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Brain Network Characteristics of Individuals at Clinical High Risk for Psychosis in between Normality and Psychosis: A Combined Structural and Functional Imaging Study
Soo-Hee Choi, Jun Soo Kwon
Seoul National University, Republic of Korea

Abstract
Objective: In an effort to improve early recognition and intervention in patients with schizophrenia (SZ), individuals at clinical high risk for psychosis (CHR) have been the focus of clinical attention. To distinguish the prodrome of psychosis from transient disturbance of mental state in youth, the authors classified broad spectrum of CH restsate into subgroups according to neurobiological characteristics using the structural and functional network constructs.

Method: Structural diffusion tensor imaging and resting-state functional magnetic resonance imaging were scanned in 61 healthy controls (HC), 57 individuals at CH restsate and 29 patients with SZ. The main outcome was a likelihood ratio using measures of structural and functional network efficiencies, coupling strength of the structural and functional networks, biological-specific data analysis using the both constructs to obtain the most probable classification of CH restsate into HC or SZ.

Results: Likelihood ratios revealed that 33 individuals at CH restsate were likely close to HC (CHR-HC) and the rest of 24 CH restsate were close to SZ (CHR-SZ). CHR subgroups were comparable to each other in demographic characteristics and clinical symptoms. However, verbal functions of CHR-CON were akin to CON and those of CHR-SZ were akin to SZ. Additionally, CHR-SZ had lower verbal intelligence than CHR-HC.

Conclusions: Our findings provide novel neurobiological evidence that heterogeneous CH restsate population can be divided into subgroups, one of which is more likely to be prone to psychosis. Using a combination of structural and functional data, we could detect vulnerable population and provide an active intervention in early phase of CH restsate.

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Association between increased resting-state functional connectivity and reduced symptoms of schizotypal personality disorder: neural evidence for compensatory brain responses
Ji-Won Hur1,2, Kang Ik Kevin Cho1, Wi Hoon Jung1, Tae Young Lee4, Sung Nyun Kim1, Jun Soo Kwon1,5
1 Department of Brain and Cognitive Sciences, College of Natural Sciences, Seoul National University, Seoul, Republic of Korea 2 Department of Psychology, College of Social Sciences, Chung-Ang University, Seoul, Republic of Korea 3 Department of Psychology, University of Pennsylvania, Pennsylvania, United States 4 Department of Neuropsychiatry, Seoul National University Hospital, Seoul, Republic of Korea 5 Department of Psychiatry, Seoul National University College of Medicine, Seoul, Republic of Korea

Abstract
Objective: Schizotypal personality disorder (SPD) shares genetic susceptibilities and clinical features with schizophrenia. Despite growing interest for resting functional connectivity networks of schizophrenia, little is known to date about resting-connectivity networks of, and their contributions to the SPD. The current study aimed to examine the resting state default mode network (DMN) functional connectivity in individuals with SPD.

Method: Twenty-five individuals with SPD and 38 normal controls underwent resting-state functional magnetic resonance imaging. We compared group differences for resting-state connectivity and then explored the links between altered connectivity and clinical symptoms in SPD subjects.

Results: As a result, both ROI-to-ROI and seed based analysis revealed that during resting state, the SPD group demonstrated increased connectivity from the left middle frontal gyrus to the posterior cingulate cortex compared to the normal controls. In addition, connectivity between the left parahippocampal gyrus and left middle frontal gyrus (ROIs analysis), as well as between the bilateral anterior cingulate cortex and posterior cingulate cortex (whole brain analysis), were also identified. In particular, enhanced middle frontal connectivity was negatively correlated with ideas of references and unusual perceptual experiences of SPD subjects.

Conclusions: The current study suggests the first neural evidence of an enhanced functional network with middle frontal regions across the resting-state network in SPD, compared to that of controls. Furthermore, these alterations may possibly take role in compensating for their clinical symptoms including thought disorder and perceptual aberrations in SPD. Our imaging evidence may provide insight on the neurocompensatory responses observed in schizophrenia spectrums.

Key words: schizotypal personality disorder/resting state/compensation/fMRI

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Inflammation in schizophrenia: Imaging genetics
Wu Jeong Huang1, Tae Young Lee1, Jun Soo Kwon1,2
1 Department of Brain and Cognitive Sciences, Seoul National University College of Natural Sciences, Seoul, Republic of Korea 2 Department of Neuropsychiatry, Seoul National University Hospital, Seoul, Republic of Korea 3 Department of Psychiatry, Seoul National University College of Medicine, Seoul, Republic of Korea 4 Institute of Human Behavioral Medicine, SNU-MRC, Seoul, Republic of Korea

Abstract
Schizophrenia is a highly heritable, severely debilitating brain disorder with complex genetic contribution. Although the exact etiology of schizophrenia remains unknown, it is postulated to be manifested by genetic, environmental and immunological factors.

The vulnerability-stress-inflammation model of schizophrenia postulates a “hit” in early life to the immune system along with physical and mental stress may trigger a lifetime increased immune reactivity and a psychotic episode. Many epidemiological and clinical studies report increased risk for schizophrenia in the individuals with pre- or perinatal exposure to infections. Alterations in levels of inflammatory markers such as cytokines are reported in blood and cerebrospinal fluid of schizophrenia patients.

