



Sessione Poster 3

Poster

**Attenuation of real and illusory self-touch: an ERPs study**

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Sensory attenuation (SA; i.e. a reduction of subjective intensity of self-generated stimuli compared to identical externally-generated stimuli) is known to rely on motor intention and sensory prediction (i.e. efferent signals). However, we previously showed that SA can also be triggered by multisensory signals sub-serving body ownership: when a fake embodied hand (embodiment induced by the rubber hand illusion, RHI) delivered somatosensory stimuli to participant's body, the SA was comparable with SA of self-generated stimuli. Here, we aimed at investigating whether this interesting behavior has an objective electrophysiological counterpart.

**Methods**

Fourteen healthy right-handed volunteers (age = 23.5±3.8) received non-painful somatosensory electrical stimuli across four experimental conditions, depending on the agent that pressed the stimulation button: the participant herself, a fake hand, an embodied fake hand (synchronous stimulation in vertical RHI setting) or a non-embodied fake hand (synchronous stimulation with the hand rotated 180°). We recorded subjective ratings of stimuli intensity (on a 0-7 Likert scale) and somatosensory evoked potentials (SEPs) in response to them. In addition, the participants rated the feeling of ownership of the hand that performed the movement (an ad hoc questionnaire with a -3/+3 Likert scale).

**Results**

The intensity of self-generated stimuli was attenuated (lower subjective ratings and reduced amplitudes of SEP N1 and P2 components) with respect to other-generated stimuli. Moreover, when the fake hand was embodied (i.e., subjective ownership was comparable with ownership of the own hand), similar SA effect was observed, which was also represented both by subjective intensity ratings and reduction of SEPs amplitude. No SA was present when the stimuli were delivered by the non-embodied fake hand.

**Conclusions**

These results suggest a top-down modulation of body-ownership on SA mechanism, showing a similar physiological signature for SA of self-produced stimuli (i.e. motor-related signals) and stimuli delivered by an embodied fake hand (i.e. body-related signals).