

AM I WHERE I BELIEVE MY BODY IS?

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Background: Experimental manipulations of our sensory experience (e.g. body illusions) can alter our body perception. In particular, the Rubber Hand Illusion (RHI) and the Full Body Illusion (FBI) induce embodiment over a fake body or body part. Crucially, the RHI is usually followed by the sensation of disownership of the real body, as if the fake hand substitutes the real one. However, when the FBI is administered from a first-person perspective (1pp-FBI), participants embody the fake body without disowning the real one.

Aims: The present project aims to demonstrate that the sense of embodiment over a fake body and disembodiment over the real one rely on predicting the body's location in space.

Method: We compared an RHI and a 1pp-FBI administered in virtual reality with the real body and the avatar either colocated or dislocated. In the RHI, participants saw a virtual hand resting on a table either spatially superimposed on their own (colocation) or at the level of their left shoulder (dislocation). In the 1pp-FBI, participants saw a seated virtual body with the legs either superimposed on their own (colocation) or in a different position (dislocation). Synchronous stroking was delivered for 2 minutes in corresponding regions of the real and the virtual left hand/leg and then a virtual knife stabbed the avatar. We recorded the skin conductance response (SCR). Before and after the illusions, participants were administered a questionnaire assessing embodiment sensations and were asked to point at the perceived location of their left hand/leg 10 times in the virtual environment.

Preliminary results: We used Bayesian rmANOVAs to evaluate the influence of the illusions on embodiment and proprioceptive drift (the distance between the participant's body and its perceived location). The three-way interaction indicated an increased sense of embodiment towards the avatar after the illusions, with higher effects in the dislocated FBI (95%CI: .03-.73). Only the FBI modulated disembodiment sensations (95%CI: .03-.35). The SCR was lower in the FBI than the RHI, and the difference was higher in dislocation (95%CI: .17-.87). However, the SCR did not correlate with either embodiment ($BF_{10}=.27$) or disembodiment sensations ($BF_{10}=.26$). The perceived body location shifted towards the dislocated avatar after both illusions ($BF_{incl}=2.29*10^{+22}$), but the correlation with embodiment ($BF_{10}=.40$) and disembodiment ($BF_{10}=.34$) showed anecdotal evidence favouring the null hypothesis.

Keywords: Body illusion, Space, Virtual reality, Bayesian, Embodiment

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