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Psychologie Cognitive et Neuropsychologie

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Psychologie Cognitive & Neuropsychologie

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Role of physiological reactivity and interoceptive awareness in the emotional experience of patients with traumatic brain injury
Working Project

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1. Introduction

Most of patients with traumatic brain injury (TBI) present behavioural disorders which might be sourced from a reduction in emotional experience. But the origin of disturbed emotional experience in TBI need to be defined. Current models postulate that emotional experience results, notably, from the perception of body changes (Philippot, 2011). However, TBI has been associated to altered physiological reactivity and reduced interoceptive accuracy, corresponding to objective precision in detecting internal bodily sensations (Garfinkel et al., 2015).

Two methods of biofeedback will be compared:
- Training of heart rate variability (HRV) with paced breathing;
- Training of interoceptive accuracy (IA) using a heartbeat detection task.

2. Objectives

1) Study the emotional experience in link with the physiological reactivity and interoceptive precision while watching emotional movies;

2) Increase emotional experience by training HRV and IA;

3) Observe the impact of these training on behavioural disorders.

3. Participants

- TBI group: 80 patients ♂ TBI (at least 1-year post-TBI)
- Control group: 80 healthy participants with similar age and education than the clinical group

4. Hypotheses

The enhancement of physiological reactivity and interoceptive accuracy should:
- ↗ Emotional experience
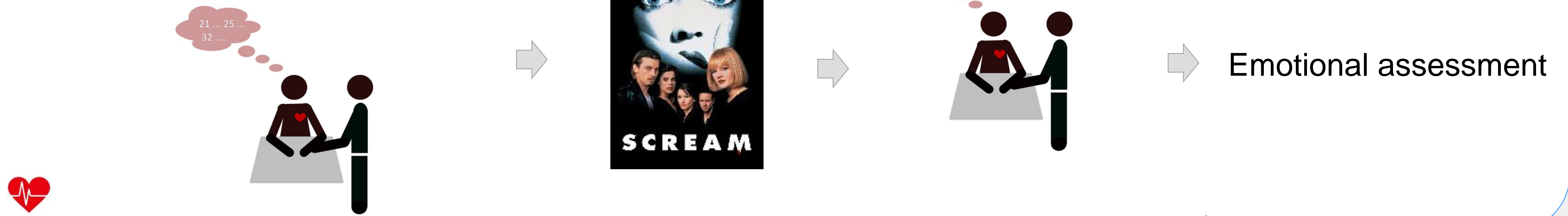- ↘ Behavioural disorders

