

Are experimental approaches to study the Sense of Agency comparable?

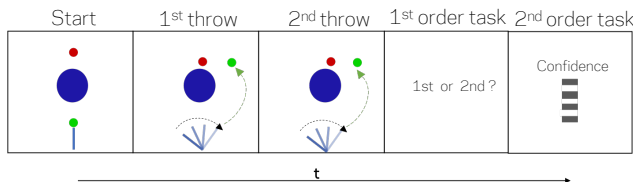
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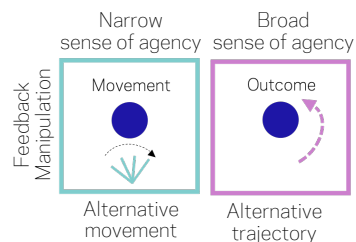
Introduction

Sense of agency (SoA) is the feeling of intentionally moving our body and, through it, affecting the environment¹. The literature often distinguished between a narrow (tightly related to the movement) and a broad SoA (which includes the consequences of the movement/action in the surrounding environment)². To study the neural mechanisms that account for the SoA, different experimental approaches have aimed to manipulate either the narrow or broad SoA. But it is unclear whether the neural mechanisms are the same or distinct.

Methods

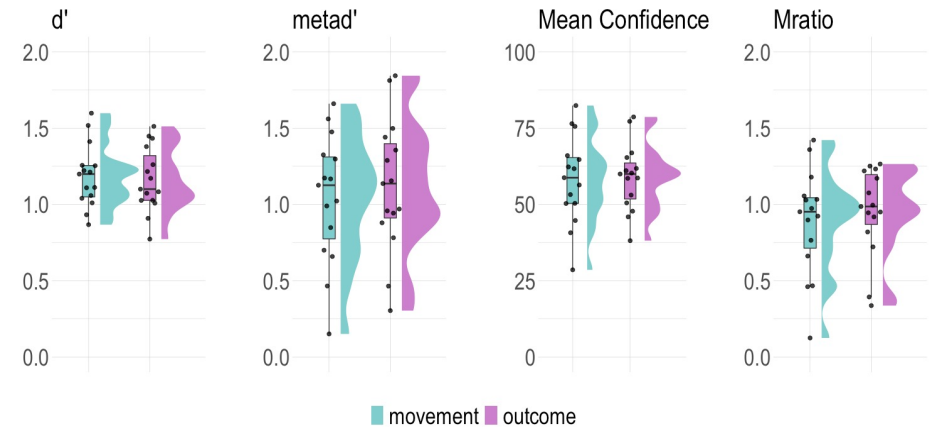


In a virtual game, participants ($n = 16$) throw a ball to hit a target twice on each trial. The visual feedback is congruent with what participants did in only one of the two movements. Participants select in which they felt they controlled more and rate their confidence in that decision.



The two conditions resemble typical manipulations studied separately in the literature of SoA. They differ on whether the manipulation affected the movement or the ball trajectory.

Results



Discussion

- We use a novel paradigm to test if the experimental manipulations typically used in studies of agency equally affect the SoA.
- In our preliminary results we found that when trial difficulty within each condition is tightly controlled, there is no difference in participants sense of agency.
- By framing SoA within the broader framework of metacognitive monitoring, we aspire to lay some theoretical grounds and a more precise methodological approach to move forward the research on SoA.

¹ Haggard, P. (2017) Nature Reviews Neuroscience; ² Grünbaum, T., & Christensen, M. S. (2020). Neuroscience of Consciousness; ³ Charalampaki et al., (2022). Consciousness and Cognition (In press)