

genome-wide association studies (GWAS) revealed alterations in immune-related genes and/or immune responses in patients with schizophrenia.

However, the structural and functional consequences of the derived results remain to be discovered. Hence, we review selected aspects of this literature, discussing the involvement of major histocompatibility complex (MHC) and cytokines.

**Keywords:** imaging genetics, inflammation, schizophrenia, neuroimaging, MHC

## PM462

### Impaired self-referential processing in patients with first-episode schizophrenia: an event-related potential study

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#### 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

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#### 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.

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### Effect of Anhedonia on Shopping Behavior in Schizophrenia

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**Abstract**

**Introduction:** Patients with schizophrenia show deficits symptoms as anhedonia. This study was designed to find neural correlates of anhedonia during shopping behavior and compared the results between healthy controls and patients with schizophrenia. We hypothesized that anhedonia would influence the shopping behavior as negative way in schizophrenia.

**Methods:** 20 patients with schizophrenia and 20 healthy controls participated in the study. Participants were engaged in a 'shopping task' during functional magnetic resonance imaging (fMRI) scanning. Patients were administered Intrinsic Motivation and Extrinsic Motivation scale (IM & EM) and anhedonia scale. Pearson correlations of regional activities with behavioral responses such as score preference and clinical scales.

**Results:** Patients preferred their own appearance wearing the cloth and that made them finally purchase the product. However, decreased activity of right posterior cingulate cortex (PCC) was found in the 'self-appearance wearing the product' condition in patients. Increment in activation of the lingual gyrus was correlated with lower score of the anhedonia scale.

**Conclusions:** This study investigated neural correlates of shopping behavior affected by anhedonia in controls and patients with schizophrenia. Interestingly, patients preferred more their new look appearance than controls and purchased the products. This shopping behavior was also negatively correlated with severity of anhedonia. As we hypothesized, patients with schizophrenia showed careless shopping behavior and it was related to anhedonia.

**PM465****Frontal-Striatal Exploratory Reasoning and Effects of Social Stress and Idea Generation**

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**Abstract**

**Background:** Neuropsychiatric disorders like schizophrenia and bipolar disorder often have onset in late adolescence or early adulthood - periods associated with increased prefrontal-striatal reactivity to social stress. Exploratory reasoning, ideas generation and creativity, may also be sensitive to social competitive stress prevalent in urban societies. Further, creative processes have been associated with the genetics of neuropsychiatric disease (Power et al 2015). However, little is understood about the neural correlates of these processes. In particular, how prefrontal-striatal engagement in probabilistic exploratory reasoning might be influenced by social stress, and their relationship with creative processes.

**Methods:** We studied 21 young adults in a 3T-MRI. The fMRI paradigm engaged events where subjects explored whether a hidden number was higher or lower than a presented number, or exploited knowledge of the hidden number. Trials were performed with or without induced social-competitive stress featuring a competitor doing better at the same task. Outside of the scanner, subjects also generated ideas about uses for a picture of a bottle and a paper clip, whose score was examined with the imaging data.

**Results:** Social stress was associated with faster and more risky exploratory responses ( $p < 0.01$ ), although performance accuracy per se was not significantly affected. Idea generation did

not correlate with exploratory reaction time or risks taken in this sample. Prefrontal-striatal function was robustly engaged during exploratory reasoning ( $p < 0.05$  FWE corrected), but was reduced by induced social stress ( $p < 0.001$  uncorrected). Higher scores on idea generation appeared to mitigate the prefrontal-striatal effects of induced social stress on exploratory reasoning ( $p < 0.001$  uncorrected).

**Conclusions:** Prefrontal-striatal functions engaged by young adults in exploratory reasoning appear to be affected by induced social stress to varying extents, modulated by idea generation and creative processes as potential protective factors. Individual variation and neuropsychiatric risk mechanisms may relate to exploratory information processing and creative abilities through interactions with the neural responses to social stress.

**PM466****Neuroanatomical implications of concomitant mood disorders in subjects at clinical high risk for psychosis**

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**Abstract**

**Background:** Mood disorders are present in about 40% of individuals at clinical high risk (CHR) for psychosis. Such high prevalence of symptomatic concomitants raises the need to address and assess the contemporary assumption that characterizes CHR states as being subserved by common neuroanatomical alterations. The present study investigated the relevance of mood symptoms on the CHR neuroanatomy and symptomatology.

**Methods:** Magnetic resonance images from a sample of 44 CHR individuals with mood disorders (CHR-M), 30 CHR individuals without mood disorders (CHR-NM), and 34 healthy control subjects (HC) were analyzed. Measures of cortical thickness (CT) were extracted using a surface-based morphometry analysis. Ratings of Structured Interview for Psychosis Risk Syndromes (SIPS) sub-scales and global functioning were also analyzed between the CHR-M and CHR-NM subgroups. Associations between brain structural alterations and clinical measures were assessed by calculating Pearson's correlation coefficients.

**Results:** Compared with HC, CHR group as a whole showed widespread cortical thinning and GMV reductions, along with ventricular enlargements. The subgroups of CHR-M and CHR-NM did not differ in measures of CT but did so in those of GMV: GMV reductions in temporo-parieto-occipital regions, along with more pronounced ventricular enlargements, were more pronounced in CHR-NM, whereas reductions in frontal regions were more pronounced in CHR-M. The two subgroups also differed in psychotic symptoms and global functioning, with significantly worse negative psychopathology and functional impairments found in CHR-M. However, no significant correlations between brain structural alterations and clinical measures were found after correction for multiple comparisons.

**Conclusion:** The different patterns of brain structural alterations and clinical ratings found between the CHR-NM and CHR-M subgroups seem to suggest the impact of concomitant mood pathologies in CHR. The present study may contribute to