

Multisensory processing in full-body illusions

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“Multisensory Processing in Full-body Illusions”

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Summary

This dissertation explores the multisensory integration processes underlying a very special instance of perceptual experience, the perception of our own bodies. The experimental work presented capitalized on the use of bodily illusions as a research tools for studying self-perception, and was possible thanks to the use of Immersive Virtual Reality technologies. The dissertation shows how different sources of information (visual, tactile, motor) are combined and contribute, together with higher cognitive components (body appearance and its semantic value), to shaping the sense of body-ownership and of self-location. It next shows that illusory body-ownership towards a virtual body can temporary alter some aspects of sensory processing, like pain perception and the temporal constraints under which visual and tactile stimuli are merged into a single percept. The dissertation further highlights how self-location and body-ownership can be selectively altered and dissociated under specific full body illusions, thus suggesting that these two components of self-consciousness rely on distinct neural underpinning. Throughout the dissertation, results from the experimental work are discussed in the wider context of the relevant literature, and are supported by original proposals for general frameworks and computation models.