without antipsychotic medication use. Noticeably, this association seems also to hold for subclinical psychotic phenomena, present in the normal population.

T69. PATHWAYS TO CARE ENCOUNTERS AND DURATION OF UNTREATED PSYCHOSIS IN MINORITY ETHNIC PATIENTS AT FIRST EPISODE OF PSYCHOSIS: A MENTAL HEALTH ELECTRONIC CASE REGISTER STUDY

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Background: Duration of untreated psychosis (DUP) is identified as a major contributor to the variation in outcomes following first episode psychosis. We investigated to what extent differences in pathways to care and DUP by ethnicity is associated with the type of specialist mental health service the patients encounter during first contact with mental health services.
Methods: We analysed data on 343 first episode psychosis patients presenting to the South London and Maudsley NHS Trust, who were eligible to receive early intervention (EI) for psychosis between 2010 and 2012. We performed crude and multivariable logistic regression to estimate odds of DUP by pathways to care characteristics and ethnic groups, controlling for confounders.
Results: We found around thirty-five percent of the sample did not receive an early intervention for psychosis. Among the EI patients, a short DUP was strongly associated with demographic factors and pathways encounters. When EI and non-EI patients were compared, both experienced longer DUP if they were referred by GP (OR=2.30; 95%CI=1.30 – 1.07) and (OR=2.65; 95%CI=1.13 – 6.06) respectively. There was strong evidence that black Caribbean patients in the EI group experienced shorter DUP compared with white British patients (adj. OR=0.33; 95%CI=0.11 – 0.98), independent of confounders.
Discussion: Our findings show that ethnicity is associated duration of untreated psychosis, and black Caribbean patients, experienced shorter DUP. Longer DUP was associated with GP referral, which may reflect the ongoing pressures on resources and waiting times for consultation in primary care.

T70. IDENTIFYING YOUTH AT CLINICAL HIGH RISK: WHAT'S THE EMOTIONAL IMPACT?

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Background: In spite of advances in early intervention in major mental illness, concerns linger regarding the risks of identifying youth as at clinical high risk (CHR) for psychosis. In particular, stigma in this population has been associated with increased emotional distress, social withdrawal, non-engagement in treatment, and suicide risk. Being told one has a CHR syndrome may be one source of stigma, yet no prior studies have conducted assessments both before and after people are given this feedback. Within the context of a larger study of stigma, we compared emotional responses to the CHR concept assessed before and after feedback by study clinicians. Notably, some participants had been already told of their risk prior to study entry whereas others had not. We expected different reactions to study feedback in these two groups. An informed discussion of risk might reduce stigma in those already worried about psychosis whereas it might increase stigma for those considering their risk for the first time. Thus, we predicted a small decrease in negative emotions following feedback in the first group, a small increase in the second, and no significant change in negative emotions for the group as a whole.
Methods: Fifty-seven CHR participants ages 12–35 were interviewed both before and after receiving formal clinical feedback about their risk status and eligibility for the study. This feedback typically included elements of psychoeducation and information about treatment options. In each interview participants were asked 1) the degree to which they felt 12 emotions in relation to risk for psychosis or schizophrenia, 2) whether they thought it was better to not tell anyone about psychosis risk. We analyzed pre-post change using general linear modeling with group (those told before study entry and those first told in the study context) as a between-subjects variable and the time between pre and post interviews as a covariate.
Results: Stigma was a significant concern in this sample as the vast majority of participants endorsed "It is better that I not tell people that I am at-risk," both before and after feedback (75% pre to 71% post, McNemar test, $p = 0.75$). However, contrary to our hypothesis, participants experienced a significant decline in negative emotions (embarrassed, different, angry, ashamed, sad, worried; $F= 20.7$, $p <0.001$) post- vs. pre-feedback, even controlling for the significant effects of time (M = 16 days between assessments; $F= 3.7$, $p =0.033$). This was true for those who reported already having been told that they were at risk for psychosis ($N = 35$; $F = 20.0$, $p < 0.001$) as well as for those who were first told they were at risk in the context of the study ($F =4.0$, $p = 0.038$). Strikingly, a third of this latter group continued to report not having been told they were at risk even immediately after feedback. Additionally, in the larger group, ten believed that they already had schizophrenia and two maintained this belief even after being told that they did not.
Discussion: This is the first study to assess emotional aspects of stigma in CHR youth both before and after formal feedback about their psychosis risk. In contrast to concerns, feedback provided in the context of specialized early psychosis programs may actually reduce distress in these youth. The fact that the number of days between assessments did not fully account for the significant changes in negative emotions suggests that these changes were unlikely to be due to time alone. Importantly, participants' varied impressions of what they had been told or whether they were at risk suggest that feedback is not the only factor influencing self-identification and stigma.

