Involvement of physiological reactivity and interoception in emotional experience after a traumatic brain injury: preliminary results

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1. Introduction

After a traumatic brain injury (TBI), patients often report a decrease in their ability to feel emotions[1], which is partially based on physiological reactivity (PR) associated with the emotion and on the ability to become aware of it, referred to as interoception. After a TBI, alterations of interoception[2] and PR have been reported[3].

2. Objectives

Explore the role of PR through electrodermal activity (EDA) and interoception with a heartbeat counting (HBC) task in emotional experience after a TBI.

3. Participants

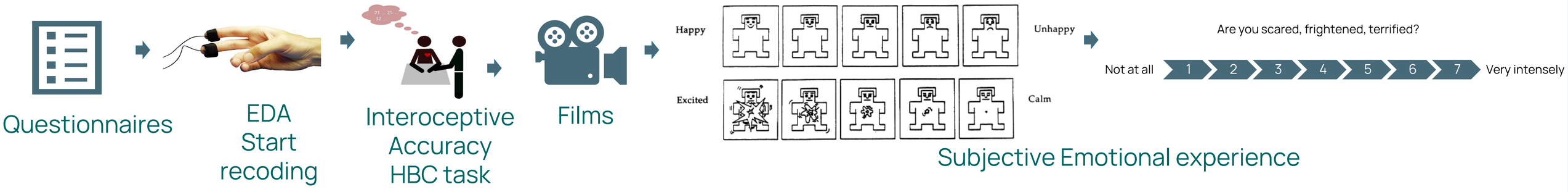
16 men with moderate to severe TBI (age: 40 ± 12,4)
17 healthy men (age:37,9 ± 15,8)

4.Hypotheses

Lower emotional experience after TBI could be explained by a reduced interoception and PR during emotional films

5. Method

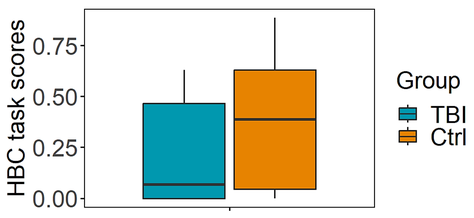
Emotional induction task with films from *FilmStim* database (Schaefer et al., 2010)



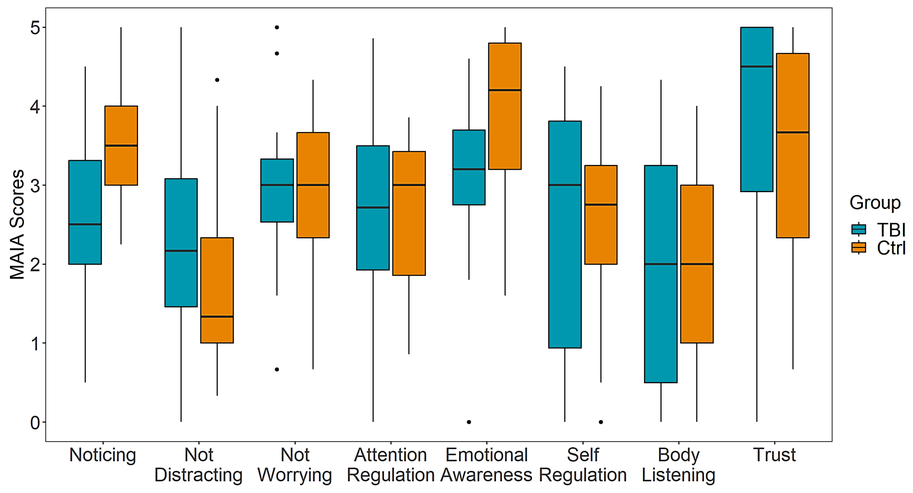
Questionnaires:
Interoceptive sensibility (MAIA-2; Mehling et al., 2018), Toronto Alexithymia scale (TAS-20; Bagby et al., 1994),Hospital Anxiety and Depression scale (HADS; Bocéréan & Dupret, 2014)

