Title: The sense of self in patients with vestibular disorders: depersonalisation-derealisation and out-of-body experiences

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Abstract:

There is increasing evidence that vestibular signals are important for the multisensory underpinnings of bodily self-consciousness. One way to test the hypothesis that vestibular signals are fundamental in establishing bodily self-consciousness is to evaluate self experience in patients with vestibular disorders.

In a first study (1), we measured the occurrence of distorted own-body representations in 60 patients with dizziness (Cambridge Depersonalization Scale). 12% of the patients have experienced distorted own-body representations (their hands or feet felt larger or smaller), 37% reported abnormal sense of agency and 35% reported disownership for the body. These proportions were larger in patients than in healthy controls. In a prospective study in 210 patients and 210 controls (2), we showed a significantly higher occurrence of out-of-body experiences (illusory sensation of disembodiment) in patients with dizziness (14%) than in healthy participants (5%). A third study (1) aimed at testing whether caloric vestibular stimulation (CVS) produced comparable distortions of own-body representations in healthy volunteers.

We compared the effects of Right-warm/Left-cold CVS, Left-warm/Right-cold CVS and sham CVS on internal models of the hands using a pointing task. The perceived length of the dorsum of both hands was increased specifically during Left-warm/Right-cold CVS.

Altogether, our studies show a vestibular contribution to own-body representations and self-consciousness and should help understand the complex symptomatology of patients with dizziness as well as help develop more comprehensive models of bodily self-consciousness.