T71. INVESTIGATING NEURAL MECHANISMS OF PROACTIVE AND REACTIVE CONTROL IN PSYCHOTIC DISORDERS WITH THE DOT PATTERN EXPECTANCY TASK

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Background: The dot pattern expectancy (DPX) task is previously validated for cognitive control deficits in psychotic disorders. Patients with schizophrenia commit more errors as well as show less activation in bilateral prefrontal cortex during proactive control in the DPX task. Recent neural recordings in rhesus macaques indicate that proactive and reactive control processes in the DPX task engaged the same neurons in the prefrontal cortex. However, it is not clear if the overlap between these two mechanisms can be observed in human blood-oxygen-level dependent signals. Further, the role of these dual mechanism regions in the cognitive control deficits of patients with psychotic disorders remains unclear.

Methods: 150 probands with a psychotic disorder, 100 first degree relatives, and 50 healthy controls in the Psychosis Human Connectome Project will complete the DPX task while undergoing 3T functional magnetic resonance imaging scan. Traditional general linear model, as well as a novel multiway method called parallel factor analysis, will be used to examine brain mechanisms involved in proactive as well as reactive control during the DPX task.
Results: In a preliminary analysis of 24 probands (38.3 ± 12.8 years, 9 females) and 27 healthy controls (36.2 ± 14.0 years, 11 females), probands showed behavioral deficits in proactive control as compared to healthy controls. Neuroimaging analysis in healthy controls with general linear model showed a cluster in the left inferior frontal gyrus that was involved in both proactive and reactive control. Additionally, overlap in proactive and reactive control was observed in bilateral supramarginal/angular gyrus and right inferior occipital gyrus, although these two mechanisms also involved distinct brain regions.
Discussion: Consistent with previous findings, probands showed a specific deficit in proactive control in the DPX task. Proactive and reactive control in healthy controls engaged the same brain regions in the prefrontal cortex, replicating findings in rhesus macaques. Further analyses will reveal the role of the prefrontal cortex as well as other brain regions in the cognitive control deficits in psychotic disorders.

T72. NEURAL ABNORMALITIES IN PSYCHIATRIC AND NEUROLOGIC DISORDERS: IDENTIFYING PATHOLOGY AGAINST A BACKDROP OF NORMAL BRAIN DEVELOPMENT

Abstract not included.