In recent years, an exponential growth of interest has been given on the application of imaging genetics to unravel neurogenetic mechanisms that lie in schizophrenia. Imaging genetics combine the two fields of genetics and brain imaging and applies structural and functional neuroimaging to study in the context of genetic background.

Many pieces of genetic evidence suggest that immune dysregulation plays a major role in schizophrenia. Furthermore,
Impaired self-referential processing in patients with first-episode schizophrenia: an event-related potential study

Young Park1,3, Suk Kyoon An*1,3 1Graduate Program in Cognitive Science, Yonsei University, Seoul, South Korea 2Section of Affect and Neuroscience, Yonsei University College of Medicine, Seoul, South Korea 3Department of Psychiatry, Yonsei University College of Medicine, Seoul, South Korea

Abstract

In previous studies, Self-referential tasks were set in a first-person perspective, which did not allow an examination of the influence of perspectives on the evaluation of self and others. The objective of the present research is to examine the changes in the physiological correlates of self/other-evaluation based on perspectives, by adding a perspective variable to the previous self-referential tasks. The neuro-physiological correlates of the impaired concept of self and perspective conversion capacity in schizophrenic patients are also examined. Twelve first-episode schizophrenic patients and a control group of 18 subjects participated in the experiment. The task was to evaluate and determine the relevance of presented personality trait adjectives to the object of reference – either self or other, in each reference condition – under two different perspective conditions – self or other. The brainwaves of participants were measured while they were performing the tasks. N2 component, which reflects an inhibition reaction, exhibited greater amplitude when evaluating the object in the third-person perspective than in the first-person perspective, and in the control group compared to the patient group. There was a significant three-way interaction among perspective, reference, and subject groups on N2 amplitude and latency. The late positive component(LPC), which reflects the executive function, showed greater amplitude when the referential object and the perspective were incongruent, compared to congruent conditions. The results suggest that a greater inhibition is necessary in both groups when evaluating objects in the third-person perspective compared to the first-person perspective, and that decentering during self-perspective, self-referential condition only occurs in the control group but not in the schizophrenia patient group. This implies that schizophrenia patients have reduced capacity to objectively evaluate self. Greater LPC amplitude during the reference-perspective incongruent conditions compared to the congruent conditions suggests that more active processing of episodic memory occurs when the perspectives and references are incongruent.

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Dysfunction of intrinsic and extrinsic motivation in schizophrenia: an fMRI study

Byung-Hoon Kim1, Yu-Bin Shin2,3, Sung-Byon Kyeong3, Seon-Koo Lee4, Seung-Koo Lee1, Jae-Jin Kim1,2,3 1Department of Psychiatry, Yonsei University College of Medicine, Seoul, Korea 2Institute of Behavioral Science in Medicine, Yonsei University College of Medicine, Seoul, Korea 3Brain Korea 21 PLUS Project for Medical Science, Yonsei University, Seoul, South Korea 4Department of Psychiatry, National Health Insurance Ilsan Hospital, Goyang, Korea

Abstract

Motivational deficit is one of the central components of negative symptoms in schizophrenia. Although reward system of the brain including the striatum is known to account for this deficit, little is studied with the focus on intrinsic and extrinsic motivational deficits in the illness. In this study, we evaluated BOLD response in patients with schizophrenia during motivational processing to test the hypothesis of dysfunctional activation related to intrinsic and extrinsic motivation.

Twenty patients meeting DSM-IV diagnostic criteria for schizophrenia and 20 control subjects participated in the study. The fMRI task required participants to accept or deny an avatar’s verbal suggestions or questions in the virtual environment. The task comprised 18 intrinsic motivation-related and 18 extrinsic motivation-related questions along with 18 neutral questions, which subjects were required to make true or false judgment to a fact-based thesis.

Repeated measures ANOVA of participants’ acceptance rate showed a significant main effect of condition and interaction effect between group and condition. In post hoc analysis, acceptance rate responding to intrinsic motivation were significantly higher than to extrinsic motivation in healthy controls. Imaging analysis resulted in a significant main effect of group for the putamen, middle temporal gyrus and corpus callosum, while main effect of condition was observed for the dorsolateral prefrontal cortex, inferior frontal gyrus and precuneus. Post-hoc analysis resulted in greater activation in the precuneus for intrinsic motivation than for extrinsic motivation.

The behavioral results were correspondent with activation pattern of the precuneus, which showed hyperactivation to intrinsic motivation relative to extrinsic motivation condition in the control group. Intrinsic motivation was known to be related to self-efficacy and retrieval of attitude-relevant memory, which are involved in function of the precuneus. Our findings support results of previous studies that reported the impairment of motivation being linked to self-related memory involving the precuneus in schizophrenia.

Effect of Anhedonia on Shopping Behavior in Schizophrenia

Min-Kyeong Kim1,2, Yu-Bin Shin1, Seon-Koo Lee2,3, Jae-Jin Kim1,2,4 1Department of Psychiatry, Yonsei University College of Medicine, Seoul, Korea 2Institute of Behavioral Science in Medicine, Yonsei University College of Medicine, Seoul, Korea 3Department of Psychiatry, National Health Insurance Service Ilsan Hospital, Goyang, Korea 4Department of Radiology, Yonsei University College of Medicine, Seoul, Korea