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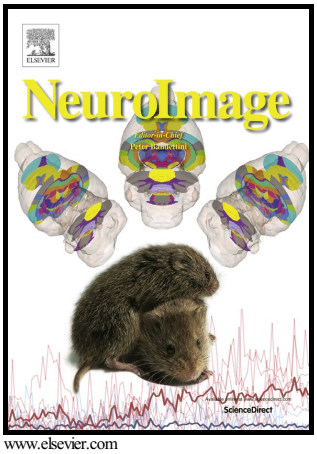

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How emotion context modulates unconscious goal activation during motor force exertion

Rebekah L. Blakemore[a,b,*], Rémi Neveu[a,b,c], Patrik Vuilleumier[a,b,c,d]

[a]Laboratory for Behavioral Neurology and Imaging of Cognition, Department of Neuroscience, University Medical Center, University of Geneva, Geneva, Switzerland
[b]Swiss Center for Affective Sciences, University of Geneva, Geneva, Switzerland
[c] Geneva Neuroscience Center, University of Geneva, Geneva, Switzerland

[d]Department of Neurology, University Hospitals of Geneva, Geneva, Switzerland
rebekah.blakemore@otago.ac.nz

remi.neveu@unige.ch
patrik.vuilleumier@unige.ch

[*]**Corresponding author:** Dr Rebekah Blakemore - *Present address:* New Zealand Brain Research Institute, 66 Stewart Street, Christchurch 8011, New Zealand. T: 0064 33786 349, F: 0064 33786 299.

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Abstract

Priming participants with emotional or action-related concepts influences goal formation and motor force output during effort exertion tasks, even without awareness of priming information. However, little is known about neural processes underpinning how emotional cues interact with action (or inaction) goals to motivate (or demotivate) motor behaviour. In a novel functional neuroimaging paradigm, visible emotional images followed by subliminal action or inaction word primes were presented before participants performed a maximal force exertion. In neutral emotional contexts, maximum force was lower following inaction than action primes. However, arousing emotional images had interactive motivational effects on the motor system: Unpleasant images prior to inaction primes increased force output (enhanced effort exertion) relative to control primes, and engaged a motivation-related network involving ventral striatum, extended amygdala, as well as right inferior frontal cortex. Conversely, pleasant images presented before action (versus control) primes decreased force and activated regions of the default-mode network, including inferior parietal lobule and medial prefrontal cortex. These findings show that emotional context can determine how unconscious goal representations influence motivational processes and are transformed into actual motor output, without direct rewarding contingencies. Furthermore, they provide insight into altered motor behaviour in psychopathological disorders with dysfunctional

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