T73. IDENTIFYING KEY VOXELS IN SCHIZOPHRENIA THAT ARE CORRELATED WITH AGE OF ONSET AND DURATION OF ILLNESS

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Background: Schizophrenia is a chronic, disabling mental disorder. Patients suffering from multiple degradations. Presently, several different brain regions are found to be involved in the neuropathology of schizophrenia, including limbic and temporal lobe, cingulate gyrus, and basal ganglia [1]. By applying the deep learning method in structural brain magnetic resonance images, an explainable deep neural network (EDNN) framework is used to identify the key structural deficits in schizophrenia [2]. We then sought to identify the correlation between demographic and cognitive profiles and structural deficits in schizophrenia.
Methods: We used the general linear model to examine predictors of clinical assessment scale in response to two different voxel integrity models for patients with schizophrenia.
The EDNN key voxels included 183 voxels which were trained by the structural MRI data, which is consisted of 200 schizophrenic patients and 200 age and gender-matched healthy control subjects. Brain MRI images were normalized and segmented into gray matter (GM), white matter (WM), and cerebrospinal fluid (CSF) space. The clinical assessment data were obtained from the same group, including sex, age, onset age, duration of illness, digit span task and mini-mental status examination. Next, the average image intensity from identified key voxels was used as the response, and cognitive data as predictors to build a regression model. We also compared the model results with those obtained from anatomical parcellation with significant between-group differences in the image intensity.
Results: In terms of its predictions to the integrity of grey matters using the linear regression model, the EDNN data yields 0.33 of R-squared value, and on the other hand, anatomical parcellation reaches 0.33 of R-squared value. We also found that the key voxels identified by the EDNN were significantly correlated to the age of onset and duration of illness.
Discussion: Our results suggest that, at the statistical level, our EDNN dataset can derive comparable results using much fewer voxels. The structural deficit identified by EDNN model was mostly contributed by the age of onset and duration of illness, which is consistent with gray matter loss observed in the course of schizophrenia.

T74. EVALUATING COGNITIVE CONTROL MECHANISMS WITHIN PATIENT AND HEALTHY POPULATIONS

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Background: Cognitive control mechanisms enable an individual to regulate, coordinate, and sequence thoughts and actions in order to obtain desirable outcomes. Cognitive control is typically conceptualized as dual processes that occur in frontoparietal regions: proactive control, which uses sustained activation to enact anticipatory planning and goal maintenance, and reactive control, which entails retrieving information as presently needed (Braver, 2012), with patients with schizophrenia being especially susceptible to proactive control impairments (Poppe et al., 2016). However, nonhuman primate research suggests most prefrontal neurons 'switch,' firing during both proactive and reactive control, implying overlap between neural encoding of these two processes (Blackman et al., 2016). We sought to examine the overlapping neural circuitry of proactive and reactive control in healthy and patient populations using the Dot Pattern Expectancy Task (DPX).
Methods: 47 patients with schizophrenia (SZ) and 56 matched healthy controls (HC) completed 4 blocks of the DPX through the Cognitive Neuroscience Test Reliability and Clinical applications for Serious mental illness (CNTRaCS). During a 3-Tesla fMRI scan, participants followed the 'X-then-Y' rule, in which they were to press one button whenever an A cue was followed by an X probe, and another button for any other non-target stimulus sequence. Dissimilarity between proactive and reactive activation was evaluated within bilateral regions implicated in cognitive control: the medial frontal gyrus, superior frontal gyrus, and anterior cingulate cortex. Neuroimaging data was processed with FMRIB Software Library (FSL) packages. Probe accuracy and reaction time data were divided into 'first half' and 'second half' groups, depending on the block during which it occurred.
Results: Behavioral data analysis showed HC subjects showed a greater proclivity to engaging in proactive control across the study length than SZ subjects. HC subjects were also faster than SZ subjects in trials that required successful marshalling of proactive control. However, there was no within-subject increase in proactive proclivity or speed across the study procedure, complicating recent findings that suggest proactive control increases as a function of trial set length (Janowich & Cavanagh, 2018).
ROI activation analysis showed no significant difference between HC and SZ proactive – reactive dissimilarity. Interestingly, within-ROI activation levels were significantly negative for both subject groups, implying these regions may be slightly more active during reactive processes.
Discussion: Results point to a between-group difference of relative strengths and weaknesses in proactive control, despite shared neural substrates. The lack of distinct ROI preference for proactive control offers support for the malleable nature of regions implicated in human cognitive control. Future analysis may investigate the association between proactive—reactive ROI dissimilarity and clinical and real-world functioning measures among patients.