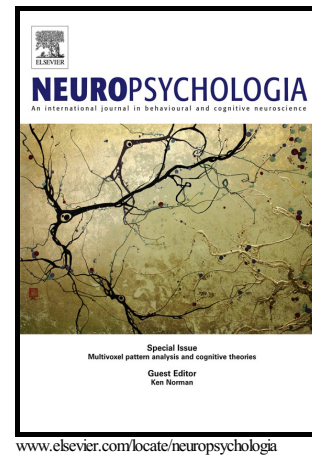


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From intention to perception: the case of Anosognosia for Hemiplegia

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Abstract

Brain-damaged patients with anosognosia for hemiplegia deny their motor deficit and believe they can still move the paralyzed limb. Previous studies suggest that anosognosia can arise from intact motor intentionality and planning for the plegic hand. However, few studies focused on the relationship between this spared intentionality and perception. To further investigate this topic, we used an apparent motion paradigm, where a stimulus generated an ambiguous motion and participants were simply asked to judge its direction (right or left). We confirmed that, when healthy participants are asked to press a key either with their right or left hand, triggering the apparent motion, they show a perceptual bias toward the direction of the moving hand. Both bimanual and unimanual modalities (i.e. key pressing with-both-hands or with-one-hand, respectively) of the same apparent motion paradigm were administered to two groups of healthy participants. Interestingly, only in the bimanual modality, participants showed a significant perceptual bias. Hemiplegic patients with and without anosognosia, were requested to perform the bimanual task. Patients without anosognosia, fully aware of their left motor deficit, only programmed right hand movements, behaving similarly to healthy controls performing the unimanual task. On the contrary, in patients with anosognosia, an effective motor intentionality for the left (plegic) hand influenced visual perception, giving rise to similar perceptual bias as that found in healthy controls actually performing bimanual movements. These findings suggest that having a specific motor representation can lead to different outcomes in the perception of the outside world.

¹ These authors equally contributed to this work.

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