TMS-Induced Numbsense: Unconscious Touch Perception Without Primary Somatosensory Cortex

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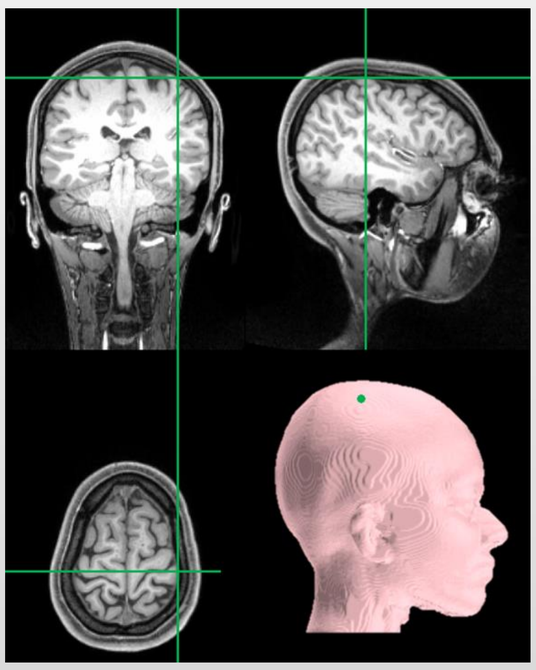
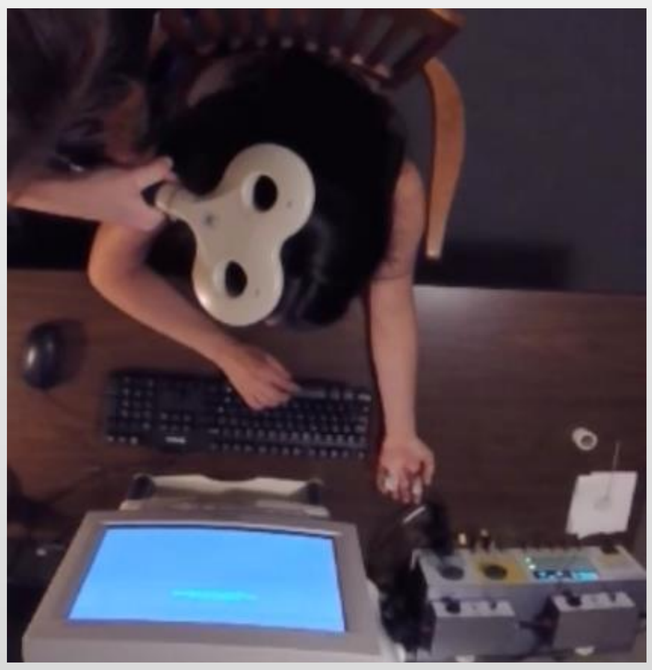
Introduction

- Like blindsight, numbsense is the ability to accurately discriminate touch without conscious perception[1-3] after damage to somatosensory brain regions
- Transcranial magnetic stimulation (TMS) over primary somatosensory cortex (S1) causes the loss of conscious touch perception[5,6]
- The role of S1 in numbsense is unknown
- We used TMS to examine the role of S1 in both tactile detection and unconscious tactile discrimination of location

Methods





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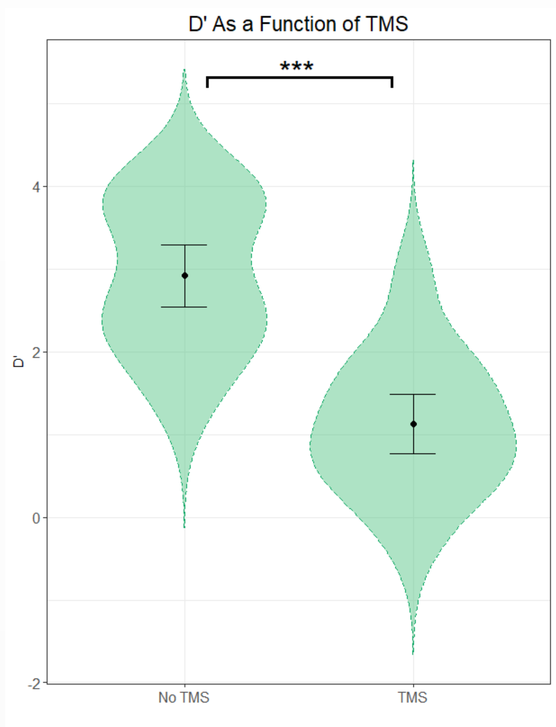
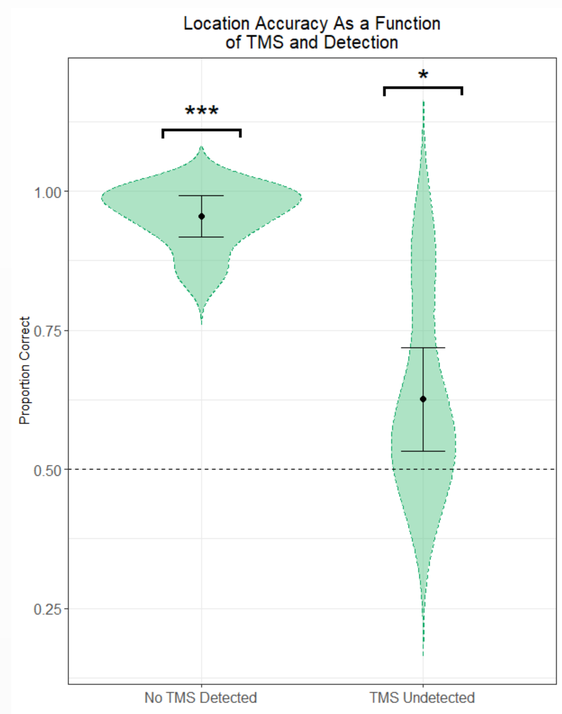
Results





Discussion

- After TMS to S1, subjects were unaware of the presence of a tactile stimulus but were nevertheless able to accurately discriminate its location
- This is the first demonstration of numbsense in normal subjects with virtual transient lesions of S1
- These results suggest that regions beyond S1 can process the location of touch in the absence of conscious awareness

References

[1]Brochier et al, 1994 [2]Paillard et al, 1983
[3]Rossetti et al, 2001 [4]Seyal et al, 1992
[5]Cohen et al, 1991