PAIN AND RELATED-SUFFERING INCREASE INTEROCEPTIVE AWARENESS BY FOCUSING ATTENTION TO INTERNAL BODILY SENSATIONS

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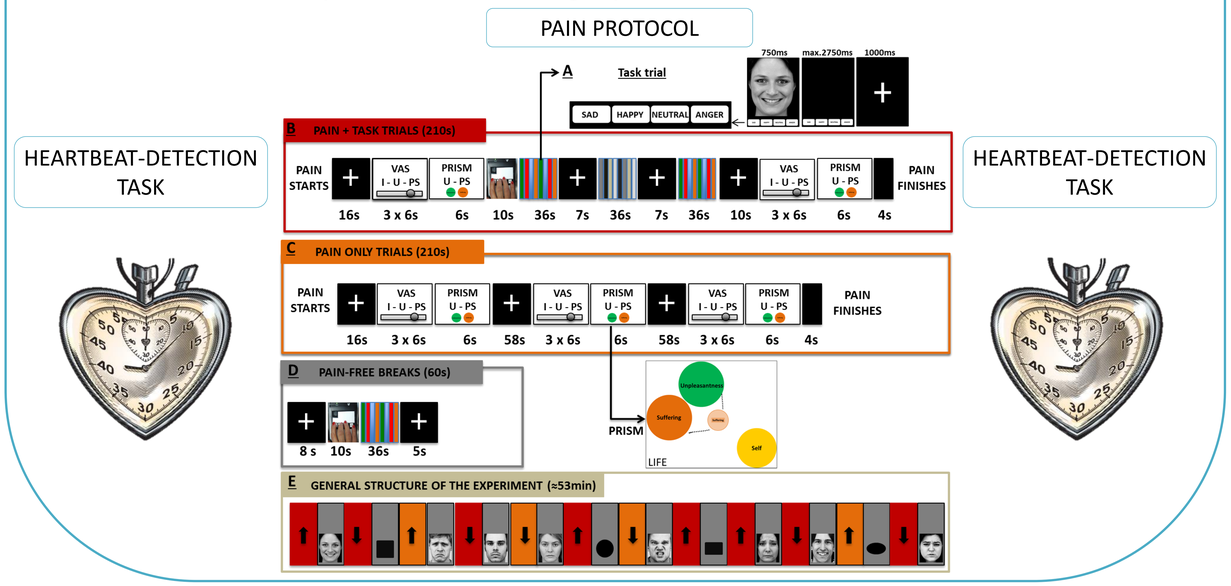
Introduction

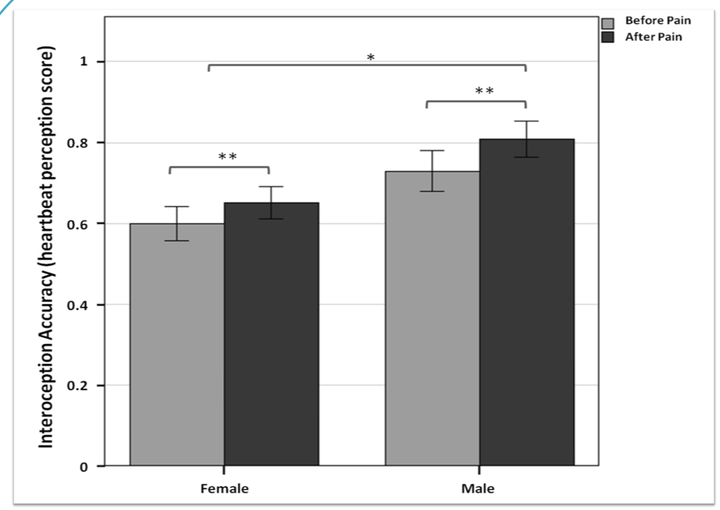
It has been proposed that the expression of pain-related suffering is reflected by enhanced focus on oneself alongside a reduced attention towards external world incentives' and others. This study therefore aimed at investigating whether experimentally induced pain-related suffering may lead to withdrawing into one's inner world as expressed by enhanced interoceptive awareness, and a reduced focus on external stimuli as shown by impaired performance in a facial recognition task.

Material and Methods

Interoceptive accuracy was measured in 32 healthy participants (Mean age=24.91 years, standard deviation=4.36) using a heartbeat-detection task (Schandry & Specht, 1981) prior to and following a 53 minutes long pain protocol. Participants were asked to mentally count the number of heartbeats they felt during time intervals of 25, 35, and 45s that were separated by standard resting periods (30s). The experimental pain induction protocol had previously been validated (Bustan et al., 2015). Concomitantly to the pain procedure, participants performed a reaction time task which consisted in recognizing different facial expressions (neutral, sad, anger, happy) or geometrical figures under conditions of no pain, low and high pain intensities.

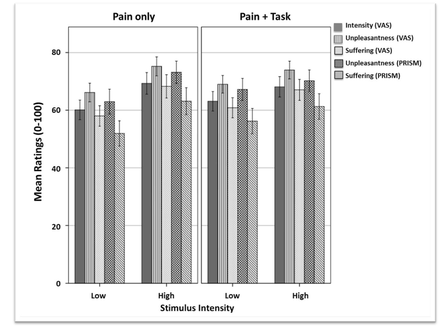


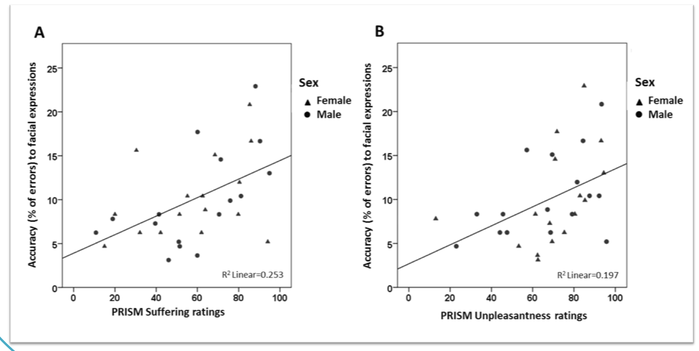
Results



IA= ⅓ Σ [1 – (recorded heartbeats – reported heartbeats) / recorded heartbeats] . Mean heartbeat perception scores and standard errors of the mean for males and females, before and after the pain stimulation protocol. All participants showed a significant improvement in interoceptive accuracy after the pain experiment in comparison to before. In general, males showed significantly better interoceptive accuracy than females. ** p<.005, *p<.05

Right panel shows pain ratings obtained when the pain was presented with a concomitant reaction time task and left panel those obtained when pain was presented alone. The high intensity stimuli were consistently rated as greater than the low ones.





Scatter plot representing the positive correlation between pain-related suffering (A) and unpleasantness (B) ratings (assessed by the Pictorial Representation of Illness and Self Measure) and the % of mistakes in the facial recognition task. Males are represented by dots and females by triangles.

Discussion

It has been hypothesized that interoceptive processes interact with pain by facilitating the detection of bodily changes accompanying pain experience and thereby affecting its cognitive–affective evaluation (Pollatos et al., 2012). Our study suggests that the opposite influence is also possible. The suffering and the high emotional and cognitive load resulting from prolonged pain stimulation could initiate continuous attentional shifts, leading to a withdrawal into the self and thus to an increased interoceptive awareness. The resulting feed forward loop may constitute a vicious circle deserving particular attention in the framework of pain management.

References

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