
Being moved by the self and others: empathy traits influence vestibular mechanisms of self-motion perception

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Abstract

The observation of conspecifics influences our bodily perceptions and actions: Contagious yawning, contagious itching, or empathy for pain, are all examples of mechanisms based on resonance between self and others. These effects are associated with a mirror neuron system, which has been demonstrated for the processing of motor, auditory and tactile information. To date, however, no study has yet investigated the role of a mirror system in self-motion perception. Using a state-of-the-art full-body motion we showed that vestibular perception is modulated by the observation of a full body (either one's own body or another age- and gender-matched body) in motion. Viewing one's own body or another body being passively rotated influenced vestibular perception, but in different ways. The observation of one's own body in motion disrupted the detection of physical self-motion when it was incongruent, while the observation of incongruent motion of another body had a weaker influence. In addition, we found that empathy traits modulated this effect: The congruency effect was correlated with individual empathy scores, subjects with high empathy scores being more disturbed by the observation of another body being moved incoherently. The results from this study provide first evidence for a vestibular mirror system.

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