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Presentation

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# Role of primary somatosensory cortex in tactile detection and discrimination: fMRI-guided TMS investigations

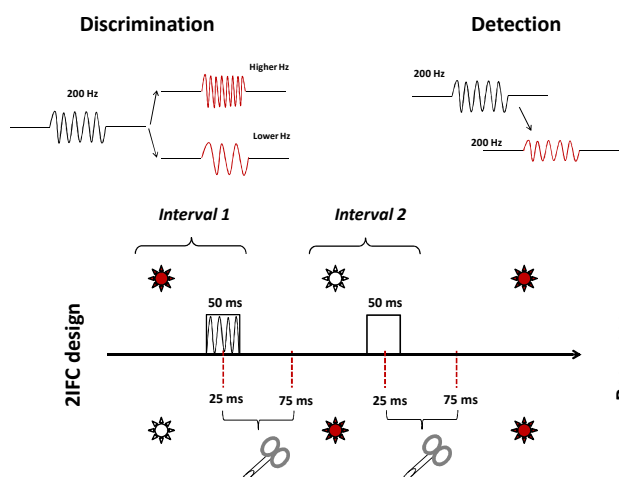
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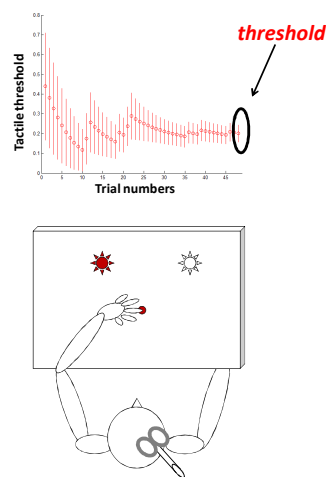
## Introduction

In the present study in **seven experiments** we investigated the contribution of the **primary somatosensory cortex (SI)** to the perception of tactile stimuli at the fingers in **discrimination** and **detection** task. We combined the **QUEST** threshold estimation method with **MRI-guided** single and double pulse **TMS** (sp/dpTMS).

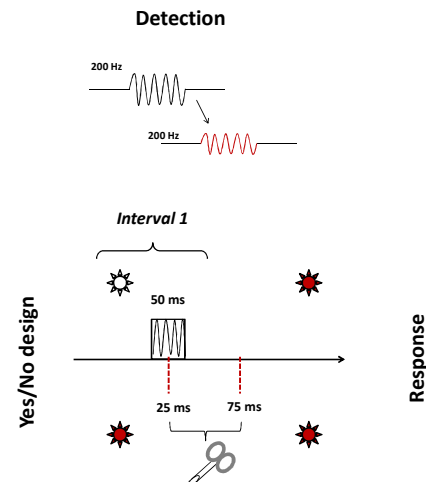
### 2IFC



### Design

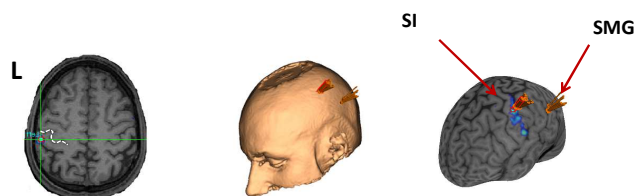


### yes-no



### fMRI-guided TMS

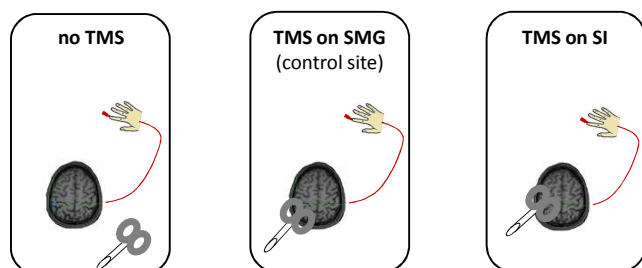
Participants (N=20) underwent a series of fMRI scans (localisers) to produce somatotopic maps of SI and SII cortices.



The peak activation focus in SI was lateral to the hand motor area, and on the posterior bank of the post-central gyrus was used to position the TMS (~2.5 cm from the target area) during a modified version of the behavioural task.

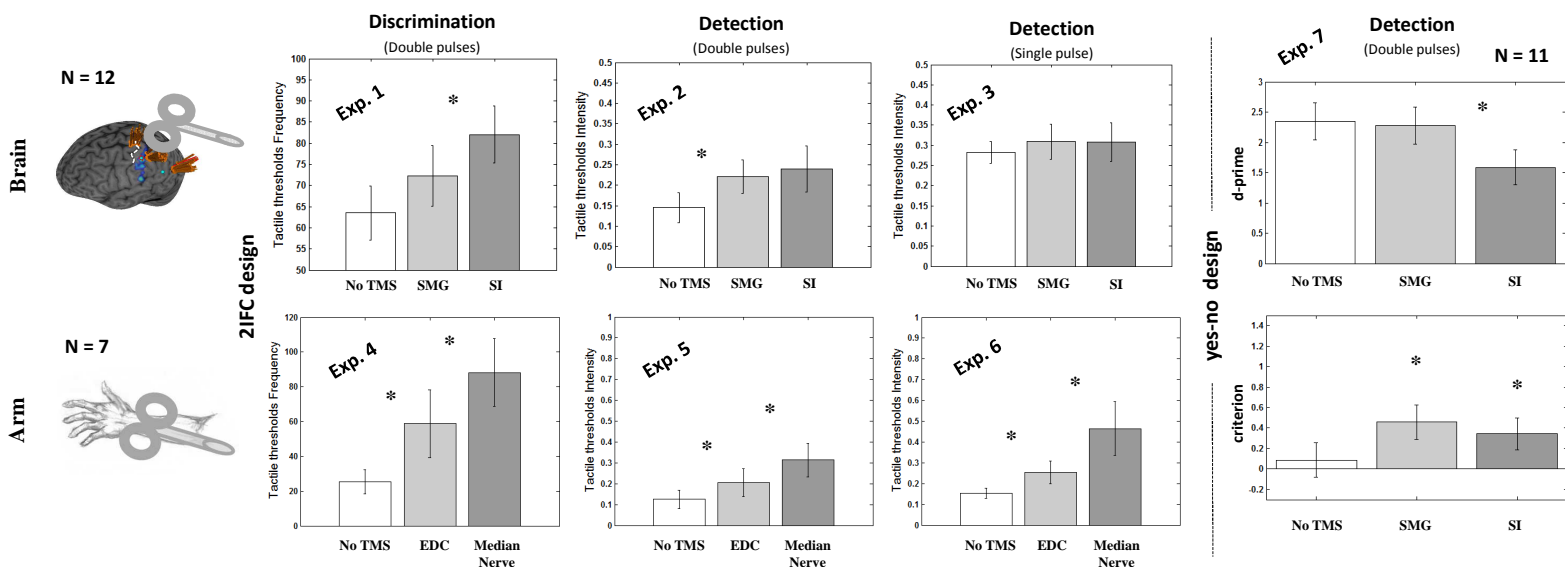
### TMS Stimulation conditions

The tactile stimuli were 200Hz sinusoidal vibrations applied to the index or middle fingers for 50 ms.



## Results

Data values represent the mean (+/- SE) of the last point of the series of 48 trials used to determine the threshold (82 % correct).



## Conclusions

**Frequency discrimination** thresholds at the fingers are increased by double-pulse TMS over SI in comparison to SMG. By contrast, **detection thresholds** at the fingers are not increased by either single or double pulse TMS over SI. This suggests that **SI is required for discrimination, but may not be for detection**, of tactile stimuli at the fingers.