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Are conscious perception and action guidance dissociable in whole-body movement?

College of Sciences and Health Professions

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Abstract

Summary: Conscious recognition of an object (“what”) and guidance of action toward it (“how”) have been identified as two dissociable processes of perception in visual, auditory, and somatosensory systems. The current study investigated whether the two dissociable processes of perception can also be observed in whole-body movements that encompass not only somatosensory (proprioceptive) inputs but also vestibular inputs. In two experiments, blindfolded participants walked along linear paths (2-10 m) with or without wearing a backpack. At the end of each path, participants faced the starting position and pulled a length of tape that matched the walked distance. They then gave a verbal estimate of perceived distance walked. Motoric tape-pulling responses were based on “how” processes and verbal estimation was mediated by “what” processes. It was predicted that tape-pulling and verbal responses would be affected differently by the backpack, if “what” and “how” processes were dissociable in nonvisual walking. Contrary to this prediction, results showed that both types of responses were not modulated significantly by the backpack, suggesting that the “what” versus “how” dissociation may not be clearly made in whole-body movement.