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# When Self-Touch Increases Our Body-Awareness: Evidences from Sense of Ownership and Agency

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## Résumé

### Introduction.

The body awareness is the feeling that the body we inhabit is ours ("sense of ownership") and that we are able to move it ("sense of agency"). In our research, we try to understand what are the determinants of this awareness? Moreover, we compare the impact that "being touched" or "self-touch" can have on this awareness.

### Theoretical framework and methods.

The Rubber Hand Illusion (RHI) investigates body awareness (Botvinick & Cohen, 1998). In its "classic passive" version, the experimenter hides a participant's hand and presents a false hand in view. Meanwhile, the experimenter strokes the participant's real hand and the false hand simultaneously (visual and tactile synchrony) and in the same location (proprioceptive consistency). In a few seconds, the participant feels that the false hand is his or her own, whereas this illusion disappears as soon as the strokes are not synchronized and coherent. This classic version demonstrates that coupling visual, tactile and proprioceptive signals can lead the sense of ownership toward a false had but without experiencing a sense of agency (Longo et al., 2008).

A "somatic" version (Ehrsson et al., 2005) demonstrates that it is possible to feel a sense of ownership for a false hand even in the absence of vision and voluntary movement, but only when tactile and proprioceptive sensations are coupled, but without a sense of agency.

Finally, an "active" version (Kalckert & Ehrsson, 2012) demonstrates that it is possible to feel a sense of ownership and agency towards the false hand without tactile stimuli, as long as the expected visual and proprioceptive signals on the false hand are consistent with those felt as a consequence of the participant's voluntary action.

Taken together, these findings raise important questions about the role of voluntary movement, proprioception and tactile sensations in body-self-awareness, specifically in sense of agency. Thus, we have worked a "self-touch" version of the illusion in order to determine the role and the importance of these factors.

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\*Intervenant

## Hypothesis.

We hypothesize that when it is the participant who touches the false hand, the sense of ownership and agency towards the false hand will be greater than when it is the experimenter who touches the false hand. We tested this hypothesis in three sets of experiments confronting a "self-touch" version of the illusion with a "classical" version.

## Results and Discussion.

Our preliminary results show that for the "self-touch" version of the illusion, both the sense of ownership and the sense of agency toward the false hand are stronger than for the "classical" version. These results indicate that feeling that we are the author of the tactile stimuli perceived on our real hand enhances the sense of ownership towards the false hand, but also enhances the sense of agency towards an inert false hand lying on a table.

## References.

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**Mots-Clés:** Body Awareness, Self, touch, Sense of Agency, Sense of Ownership, Rubber Hand Illusion, Voluntary Action