WHERE ARE MY HANDS? INFLUENCE OF LIMB POSTURES ON TACTILE EXTINCTION

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INTRODUCTION
Tactile identification task provides an interesting window to study body representations. Previous studies in patients with tactile extinction suggest evidence that localizing events on your skin involves both a somatotopic and a postural schema (body schema) representation. One important topic is how tactile stimulations are mapped into a body schema representation. Here, we attempted to determine the extent to which body posture (hand, finger) influences tactile identification in right-brain-damaged patients.

EXPERIMENT 1
Participants: Twenty patients with right hemisphere stroke and 20 control participants were involved in this study (see Table 1a & 1b). All participants were right-handed.

Stimuli and Procedure: Participants were seated in front of the examiner with the palm in contact with the plane of a table (or a plane medium) and with their corporeal midline aligned with the center of the table. By using his forefinger, the examiner delivered light and brief touches on the dorsal surface of the participants’ hands or forearms. Stimuli were presented in a random order either to the left or right side, or both side simultaneously. All subjects previously informed that stimuli could be single or double, were requested to report both verbally the side of the stimulated body part and by moving it. Subjects were blindfolded throughout the session. Each participants was tested in 5 experimental blocks. In each block 10 single left, 10 single right and 10 double simultaneous stimuli were delivered.

Results: The number of correct detections were analyzed by using X² tests in each condition.

- Controls performed at ceiling in all conditions.
- For patients, under double stimulation conditions arms crossing caused a deterioration of accuracy only for stimuli applied to the contralesional body parts (left side) situated after crossing.

EXPERIMENT 2
Participants: Three patients of Experiment 1 (patients P01, P03 and P06, Table 1b).

Stimuli and Procedure: The procedure was similar to those of Experiment 1, except that the examiner delivered light tactile stimuli on the dorsal surface of the patient's foreindex placed on a plane medium. The fingers were placed in an anatomic position or crossed over the other in their middle. Stimulations were delivered either after or before finger crossing. Each participants was tested in 3 experimental block. In each block 10 single left, 10 single right and 10 double simultaneous stimuli were delivered.

Results: The number of correct detections were analyzed by using X² tests in each condition.

- Results were similar of those of Experiment 1
- Under double stimulation conditions, finger crossing caused a deterioration of performances only for stimuli applied to the contralesional finger part situated after crossing.

CONCLUSION
- Patients showed on double stimulation condition a left tactile extinction only when the stimulations were delivered on the body part (hand or finger) situated after the crossing.
- There was no difference in accuracy on bilateral trials for the inverted condition, i.e., when the left hand is placed in the left hemisphere without arm crossing, suggesting that crossing limb effect is not only linked to the body midline.
- A novel result of the present report is that tactile stimuli can be encoded based on multiple specific body-part representations rather than on an integrated body schema representation.

REFERENCES