SIRS 2020 Abstracts

**Discussion**: The findings suggest that the pattern, magnitude, and distribution of severity of impairment in CHR were similar to that observed in FES. However, early in the illness, there may be relative sparing of reasoning and problem solving and social cognition.

**Background**: Hostile attribution bias has been reported to be common from nonclinical population to serious mental illness such as schizophrenia and is known to be closely related to social cognition. The aims of this study was to investigate whether theory of mind (ToM) skills mediate the relationship between cognitive ability and personality traits and attribution bias by using the Korean version of Reading the Minds in the eyes test (K-RMET).

**Methods**: One hundred ninety-six (101 females) nonclinical youths were recruited. To assess general cognitive ability and ToM skills, participants were asked to complete the Raven’s Standard Progressive Matrices (SPM) and the K-RMET. For personality traits, the Eysenck Personality Questionnaire (psychoticism) and Interpersonal Reactivity Index (perspective taking) were administered. To evaluate the hostile attribution bias, the Ambiguous Intentions Hostility Questionnaire was also administered. Path analysis and the bias-corrected percentile bootstrap method were performed to estimate the parameters of mediating effects.

**Results**: Based on Akaikle Information Criterion(AIC) the best model characterized 1) two direct pathways from psychoticism and the K-RMET to hostility attribution bias and 2) four indirect pathways, wherein SPM, perspective taking and psychoticism influence hostile attribution bias through the K-RMET. The K-RMET fully mediated the association between SPM (p=.028), perspective taking (p=.027), psychoticism (p=.041) and hostile attribution bias.

**Discussion**: The main findings suggested that ToM skill such as the RMET plays an important role in explaining the relationship between cognitive ability and personality traits and hostile attribution bias. The development of remediation strategy of theory of mind skills may be needed to balance the enhanced hostility bias which is underlying the paranoia.

**Background**: Cognitive remediation (CR) is an evidence-based behavioral intervention for cognitive impairment in schizophrenia. Although the effectiveness of CR is well established, its effects are modest, especially in terms of functional outcome. There is an emerging literature suggesting that adding aerobic exercise to CR may exert synergistic effects. Despite these promising reports, the extent to which aerobic exercise in combination with CRT can improve cognitive and daily functioning in multiphasic schizophrenia and schizoaffective disorder remains unclear.

**Methods**: This is a single-blinded, randomized clinical trial (NCT02864576) with two different groups: 1) patients with multiphase schizophrenia or schizoaffective disorder receiving 3-month Aerobic exercise plus CR treatment (three weekly sessions, 40 min of Aerobic exercise and 90 min of CR), and 2) patients with multiphase schizophrenia or schizoaffective disorder receiving Healthy lifestyle promotion plus CR treatment (three weekly sessions, 40 min of Healthy lifestyle promotion and 90 min of CR). Primary outcome measures were the MATRICS Consensus Cognitive Battery (MCCB) and the Global Assessment of Functioning (GAF), which were assessed (among others) at baseline and immediately after treatment. For the present work, the sample included in the analysis were 34 patients for whom cognitive data were available. Treatment effects on neurocognition and functional outcome were analyzed by applying the multivariate general linear model (GLM) repeated measures.

**Results**: After treatment, both groups exhibited a significant improvement in MCCB visual learning memory (F=14.298, p=0.001), working memory (F=6.626, p=0.015) and speed of processing (F=16.344, p=0.001) domains. However, no significant benefits were evidenced for problem solving (F=2.143, p=0.153), verbal learning memory (F=0.321, p=0.575) and attention/vigilance (F=0.740, p=0.397) domains. Functional outcome, as measured by the GAF, was more improved in the Aerobic exercise plus CR group than in the Healthy lifestyle promotion plus CR group (F=4.248, p=0.047).

**Discussion**: Our preliminary findings indicate that combining aerobic exercise with cognitive remediation may promote a large impact on functional outcome in patients with multiphase schizophrenia or schizoaffective disorder.

**S74. AEROBIC EXERCISE AND COGNITIVE REMEDIATION IN MULTIEPISODE SCHIZOPHRENIA AND SCHIZOAFFECTIVE DISORDER: PRELIMINARY RESULTS: FROM A RANDOMIZED CLINICAL TRIAL**

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**Background**: In recent decades, research in the treatment of schizophrenia has shifted to early detection and intervention. Unfortunately, the development of psychosis is still poorly understood, making such an endeavour more challenging. Cognitive models of psychosis suggest that neurocognitive deficits place an individual at greater risk of developing metacognitive deficits. Such deficits in metacognition have been shown to contribute to the development of positive symptomatology. A large body of literature supports that patients with schizophrenia exhibit impairments across nearly all domains of neurocognition, as well as metacognition. Theory of mind (ToM) is one of the most widely studied components of metacognition, which includes both cognitive (i.e., understanding what another person is thinking) and affective (i.e., understanding what another person is feeling) processes. Research indicates patients with schizophrenia demonstrate deficits in cognitive and affective ToM, and these deficits are associated with delusional symptomatology. If ToM is involved in the development of positive symptoms, it is expected that this deficit would be present prior to the onset of a first episode psychosis. It is unclear from current research findings if this is the case, however. Additionally, research examining the role of neurocognition as it relates to ToM is lacking. While
some research has examined these variables in clinically-high-risk (CHR) groups, little research has examined nonclinical samples at risk for psychosis. Thus, this study sought to examine the relationship between ToM and neurocognition in a nonclinical sample with schizotypal traits, as research suggests these individuals may be at risk of developing a psychotic illness. It was hypothesized that lower performance in working memory and executive functioning would be related to poorer performance in cognitive and affective ToM, which would subsequently be associated with subsyndromal delusions. It was further predicted that schizotypal traits would moderate the relationship between neurocognitive performance and ToM abilities.

