

Accepted Manuscript

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PII: S1053-8119(18)30726-2

DOI: [10.1016/j.neuroimage.2018.08.028](https://doi.org/10.1016/j.neuroimage.2018.08.028)

Reference: YNIMG 15189

To appear in: *NeuroImage*

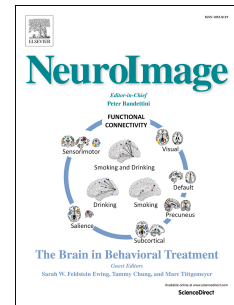
Received Date: 5 February 2018

Revised Date: 8 August 2018

Accepted Date: 13 August 2018

Please cite this article as: Vercillo, T., O'Neil, S., Jiang, F., Action–effect contingency modulates the readiness potential, *NeuroImage* (2018), doi: [10.1016/j.neuroimage.2018.08.028](https://doi.org/10.1016/j.neuroimage.2018.08.028).

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Action–effect contingency modulates the readiness potential

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Abstract

The ability to constantly anticipate events in the world is critical to human survival. It has been suggested that predictive processing originates from the motor system and that incoming sensory inputs can be altered to facilitate sensorimotor integration. In the current study, we investigated the role of the readiness potentials, i.e. the premotor brain activity registered within the fronto-parietal areas, in sensorimotor integration. We recorded EEG data during three conditions: a motor condition in which a simple action was required, a visual condition in which a visual stimulus was presented on the screen, and a visuomotor condition wherein the visual stimulus appeared in response to a button press. We measured evoked potentials before the motor action and/or after the appearance of the visual stimulus. Anticipating a visual feedback in response to a voluntary action modulated the amplitude of the readiness potentials. We also found an enhancement in the amplitude of the visual N1 and a reduction in the amplitude of the visual P2

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