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THE ME AND THE I: DISSOCIATING OWNERSHIP AND AGENCY IN SENSORIMOTOR PROCESSING

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Grant 146/20

Background: One of the key functions of the self is to enable adaptive interactions between the organism and the environment. To this end, being able to distinguish sensory information that comes from external sources or is the result of our own actions becomes crucial. Although experienced as a unified entity, two core components of the self have been identified: ownership (i.e., the feeling of the body as one's own) and agency (i.e., the feeling of being the source of an action). Despite their overlap in voluntary actions, there is some experimental and clinical data implying the two can be dissociated.

Aims: This project takes advantage of the high temporal resolution of electroencephalography (EEG) to probe the dissociation between agency and ownership in an auditory-motor context. Here, agency is defined as eliciting a preferred word whereas ownership is defined as recognizing one's own voice. A new experimental protocol contrasting these levels of self-related processing is being validated.

Method: In the EEG task, two words were displayed on the screen and participants ($n = 26$) were asked to choose one of them. Then, a word (chosen vs. unchosen) uttered by the participant or another person was presented. There were also trials where a word in an ambiguous voice (morphed self- and other-voice) was heard. The EEG analysis focused on the amplitude of the N1 and P2 components. Repeated-measures ANOVAs tested the main and interactive effects of agency (chosen vs. unchosen word) and ownership (self- vs. other- vs. ambiguous voice) on the N1 and P2 amplitudes.

Preliminary results: A significant effect of agency was reflected on suppressed N1 ($p < .001$) and enhanced P2 ($p = .003$) for chosen vs. unchosen words. Interactions between agency and ownership were also observed for the N1 ($p = .047$) and P2 ($p = .027$): the N1 suppression and P2 enhancement for chosen words was greatest when hearing an ambiguous voice (morphed self-other voice). These results underscore the interplay between agency and ownership in sensorimotor processing. These findings have implications for our understanding of phenomena characterized by altered self-other voice distinction such as auditory verbal hallucinations.

Keywords: Agency, Ownership, Voice, EEG

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