

◆ Dissociation between size constancy for perception and action in a patient with bilateral occipital lesions

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Our visual system shows size constancy: an object is perceived as being the same size even though its image on the retina varies continuously with viewing distance. A recent fMRI study [Sperandio, Chouinard and Goodale, Nature Neuroscience, 15, 540-542] demonstrated that activity in the primary visual cortex (V1) reflects size constancy. But is V1 always critical for size constancy? To answer this question, we carried out a size constancy study on patient M.C., who has large bilateral occipital lesions that include V1. We first measured M.C.'s ability to estimate the perceived size of objects of different physical sizes positioned at varying distances. M.C.'s estimates were poorly scaled to the physical size of the objects and were correlated instead with their retinal image size, showing no evidence of perceptual size constancy. In contrast, when we asked M.C. to reach out and pick up objects positioned at different distances, her grip aperture scaled to the real width of the target regardless of viewing distances. Our findings strongly suggest that the neural mechanisms underlying size constancy for perception and action are distinct, and lend