5. Method

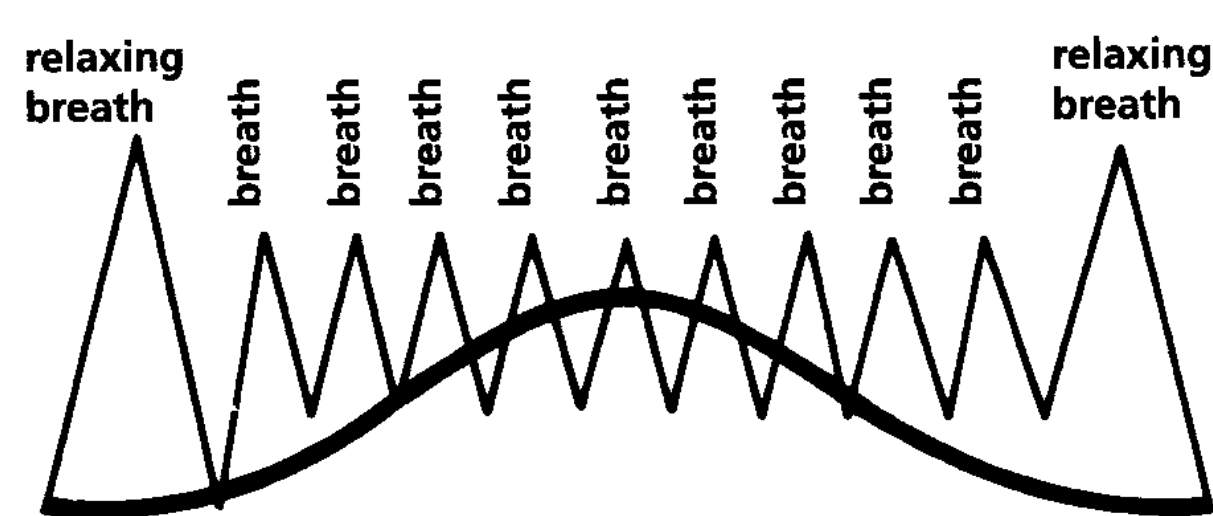**Neuro-behavioural Scale (NRS-R)**

Pre-test
TBI group

Study 1
TBI group
Control group
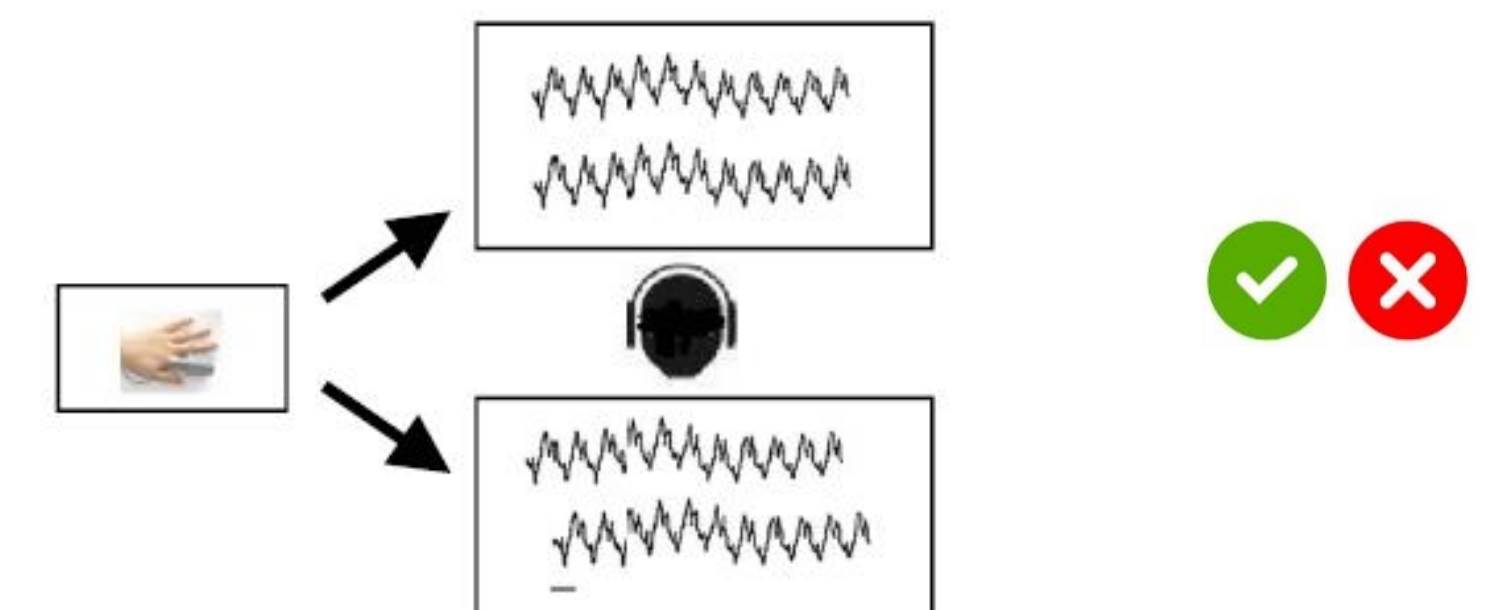
Assesment of interoceptive accuracy by Heartbeat Counting Task

SCREAM

Emotional assessment

Study 2
TBI group
40 patients

Heart rate variability training

relaxing breath — breath breath breath breath breath breath breath breath — relaxing breath

Study 3
TBI group
40 patients

Interoceptive accuracy training

Study 4
TBI group

THE EXORCIST

Emotional assessment

Post-test
TBI group

Neurobehavioural Scale (NRS-R)

6. Conclusions

Our results will provide a **better understanding** of the emotional process in TBI. They will also have a **clinical impact** by proposing new rehabilitation techniques. These techniques should improve the social reintegration of patients through the decrease of behavioural disorders.

Garfinkel, S. N., Seth, A. K., Barrett, A. B., Suzuki, K., & Critchley, H. D. (2015). Knowing your own heart : Distinguishing interoceptive accuracy from interoceptive awareness. *Biological psychology, 104*, 65–74.
Philippot, P. (2011). *Émotion et psychothérapie*. Wavre, Belgique: Mardaga.