The backbone of the self?

Differential spinal cord activity during self-other-object touch

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HIGHLIGHTS

Self-touch, touch from others and object-touch relate to distinct activation patterns in the brain and spinal cord.

Activation during other-touch in the temporoparietal junction and insula is attentuated during self-touch.

Spinal cord activity differs for sensory and motor related process involved in self-, other- and object-touch.

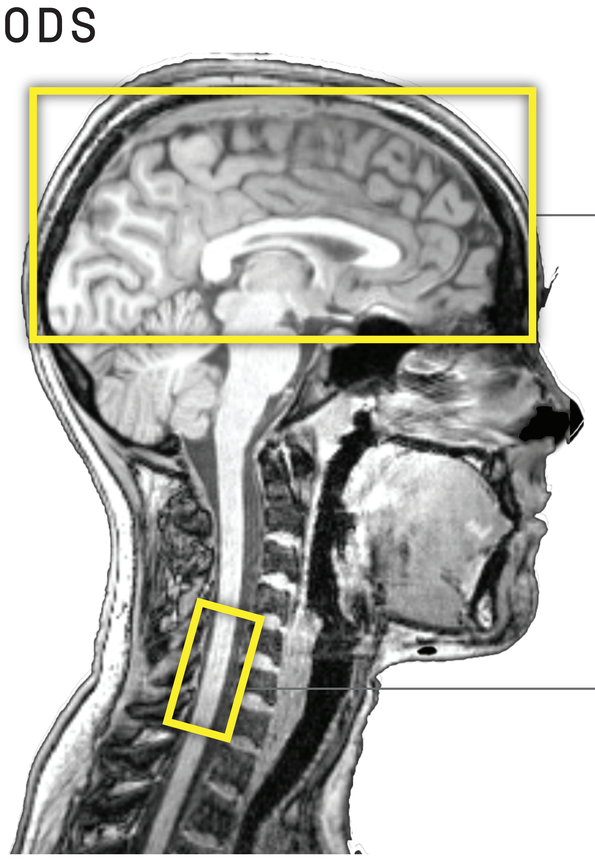
BACKGROUND

Touch is crucial for identifying the physical border between our own body and the outside world and plays an important role for our sense of self and social interactions[1].

