Master's degree in Biology – Chemistry-Biology Department

Master 2 internship projectYear 2023-2024

Laboratory/Institute: Grenoble Institut Neurosciences - GIN **Director:** E. Barbier
Team: Brain Behavior and Neuromodulation **Head of the team:** Julien Bastin

Name and status of the scientist in charge of the project: Clément Dondé, MD PhD HDR
HDR: yes ■ **no** ☐
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Program of the Master's degree in Biology:

☐ Microbiology, Infectious Diseases and Immunology ☐ Structural Biology of Pathogens
☐ Physiology, Epigenetics, Differentiation, Cancer ■ Neurosciences and Neurobiology

Title of the project: Dynamical effort allocation in an effort-cost decision-making task in schizophrenia

Objectives (up to 3 lines):

Objective 1: Uncovering the mechanisms of effort allocation in schizophrenia in the context of dynamical effort allocation Objective 2: Characterising the relationship with negative symptoms as measured by standardized symptom scales

Abstract (up to 10 lines):

Negative symptoms (i.e.; amotivation, social withdrawal, alogia, and flat affect) are a part of schizophrenia and are responsible for a significant part of the functional impairment in patients. There exists no treatment to alleviate these symptoms partly because their cognitive mechanisms are not well understood. Effort-cost decision-making paradigms have been developed in order to understand the mechanisms behind amotivation. Here, we used an effort-cost decision-making task to explore the computational mechanisms of amotivation through studying dynamical effort allocation. The goal was to study online adaptation to effort to understand the cognitive mechanisms behind effort initiation and re-initiation.

Methods (up to 3 lines):

The present study uses a grip-strength effort-cost decision-making computerized task to understand the determinants behind effort interruption/resumption in a group of schizophrenia individuals and a group of controls. The task consists of 30s trials in series with varying levels of difficulty (3 levels) and incentive (3 levels).

Up to 3 relevant publications of the team:

- Blouzard E, Pouchon A, Polosan M, Bastin J*, Dondé C*. Effort-cost decision-making among individuals with schizophrenia: A systematic review and meta-analysis. JAMA Psychiatry. 2023
- Dondé C, Kantrowitz JT, Medalia A, Saperstein A, Balla A, Sehatpour P, Martinez A, O'Connel MN, Javitt DC. Early auditory processing dysfunction in schizophrenia: mechanisms and implications. Neurosci Biobehav Rev 2023
- Cecchi R, Vinckier F, Hammer J, Marusic P, Nica A, Rheims S, Trebuchon A, Barbeau E, Denuelle M, Maillard L, Minotti L, Kahane P, Pesiglione M, Bastin J. Intracerebral mechanisms explaining the impact of incidental feedback on mood state and risky choice. Elife 11.

Requested domains of expertise (up to 5 keywords):

negative symptoms; schizophrenia; effort-cost decision-making; neurocognition; goal directed behavior