus (the executive control network) and the right postcentral gyrus (the auditory network). There were no significant correlations of symptom severity with the functional connectivity of these regions.

Discussion: The left supplementary motor cortex, supramarginal gyrus, and right postcentral gyrus having areas with a significant group difference may have a role in the pathophysiology of schizophrenia, given their language and auditory information processing functions.

T136. NEURAL CORRELATES OF ALTERED COGNITIVE FLEXIBILITY AND STABILITY FOR MOTOR CONTROL IN SCHIZOPHRENIA - JUST TWO SIDES OF THE SAME COIN?

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Background: It has been suggested that patients with schizophrenia are impaired in the use of prediction error signals resulting in disturbances of motor control. Alterations in fronto-striatal dopamine transporter systems are regarded to contribute to these deficits. It is unclear whether the use of predictive strategies for motor control may be systematically related to impaired cognitive functions in patients. In healthy subjects, cognitive flexibility has been related to medial prefrontal cortex (PFC) function, while cognitive stability was related to lateral PFC integrity with both brain regions being modulated by striatal activity. Despite these findings, the interplay of cognitive flexibility and stability needed for motor control and its associations to alterations on the brain system level have not been investigated systematically in this patient group.

Methods: We assessed patients with schizophrenia (N=22) and healthy controls (N=22) on first, detection of relevant unexpected events (cognitive flexibility) and second, distractor resistance to irrelevant prediction errors (cognitive stability) using a serial prediction task including the digits 1-2-3-4. We applied an event-related design in a functional magnetic resonance imaging (fMRI) environment (3T) to explore brain networks underlying cognitive flexibility and stability, respectively. In analyses, the minimum cluster extent was set to k > 20 and corrected using the false discovery rate (FDR) with p < 0.05. Since we were specifically interested in the role of the striatum, we applied small volume correction at p < 0.05 with the minimum cluster extent set to k > 5 in a region of interest analyses. Participants were also assessed on general cognitive function using the Brief Assessment of Cognition in Schizophrenia (BACS) battery and on motor symptoms using the Heidelberg Scale for Neurological Soft Signs (NSS).

Results: Patients detected less behaviorally relevant events (M(Pat) = 0.57 vs. M(HC) = 0.78, F(41,1) = 16.32, p < 0.001) and ignored less irrelevant events (M(Pat) = 0.87 vs. M(HC) = 0.93, F(41,1) = 11.78, p < 0.001) implying impairments of both cognitive flexibility and stability in patients. Motor symptoms (NSS) and cognitive deficits (BACS) in patients were exclusively related to cognitive flexibility, but not stability. Brain correlates of reduced flexibility in patients were found in a fronto-striato-thalamo network. More specifically, reduced striatal activation in patients was related to weaker event discrimination and reduced detection of unexpected relevant events. Additionally, exploratory follow-up analyses revealed reduced fronto-striato-temporal activation in patients associated with weaker distractor resistance during the stability task. Note, chiorpromazine equivalents as an indicator of antipsychotic dosage as well as positive and negative symptoms were unrelated to measures of cognitive flexibility and stability.

Discussion: Together, our findings provide evidence for distinctive neurobiological alterations underlying reduced cognitive flexibility and stability in schizophrenia with reduced flexibility being associated with general cognitive and motor impairments. Our main imaging results show reduced activation in a fronto-striato-thalamo network in response to relevant prediction errors in patients, while impaired cognitive stability may be rather related to alterations in a fronto-striato-temporal network. Reduced caudate activation during behavioral relevant events, which was associated with weaker event discrimination and detection of relevant prediction errors in patients, supports a model of striatal gating being essentially impaired in patients.

T137. THE RELATIONSHIP BETWEEN CORTICOSTRIATAL CONNECTIVITY AND STRIATAL DOPAMINE FUNCTION IN SCHIZOPHRENIA: AN 18F-DOPA PET AND DIFFUSION TENSOR IMAGING STUDY

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Background: Striatal dopamine dysfunction caused by cortical abnormalities is a leading hypothesis of schizophrenia pathophysiology, which underlies in majority of treatment-responsive patients. Although supported by findings that prefrontal cortical lesions lead to striatal dopamine dysregulation and that recently, prefrontal structural volume is negatively correlated with striatal dopamine synthesis, the relationship between corticostriatal connectivity and striatal dopamine synthesis has not been tested in patients with schizophrenia. We therefore investigated the relationship between corticostriatal connectivity and striatal dopamine synthesis capacity in treatment-responsive patients with schizophrenia, and compared them to treatment-resistant patients and healthy control subjects.

Methods: Twenty-four patients with schizophrenia and twelve matched healthy control subjects underwent 18F-DOPA PET scans to measure dopamine synthesis capacity (indexed as the influx rate constant Kicr), structural and diffusion 3T MRI. Connectivity (indexed as Fractional...