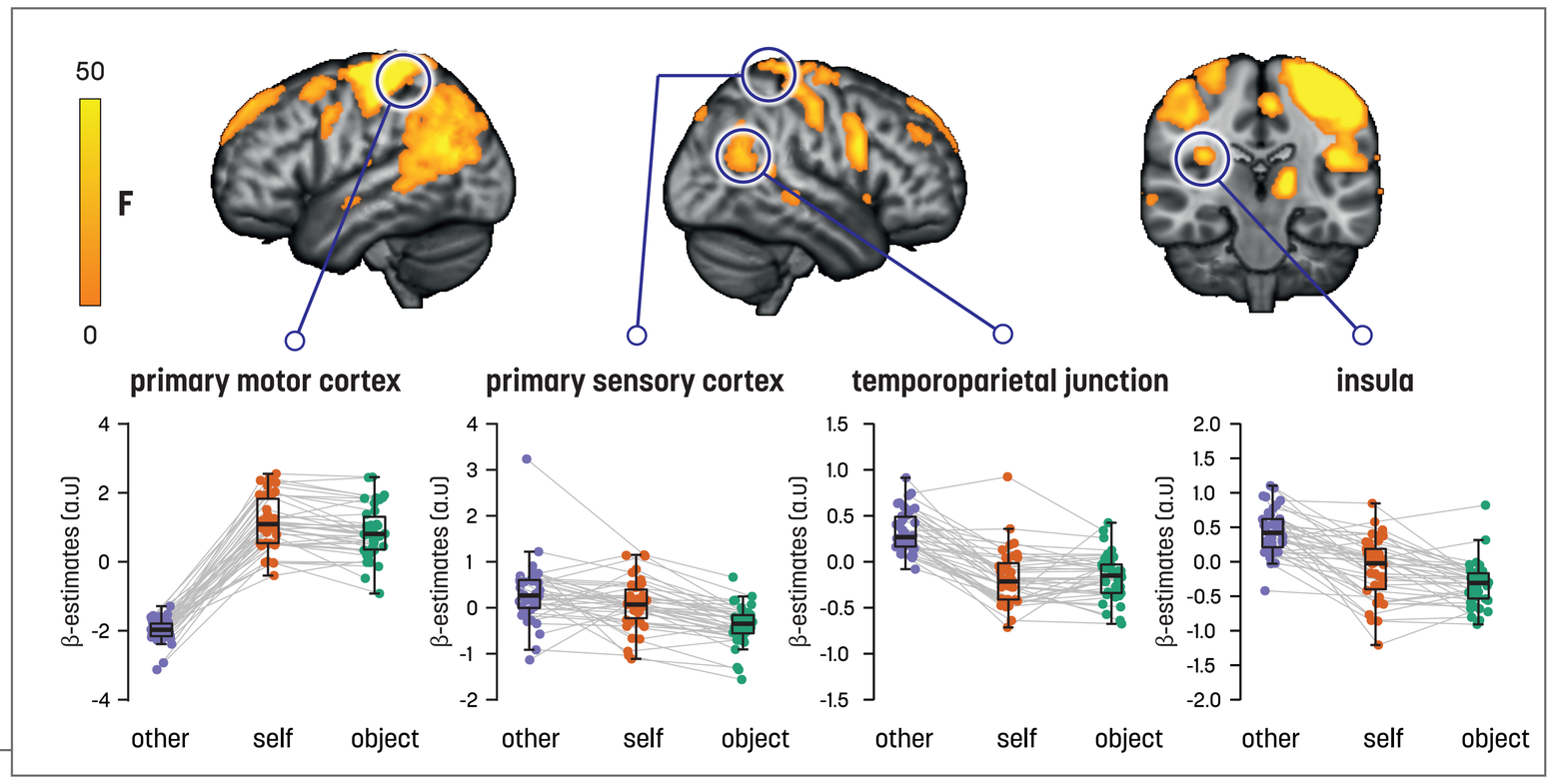
The distinct experiences of ***being touched*** and ***touching oneself*** are reflected in regions associated with somatosensation as well as social cognition and interoception[2].

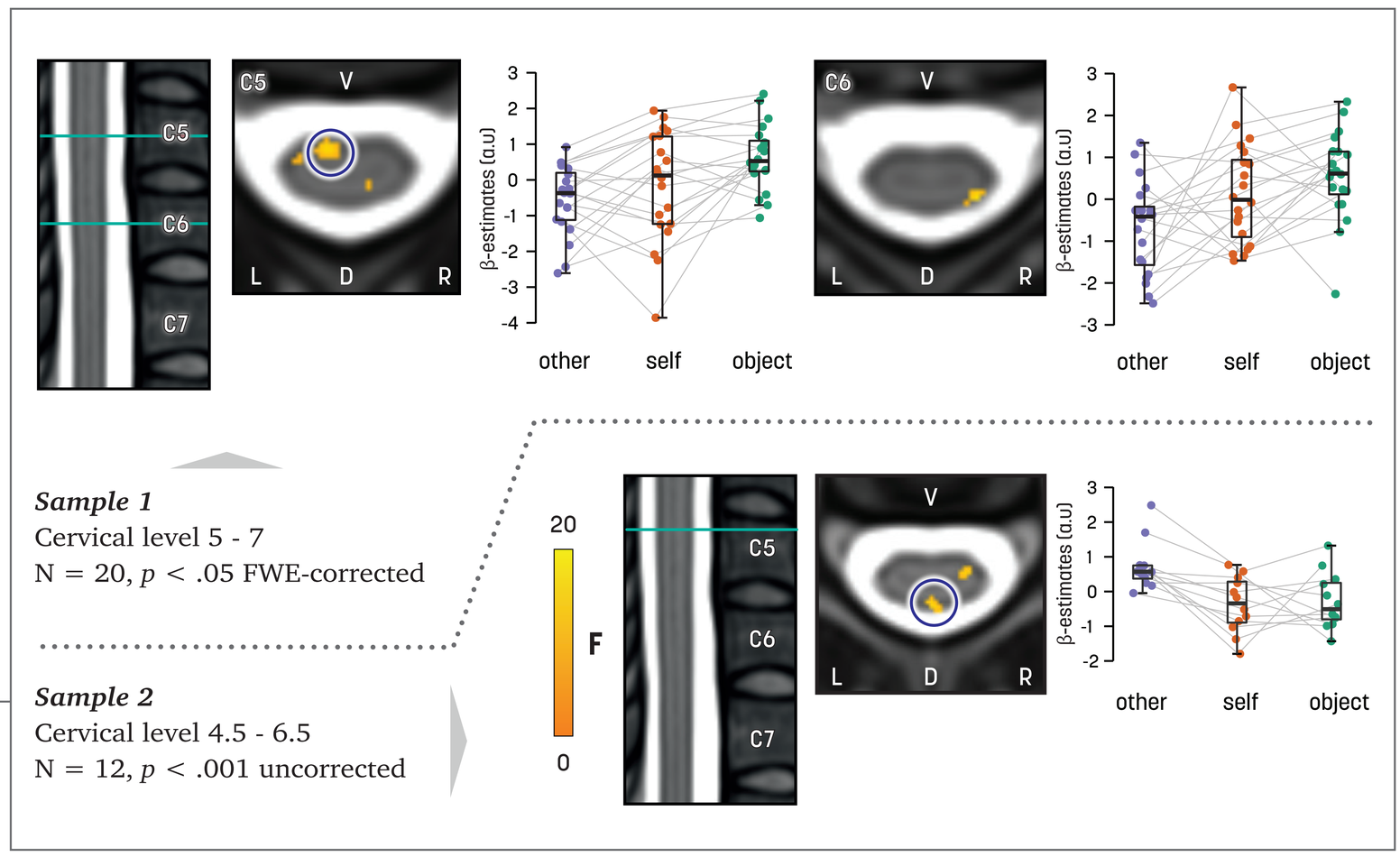
Early evidence suggests that self-versus-other touch is already differentially processed at the level of the spinal cord[2], but the exact mechanisms are not yet understood.

