Contribution ID: **264** Type: **Talk in simposio**

Neuronal encodes of a memory-based schema during a transitive Inference task: evidence from primate prefrontal cortex activity

Wednesday, September 25, 2024 9:20 AM (20 minutes)

Relational inference using previously memorized information is one of the aspects of intelligence in humans and non-human animals. Provided that the premises A>B and B>C are well memorized, the subject is able to infer that A>C. This ability to use overlapping information and extend it to deduce a novel relationship forms the basis of Transitive Inference (TI) capability. To solve these deductions, the role of memory, especially working memory (WM) is crucial. Previous neurophysiological studies have described the pattern of neuronal activity from the Prefrontal Cortex (PFC), an area involved in WM, being modulated while an abstract mental schema of ranked items is accessed during a TI task. However, the question of how the neuronal encoding of the individual items subtending this schema is shaped by learning the reciprocal relationships is relatively unexplored. In this study, we address this question by investigating the single-neuron activity recorded from the dorsolateral PFC of 2 monkeys as they learned a 6-item ranked series (A>B>C>D>E>F) and solved TI problems. Each session comprised two consecutive phases: the learning phase, when the monkeys learned the reciprocal relationships (e.g., A vs B, B vs C, etc.), and then the test phase, requiring logically inferring novel relationships (e.g., B vs D). Our results confirmed that the behavioral performance during the learning and the test represents the acquisition and recall of a schema, while the encoding of this schema is differently represented by neuronal activity from learning to test.

If you're submitting a poster, would you be interested in giving a blitz talk?

No

If you're submitting a symposium talk, what's the symposium title?

Understanding Memory: Implications from neuronal to clinical populations

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

No

Primary author: Dr RAMAWAT, Surabhi (Stefano Ferraina's Lab, Department of Physiology and Pharmacology, Sapienza University, Rome, Italy)

Co-authors: Dr DI BELLO, Fabio (Department of Physiology and Pharmacology, Sapienza University, Rome, Italy); Dr MIONE, Valentina (Department of Physiology and Pharmacology, Sapienza University, Rome, Italy); Prof. PANI, Pierpaolo (Department of Physiology and Pharmacology, Sapienza University, Rome, Italy); Prof. BRUNAMONTI, Emiliano (Department of Physiology and Pharmacology, Sapienza University, Rome, Italy); Prof. FERRAINA, Stefano (Department of Physiology and Pharmacology, Sapienza University, Rome, Italy)

Presenter: Dr RAMAWAT, Surabhi (Stefano Ferraina's Lab, Department of Physiology and Pharmacology, Sapienza University, Rome, Italy)

Session Classification: Symposia: Understanding Memory: Implications from neuronal to clinical populations