

**Master Sciences Cognitives Grenoble
2016-2017
Proposition de stage de recherche**

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Reward and decision making team

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5 keywords : Neuroeconomics, Decision making, reward, model-based fMRI

TITRE : Functional neuroimaging studies of Group and individual decision-making in humans

RESUME :

A large body of behavioral evidence indicates that groups behave differently from individuals with regard to cooperation and competition, risk and uncertainty, trust and trustworthiness. Most studies conclude that people in groups act more selfishly and may be more risk seeking than when they make decisions individually. Yet, little is known about the neural mechanisms underlying the differences between choices made as an individual or in groups. The goal of this project is to investigate the cerebral networks engaged when making decisions as individual and in groups. We will also investigate the neural coding of psychological processes that may underlie differences between individual and group decision-making, such as envy, compassion and the motivation to avoid guilt and blame when making decisions that affect others' welfare, and the social pressure to conform to certain norms when one is in a group setting. We will design and test a new fMRI experiment designed to understand the neural mechanisms involved in individual and group decision making. We will study intergroup interactions, which leads to less cooperative outcomes in group settings than inter-individual interactions. Together, our findings should clarify the relationships between brain activation and decision-making in individuals and groups.

Recent publications :

- Khalvati K, Park S, **Dreher JC**, Rao R, A Probabilistic Model of Social Decision Making based on Reward Maximization, *NIPS*, in press
- **Dreher JC**, Dunne S, Pazderska A, Frodl T, Nolan J.J, O'Doherty J.P, Testosterone Causes Both Prosocial and Antisocial Status-enhancing Behaviours in Human Males, *PNAS USA*, in press
- Ligneul R, Obeso I, Ruff C and **Dreher J-C**, Dynamical representation of dominance relationships in the human medial prefrontal cortex, *Current Biology*, in press
- G Sescousse, G Barbalat, P Domenech B, **J-C Dreher**, Imbalance in the sensitivity to different types of rewards in pathological gambling, *Brain*, 136(Pt 8):2527-38, 2013
- E Météreau and **J-C Dreher**. Cerebral correlates of salient prediction error for different rewards and punishments, *Cerebral Cortex*, 23(2):477-87, 2013
- **J-C Dreher**. Neural coding of computational factors involved in decision making. *Progress in Brain Research*, 202:289-320, 2013
- G Sescousse, X Caldù, B Segura, **J-C Dreher**, Common and specific neural structures processing primary and secondary rewards: a quantitative voxel-based meta-analysis, *Neuroscience and Biobehavioral reviews*, 37(4):681-96, 2013