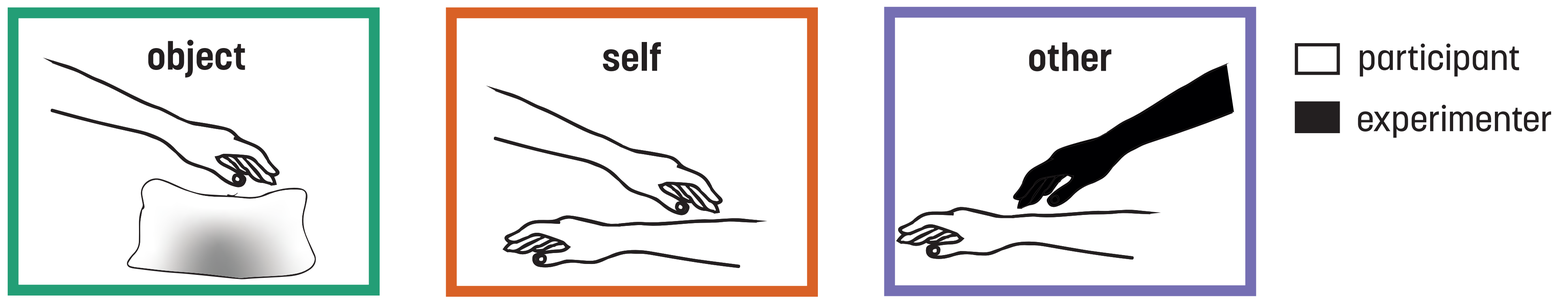
METHODS



RESULTS







Participants	spinal cord 20 + 12 | brain 38
Paradigm	self-other-touch: randomized blocked design with 30 trials of 10 sec.
Apparatus	simultaneous functional MRI (3T) of brain and spinal cord[3]
Analysis	spinal cord toolbox[4] and SPM12[5]

REFERENCES

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CONCLUSIONS

This feasibility study replicated previous brain findings of self-other differentation in regions associated with somatosensation/social cognition/interoception[2] and showed activation differences during self/other/object touch in the spinal cord.

In sample 1, two clusters of differential activation in the spinal cord for self/other/object-touch reflected sensory and motor processing of the touching hand.

In sample 2, an additional spinal cord activation cluster reflected attenuated processing for self- vs. other touch on the left forearm.

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