

Vestibular updating and the continuity of awareness

ABSTRACT:

The *sense of self* is a sensory construct that remains constant as an organism moves through and explores their environment. One function of the vestibular input might be bridging the self to the world.

Vestibular contribution to egocentric representation.

Egocentric representations describe the external world as experienced from an individual's location. We aimed to clarify whether and how vestibular inputs contribute to egocentric representation. Participants were asked to judge whether visual stimuli were located to the left or to the right of their body midline. Artificial vestibular stimulation (GVS) was applied to stimulate the vestibular organs. We found that GVS biased body midline perception. Our data suggest that vestibular information contributes to computation of egocentric representations by affecting the internal representation of the body midline.

Vestibular contribution to spatial perception.

Whether a visual stimulus seems near or far away depends partly on its vertical elevation. The vestibular system provides a fundamental signal for the downward direction of gravity. We asked participants to judge the absolute distance of an object presented on a plane at different elevations during GVS. Relative to distance estimates collected with the object at the level of horizon, participants overestimated distances when the object was presented above the level of horizon and the head was tilted upward and underestimated them when the object was presented below the level of horizon. Adding GVS strengthened these biases, showing that online multisensory signals contribute to distance perception.

Keywords

Vestibular system, Multisensory integration, Gravity, Body awareness

Published Work:

Török, Á., Ferrè, E. R., Kokkinara, E., Csépe, V., Swapp, D., & Haggard, P. (2017). Up, down, near, far: an online vestibular contribution to distance judgement. *PLoS one*, *12*(1), e0169990.

Ferrè, E. R., & Haggard, P. (2016). The vestibular body: Vestibular contributions to bodily representations. *Cognitive Neuropsychology*, *33*(1-2), 67-81.

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