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### **Perturbing the Sense of Agency**

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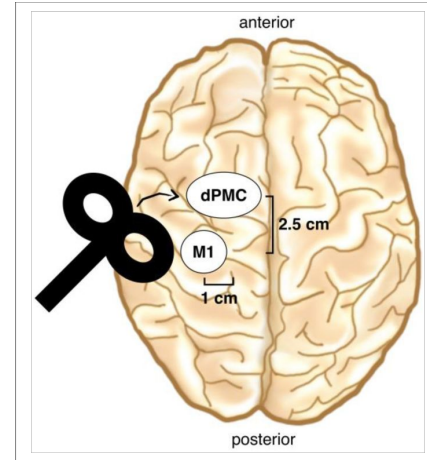
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## Goal

To test a model of the sense of agency, intention, volition, and causality in order to examine the time course of the sense of agency associated with voluntary and involuntary movements

## Background

- **What is TMS?** Transcranial Magnetic Stimulation; noninvasive brain stimulation
- **What is Agency?** Subjective awareness of controlling one's actions



The non-invasive, transcranial magnetic stimulation (TMS) stimulates the motor cortex, intermixing the resultant motor movements with motor movement of the participants own volition.

## Study Design

- The TMS coil will be placed above the scalp in a position that triggers a slight hand movement, the subject will then be instructed to make the same movement at will.
- It is expected that the participant will report ambiguity when asked whether the movement was due to them or the TMS.
- The project explores the participants' self-reported level of agency, to see the range and types of perceptions that emerge among the individuals

*“Single-pulse TMS have been used to explore the role of the left inferior parietal areas and sense of agency, and is linked to action selection and programming processing acting independently from each other” (Crivelli et al 2017).*

*“TMS can alter recognition of self-controlled movements in simple drawing tasks” (Ritterband-Rosenbaum 2014).*

## Future Directions

- Continue to run participants
- Run non-Chapman students

## References

(Crivelli, & Balconi. (2017, November 6), Hallett, M. (2007), Ritterband-Rosenbaum, Karabanov, Christensen, & Nielsen. (2014, June 9), Young, L. A., Camprodon, J. A., Hauser, M. A., Pascual-Leone, A. A., & Saxe, R. A. (2010).