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# Representation of perceptual decisions in the human motor system

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## Résumé

Perceptual decision-making is the process of making judgments about sensory information accumulated over time. A growing body of evidence shows that the decision process has its neural correlate in motor structures that prepare the likely response. However, most of this research relies on electrophysiological recordings in monkeys, highly trained to map perceptual decisions to specific actions. Moreover, simple choice-discrimination tasks have been used, where high dimensional overlap exists between the stimulus set and the response set. More complex situations may require a dissociation between the perceptual decision and response selection processes. To examine this hypothesis, we manipulated stimulus-response (S-R) congruence along with stimulus discriminability, and probed the motor system by means of electromyographic (EMG) recordings. As already reported, we found subthreshold incorrect motor activation in a portion of trials where the correct response was finally given. Those so-called "partial errors" were sensitive to S-R congruence. Importantly, they were also sensitive to stimulus discriminability, occurring later when discriminability was lowered. Although the sensitivity of incorrect EMG activity to perceptual variables support a continuous process linking perceptual decision-making and sensorimotor control in humans, some characteristics put additional constraints on decision making models.

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