Methods: Undergraduate students (N = 99) completed self-report measures of personality and psychosocial functioning, including the Schizotypal Personality Questionnaire, Beck Depression Inventory-II, Launay-Slade Hallucination Scale-Revised, and 21-Item Peters Delusions Inventory. Participants also completed the Neuropsychological Assessment Battery Screening Module, which is a screening measure for neurocognitive dysfunction. Finally, they completed the Recognition of Faux Pas Test, a task-based measure that evaluates cognitive and affective ToM.

Results: Data collection is complete, and the data will be analysed using partial least squares structural equation modeling. This is a regression-based path analysis designed for exploratory models. This statistical method is better able to handle non-normally distributed data and smaller sample sizes when compared to covariance-based structural equation modeling.

Discussion: Study findings will be discussed in the context of cognitive models for the development of psychosis. The ways in which these findings, and cognitive models more broadly, can facilitate early detection of schizophrenia will be discussed, along with how such models can be used to inform psychosocial interventions for the illness.

S76. PROACTIVE AND REACTIVE RESPONSE INHIBITION IN INDIVIDUAL WITH SCHIZOTYPY: AN ERP STUDY

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Background: Schizotypy, a subclinical group at risk for schizophrenia, have been found to show impairments in response inhibition. Recent studies differentiated proactive inhibition (a preparatory process before the stimuli appears) and reactive inhibition (the inhibition of a pre-potent or already initiated response). However, it remains unclear whether both proactive and reactive inhibition are impaired in schizotypy and what are the neural mechanisms. The present event-related potential study used an adapted stop-signal task to examine the two inhibition processes and the underlying neural mechanisms in schizotypy compared to healthy controls (HC).

Methods: A total of 21 individuals with schizotypy and 25 matched HC participated in this study. To explore different degrees of proactive inhibition, we set three conditions: a “certain” go condition which no stop signal occurred, a “17% no go” condition in which stop signal would appear in 17% of trials, and a “33% no go” condition in which stop signal would appear in 33% of trials. All participants completed all the conditions, and EEG was recorded when participants completed the task.

Results: Behavioral results showed that in both schizotypy and HC, the reaction times (RT) of go trials were significantly prolonged as the no go percentage increased, and HC showed significantly longer go RT compared with schizotypy in both “17% no go” and “33% no go” conditions, suggesting greater proactive inhibition in HC. Stop signal reaction times (SSRTs) in “33% no go” condition was shorter than “17% no go” condition in both groups. Schizotypy showed significantly longer SSRTs in both “17% no go” and “33% no go” conditions than HC, indicating schizotypy relied more on reactive inhibition. ERP results showed that schizotypy showed larger overall N1 for go trials than HC irrespective of condition, which may indicate a compensation process in schizotypy. Schizotypy showed smaller N2 on both successful and unsuccessful stop trials in “17% no go” conditions than HC, while no group difference was found in “33% no go” conditions for stop trials, which may indicate impaired error processing.

Discussion: These results suggested that schizotypy tended to be impaired in both proactive control and reactive control processes.

S77. ROLE OF DOPAMINE AND GLUTAMATE TRANSPORTERS IN GENERATION OF ANTIMYCOXIC EFFICACY

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Background: Antipsychotic drugs are the first line intervention to treat psychosis in schizophrenia and D2 receptor blockade is thought to be their primary mechanism of action. However, multiple lines of evidence from human and animal studies show that D2 receptor blockade is not always correlated with markers of antipsychotic efficacy. We previously demonstrated that reduced antipsychotic efficacy occurs over chronic antipsychotic administration in rodents despite stable D2 blockade, examined using PET imaging. Instead, we found that changes in expression of the dopamine transporter (DAT) were associated with decreases in endogenous dopamine and dopamine-mediated autoinhibition. These studies have led us to examine the DAT as a critical player in generation of an antipsychotic response.

Methods: Using antisense morpholino oligonucleotides, administered for 3 consecutive days using Long Evans rats, we selectively blocked translation of DAT or GLT-1 mRNA in the core of the nucleus accumbens, a brain region critical for motor outputs in response to salient stimuli. Baseline locomotion was monitored prior to and after an acute i.p. injection of haloperidol. Next, locomotion was monitored in response to a tail pinch or acute i.p. administration of cocaine. Transporter expression was quantified during acute or chronic haloperidol treatment using confocal microscopy.

Results: We found that DAT knockdown enhanced tail pinch-induced locomotion after acute haloperidol administration. Additionally, knockdown of the glutamate transporter GLT-1 strongly enhanced locomotion induced by tail pinch or cocaine injection against antipsychotic treatment. Confocal analysis of GLT-1 expression after acute or chronic haloperidol revealed significant GLT-1 up-regulation during a time period associated with antipsychotic efficacy.

Discussion: Our findings demonstrate a cause/effect relationship between reduced DAT and the behavioral response to an acute injection of antipsychotics in rodents. In all, our data point to the importance of both dopamine and glutamate uptake in the efficacy of antipsychotic drugs and argue against a D2-centric hypothesis of antipsychotic action.

S78. TIME PREDICTION AND SENSE OF SELF: LACK OF FLEXIBILITY IN PATIENTS WITH SCHIZOPHRENIA

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Background: The sense of time continuity appears to be disturbed in pathologies like schizophrenia, associated with a disruption of the sense of self, and of the feeling of being immersed in the world. Prediction mechanisms have been proposed to be involved in the sense of time continuity by helping to relate discontinuous events, and our previous studies have suggested that these mechanisms may occur even at the millisecond level. Such mechanisms would be involved in our ability to interact with the outer world, by helping to follow events accurately in both space and time. We explored prediction mechanisms and attention shifts based on recently experienced sequences of visual information (sequential effects).