In your skin: The psychophysiology of touch observation

ABSTRACT:

Background
It has been suggested that we automatically simulate observed touch experiences in our somatosensory cortex (SCx) mirroring other's sensory experiences through activation of early sensory areas.

Aims
Here we investigated whether (a) task instructions and attention to the observed touch modulate the activation of early sensory areas, and whether (b) the quality of the observed touch texture (i.e. soft vs hard) modulates such early sensory SCx activations.

Method
We measured ERPs of SCx's hierarchical processing stages to investigate the timing of touch observation effects. In the first experiment, participants (n=43) merely observed touch or no-touch to a hand; in the second, participants saw different touch, textures (foam and rubber) either touching a hand (other-directed touch) or they engage with observed texture (self-directed). We probed SCx activity and isolated SCx touch observation activations from visual carry over effects.

Results
We found no early sensory SCx modulations (e.g. P50, N80), but we found touch observation effects on a later processing stage (i.e. Late Positive Complex) and on behavioural responses to a go/no-go stimulus presented after each touch sequence consistent with post-perceptual effects. Importantly, early sensory SCx modulations were present when participants were instructed to attend to and feel the (visual) touch; and, furthermore, these early sensory SCx activations were not modulated by observed touch texture.

Conclusions
SCx is purposely recruited when attention is directed to touch, and such activations situate the perceptual experience in the relevant sensory cortex rather than fully simulate the sensory experience.

Keywords
Touch observation, Somatosensory, ERPs, Texture, Simulation

Published Work:

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