

The effect of cold pressor pain on attention capacity

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Background: It has been postulated that pain and attention draw from the same pool of attentional resources, the capacity of which is limited. Pain thus competes for limited attentional resources.

Aim of investigation: To examine the effects of experimentally induced pain on perceptual load in a visual selective attention task. The visual search task included a manipulation of perceptual load: load 2 (easy condition) and 6 (hard condition). It was hypothesized that reaction times (RTs) are longer in the hard versus the easy condition and, that this effect is larger in the pain compared to the neutral condition.

Methods: Sixteen students were included in the study. Participants were required to respond as soon as possible to one of two relevant targets and to ignore 1 or 5 irrelevant distractors. Task conditions were randomly mixed, within blocks of trials. Participants performed the perceptual load task twice for 1,5 minutes with their nondominant hand placed in a water basin (Cold Pressor Test). The pain manipulation comprised a painfully cold (2°C) and a neutral (27°C) condition. Immediately after the test, visual analogue scales were completed to assess pain intensity.

Results: The cold water was rated as significantly more painful than the neutral water, confirming that pain was effectively manipulated. RTs were significantly longer, and error rates were significantly higher in the high load compared to the low load condition, confirming that perceptual load was effectively manipulated. However, the main effect of pain on task was not significant, neither did pain interact with load, which was contrary to our hypothesis. Subjects thus performed equally well with and without pain.

Conclusions: Pain did not affect task performance, even when demands on capacity were high. It could be that pain sensitivity is affected by attentional demands rather than attention by pain.

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Poster session of choice: Cognition & Behavioral Neuroscience on Friday 4 June