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Friday, 15 March 2019

seminar

VISION & COGNITION

EPFL - SV2.510

Prof. Anne Giersch 16h30

INSERM U1114, University Hospital of Strasbourg

"A disruption of the prediction of sequences at the ms level in schizophrenia : a mechanism for altered immersion in the world?"

Prof. Ulrich Ettinger 17h30

Department of Psychology, University of Bonn

"Effects of ketamine on oculomotor and neuroimaging biomarkers of schizophrenia"

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ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

synapsy
Bringing Together Brain Research and Psychiatry
National Centre of Competence in Research

Prof. Anne Giersch — 16h30

INSERM U1114, University Hospital of Strasbourg

"A disruption of the prediction of sequences at the ms level in schizophrenia : a mechanism for altered immersion in the world?"

The feeling of being one continuous individual in time is a natural evidence, which is disturbed in patients with schizophrenia, who feel disconnected from the environment. I will describe clinical reports suggesting a disruption of the sense of time continuity in schizophrenia, associated with a disruption of the sense of self, and of the feeling of being immersed in the world. I will show how we objectified timing disorders in patients, while trying to understand the mechanisms underlying the sense of time continuity. Patients are impaired at detecting asynchronies and ordering stimuli, suggesting distortions in the temporal structure of consciousness. The amplitude of the impairments led us to explore timing at a non-conscious level. We showed that in healthy subjects events are distinguished in time automatically even when subjectively judged as being simultaneous. Our most recent data, based on sequential effects, suggests that sequences of future visual information are predicted and allow subjects to allocate attention in the right place and right time. We will argue that a close synergy between non-conscious prediction of sequences and attention is necessary for the sense of immersion in the environment and the feeling of time continuity to emerge. Conversely, both behavioral and EEG data suggest that time prediction is impaired in patients with schizophrenia with bodily self disorders, and especially the production of sequences at the millisecond level. I will propose possible therapeutic developments for the patients.□

Prof. Ulrich Ettinger — 17h30

Department of Psychology, University of Bonn

"Effects of ketamine on oculomotor and neuroimaging biomarkers of schizophrenia"

In this talk I will present findings from recent investigations into the effects of ketamine on cognition, oculomotor control and brain function. Ketamine has been proposed to model symptoms of psychosis. Support for this hypothesis comes from studies that report ketamine-induced alterations in cognition and brain function that resemble the deficits observed in schizophrenia. Here, I will focus on well-established biomarkers and endophenotypes of schizophrenia spectrum disorders, viz. smooth pursuit eye movements (SPEM) and antisaccades (AS), as well as other measures of cognitive function. We and others have observed SPEM impairments during ketamine administration in healthy volunteers. These appear to resemble the deficits observed in schizophrenia, but cannot be prevented with antipsychotic pre-dosing in healthy participants. Antisaccade performance, in contrast, appears to be relatively uninfluenced by ketamine administration. This finding is surprising, given that antisaccade error rates are reliably and robustly increased in schizophrenia patients, and reflects a limitation of the ketamine model of psychosis. In a recent study, we investigated the neural effects of ketamine during SPEM and AS in healthy participants using functional magnetic resonance imaging (fMRI) at 3T. In agreement with previous studies, ketamine administration induced psychosis-like symptoms and led to robust deficits in SPEM performance; these were accompanied by reduced blood oxygen level dependent (BOLD) signal in the SPEM network compared to placebo. These results bear resemblance to the deviations found in schizophrenia patients. In contrast, AS error rate and BOLD response during the AS task were largely unaffected by ketamine. Overall, our findings support the role of glutamate in SPEM and provide partial support for the use of ketamine as a pharmacological model of psychosis.□