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PII: S0301-0511(17)30345-9
DOI: https://doi.org/10.1016/j.biopsycho.2017.12.004
Reference: BIOPSY 7474

To appear in:

Received date: 12-6-2017
Revised date: 19-12-2017
Accepted date: 19-12-2017

Please cite this article as: Wamain, Yannick, Sahaï, Aïsha, Decroix, Jérémy, Coello, Yann, Kalénine, Solène, Conflict between gesture representations extinguishes μ rhythm desynchronization during manipulable object perception: an EEG study.Biological Psychology https://doi.org/10.1016/j.biopsycho.2017.12.004

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Highlights:

- Object location in space determines the type of gestures evoked by a visual object
- The number of evoked gestures impacts both attentional and motor resonance effects
- Conflict between affordances extinguishes μ rhythm desynchronization
- μ rhythm modulation can reflect action selection processes during object perception

Abstract:

Recent findings showed that competition between object structural ("grasp-to-move") and functional ("grasp-to-use") gestures slows down the initiation of object-directed actions but also object visual processing. The present study investigates the neurophysiological correlates of the competition between gesture representations during object perception. 3D conflictual objects (distinct structural and functional gestures) and non-conflictual objects (similar structural and functional gestures) were presented in three spaces (peripersonal, boundary of peripersonal, and extrapersonal) in a virtual environment. Participants performed reach-to-grasp and semantic judgments on objects while EEG was recorded. Results revealed that the conflict between evoked gestures impacts 8-12 Hz desynchronization at both central (μ rhythm) and posterior (α rhythm) sites. Critically, μ rhythm desynchronization was suppressed when conflictual objects were presented in peripersonal space. Findings indicate that μ rhythm desynchronization is reduced by the competition between evoked gestures and suggest that neural motor resonance may also reflect action selection processes during object perception.