



MASTER 2 Fundamental and Clinical Neurosciences

Internship proposal 2024-2025

(internship from January to June 2025)

Host laboratory: Department of Department of Experimental Psychology, Faculty of Psychology and Educational Sciences, Ghent University, Henri Dunantlaan 2, 9000 Gent

Host team: Social & Cognitive Neuroscience Lab (PI: Prof. Dr. Lara Bardi)

<https://bardilab.com/>

Internship supervisors: Prof. Dr. Lara Bardi (lara.bardi@ugent.be) and Yulong Huang (yulong.huang@ugent.be) (PhD student)

Project title: How Environmental Cues Influence Decision-making: Behavioral and Neural mechanisms underlying the Pavlovian-to-Instrumental Transfer (PIT) Effect

Project summary: Environmental cues continuously influence our daily behavior. For example, a fast-food sign may lead us to purchase and eat a hamburger specifically, or it may lead us toward the nearest restaurant to consume food in general. In this project, we aim to investigate the behavioral persistence and neural mechanism underlying this cue-guided behavior using a Pavlovian-to-Instrumental Transfer (PIT) task and Transcranial Magnetic Stimulation (TMS). The PIT task involves learning associations between cues and outcomes, and then assessing how cues influence decisions related to those outcomes. We will apply TMS to the primary motor cortex along with visual cues to examine its influence on this process and use eye-tracking to analyze the PIT effect, together, enhancing our understanding of the behavioral and neural mechanisms involved.

3-5 recent publications:

1. Mahlberg, J., Seabrooke, T., Weidemann, G., Hogarth, L., Mitchell, C. J., & Moustafa, A. A. (2021). Human appetitive Pavlovian-to-instrumental transfer: a goal-directed account. *Psychological Research*, 85, 449-463.
2. C. Prevost, M. Liljeholm, J. M. Tyszka, , Neural Correlates of Specific and General Pavlovian-to-Instrumental Transfer within Human Amygdalar Subregions: A High-Resolution fMRI Study. *J. Neurosci.* (2012).
3. L. Casartelli, C. Chiamulera, The motor way: clinical implications of understanding and shaping actions with the motor system in autism and drug addiction. *Cogn. Affect. Behav. Neurosci.* 16, 191–206 (2016).
4. Guidali, G., Roncoroni, C., & Bolognini, N. (2021). Paired associative stimulations: Novel tools for interacting with sensory and motor cortical plasticity. *Behavioural Brain Research*, 414, 113484.
5. Pool, E. R., Pauli, W. M., Kress, C. S., & O'Doherty, J. P. (2019). Behavioural evidence for parallel outcome-sensitive and outcome-insensitive Pavlovian learning systems in humans. *Nature human behaviour*, 3(3), 284-296.