6. Results

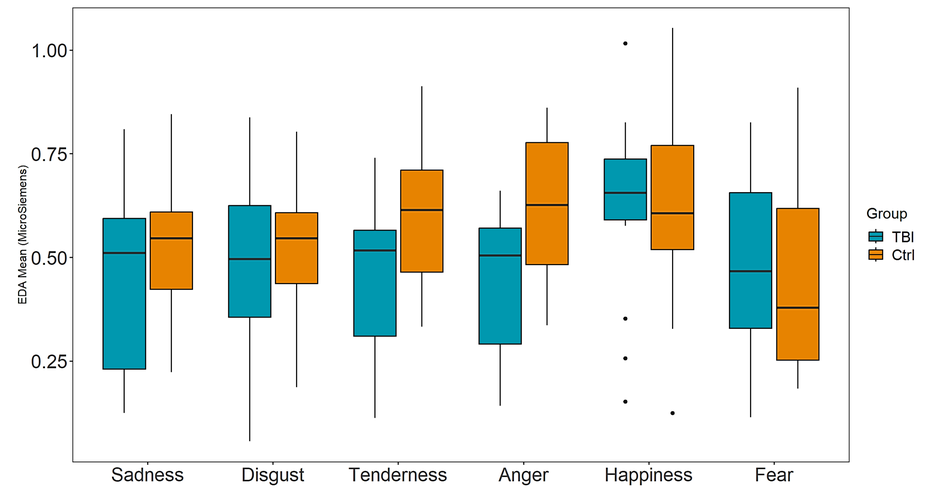
Alexithymia in TBI group (mean score: 60.19, threshold: 52)



Lower scores for HBC task in TBI group (W=86;p=.119)

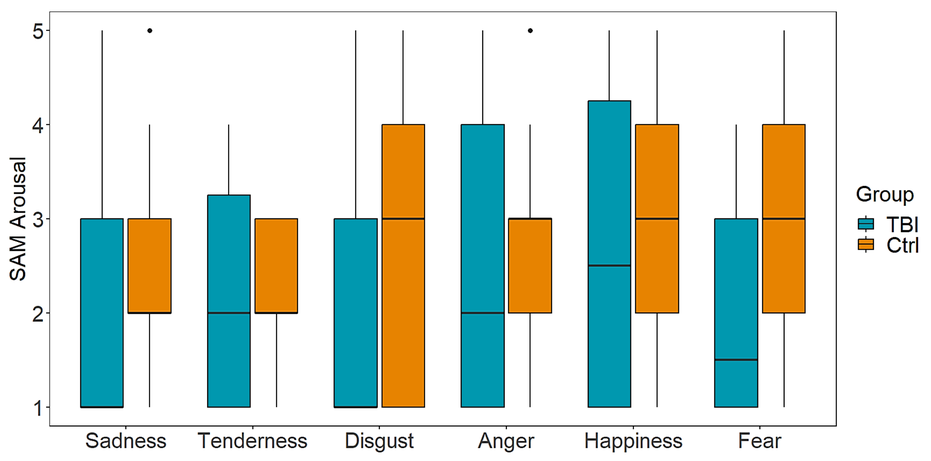


Lower interoceptive sensibility in TBI group for **Noticing** (W = 55, p = 0.004) and **Emotional awareness** (W = 74, p= 0.026)



Lower EDA in TBI group significant for Tenderness (t (31)= -2.2944, p = 0.029) and Anger films (t (31)=-3.1935, p = 0.003))

No difference for **subjective emotional experience** for both SAM arousal and valence and DES



7. Conclusions

These results showed lower EDA but no difference for the emotional assessments, suggesting a **dissociation** between emotional experience and emotional response. Our results also showed lower interoceptive sensibility. Interoception could **moderate** the coupling of bodily responses to emotion experience. This results contributed to a better understanding of emotional disorders after a TBI.

1. Croker, V., & McDonald, S. (2005). Recognition of emotion from facial expression following traumatic brain injury. *Brain Injury*, *19*(10), 787-799. https://doi.org/10.1080/02699050500110033
2. Hynes, C. A., Stone, V. E., & Kelso, L. A. (2011). Social and emotional competence in traumatic brain injury : New and established assessment tools. *Social Neuroscience*, *6*(5-6), 599-614. https://doi.org/10.1080/17470919.2011.584447
3. Bodart, A., Invernizzi, S., Lefebvre, L., & Rossignol, M. (2023). Physiological reactivity at rest and in response to social or emotional stimuli after a traumatic brain injury : A systematic review. *Frontiers in Psychology*, *14*. https://www.frontiersin.org/articles/10.3389/fpsyg.2023.930177