

ATTENTIONAL BIASES DEPENDENTS OF EMOTION: A PILOT STUDY IN PEOPLE WITH CHRONIC PAIN

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Abstract

Experimental evidence suggest that chronic pain condition can introduce modulations in attentional processing in adults. In the present study, we try to understand this phenomenon through cognitive tasks. We combined a modified Stroop and a Dot-probe paradigm in order to study attentional deviation to pain-relevant stimuli in chronic pain individuals and controls. Behavioural data (responses and reaction times) were analyzed. Preliminary results suggest an attentional biases to pain-relevant stimuli in comparison to the neutral ones. This effect seems to be more pronounced in participants with chronic pain, although it is needed further research with larger sample sizes.

Keywords: *Chronic pain, Attentional biases, Stroop, Dot-Probe.*

1. Introduction

The pain is not limited to biological factors, but also the result of psychological variables. According to Beecher (1956, cit. Araoz, Burte, & Carrese, 1998), pain is a bidimensional experience, and Melzack (1973, cit. in Araoz et al., 1998), for its part, lists some of the possible variables that may influence the individual experience of pain. For example, various studies suggest that the increased latency of response in the modified Stroop task is product of the interference of emotional relevance in the cognitive processing of stimulus (Fisher, Sass, Heller, Levin, Edgar, Stewart & Miller, 2010). That is, a specificity exists between categories of words, including their subjective significance, and that induce cognitive interference (Beck et al. 2001). Thus, it is plausible that a deviation occurs on attentional processing stimuli related to chronic pain condition and, therefore, it assumes an emotional-affective relevance for people who suffer from it.

Different versions of the Stroop paradigm have been applied to study cognitive interference phenomena in basic and clinical research. Other variations have been used in procedures which modified Stroop to identify emotional words that are specific of clinical disorders (e.g., see Beck, Freeman, Shipbird, Hamblen & Lackner, 2001). Other paradigms that have been used to study the modulation of attention in basic and applied research consist of modified Dot-Probe tasks.

Experimental evidence suggest that chronic pain condition can introduce modulations in attentional processing in adults. For the present study, we try to understand this phenomenon through cognitive tasks using proper methodologies.

We combined a modified Stroop and a Dot-probe paradigm in order to test attentional deviation to pain-relevant words in chronic pain individuals and controls. Behavioural data (responses and reaction times) were analyzed.

2. Methods

We combined a modified Stroop and a Dot-probe paradigm in order to test attentional deviation to pain-relevant words in chronic pain individuals and controls. Behavioural data

(responses and reaction times) were analyzed from ten women, five patients with fibromyalgia and five healthy participants.

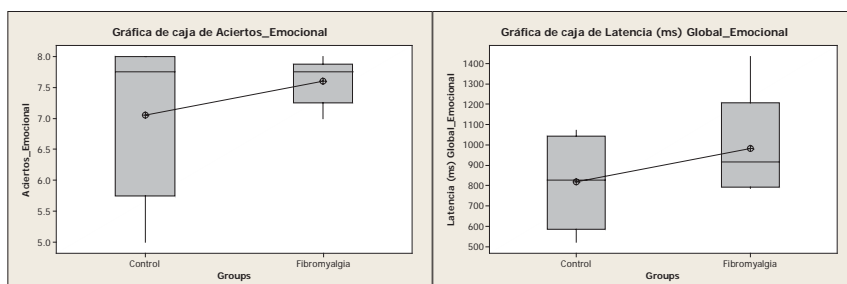
We administered a modified version of the Stroop paradigm in slides and in which emotional and neutral words appeared randomized in different colors (blue, green, red and yellow) on a black background. The participant was instructed to identify the colors (ignoring the meaning) along eight blocks (four blocks of emotional stimulus and four blocks of neutral stimulus), presented in 64 trials in total. In each trial it appeared the word for 1500ms, following an attachment point between 275-725ms, and an interval between trials in 2000 +225 ms.

In the Dot-Probe task other types of visual stimuli were presented -emotional words for the clinical condition and neutral - followed by a small circle. In each trial we presented a central fixation point on the monitor for 500ms, followed by a pair of words (stimuli probe) simultaneously presented for 500ms (one neutral and one emotional or vice versa). Then, the fixation point appeared again during 100-300ms, followed by a circle (target stimulus) positioned randomly in place of one of the words for 150ms. The participant had 1750ms to respond, indicating the location of the target stimulus onset. There were four blocks composed of 20 trials each one, that were preceded by a training block of five trials.

3. Results

3.1. Stroop

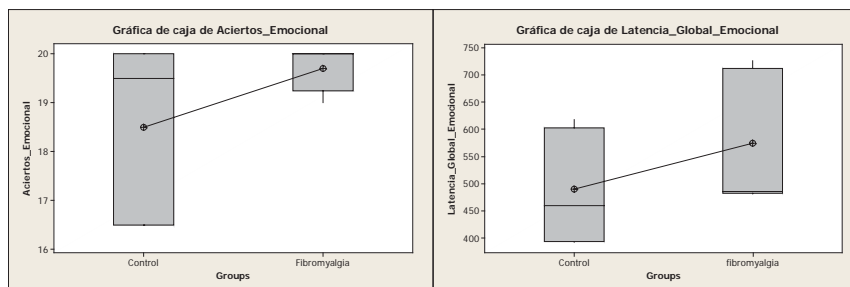
The number of correct answers fibromialgya ($M = 7.60$ $SE = 0.37$) had a higher mean than the control group ($M = 7.05$ $SE = 1.30$). Was performed t test and these comparisons were not significant.



The average response latency in the Stroop task modified for the control group was ($M = 817.65$, $SE = 234.17$) was lower than the group with Fibromyalgia ($M = 983.30$, $SE = 264.85$). Latency was lower in the control group than in the experimental group, but these differences were not significant.

3.2. Dot-Probe

The Fibromyalgia group presented higher mean for the number of correct answers ($M = 19.7$, $SE = 0.44$) than the control group ($M = 18.5$, $SE = 1.83$). They conducted a t test to explore potential differences ($t = -1.41915$).



The fibromyalgia group had higher latency responses ($M = 574.81$, $SE = 125.81$) than the control group ($M = 489.96$, $SE = 106.85$). No significant differences between their means.

4. Conclusions

Preliminary data suggest an attentional bias to pain-relevant stimuli in comparison to the neutral ones. This effect seems to be more pronounced in participants with chronic pain. However, the sample size of this pilot study was not large enough to obtain conclusive results and future research is needed to confirm effects.

Both in the Stroop task as the Dot-Probe task, the group with fibromyalgia presents for these behavioral data, greater hits and response latency. This precision in the hits may be due to greater resources in evaluating cognitive so that emotional stimuli are consuming more resources on the subject and this further evaluation, resulting in accuracy of response.

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