INTEROCEPTIVE CONDITIONING OF PAIN-RELATED FEAR: AN EXPERIMENTAL INVESTIGATION

Steven De Peuter¹, Ilse Van Diest³, Debora Vansteenwegen², & Johan W.S. Vlaeyen¹,³

¹ Research Group Health Psychology, Department of Psychology, University of Leuven, Belgium
² Centre for the Psychology of Learning and Experimental Psychopathology, University of Leuven, Belgium
³ Department of Clinical Psychological Science, Maastricht University, The Netherlands

INTRODUCTION

In chronic musculoskeletal pain, classical (Pavlovian) conditioning fosters the development for example when a movement/activity become associated with pain. In this case, the movement/activity becomes a signal for pain and elicits an anticipatory defensive (fear) response - including activity avoidance. This may lead to reduced functionality and increasing disability.

Current study:

Can interoceptive sensations elicit conditioned pain-related fear?

...expanding the scope of the conditioning account beyond musculoskeletal pain.

DESIGN

• 40 healthy female students (age 18-23)
• 5°C circulated water cold pressor task (CPT) non-dominant hand and wrist
• Experimental group (n = 20):
  • First trial: 1 minute → Cold + PAIN
  • Second trial: 8 seconds → Cold
• Control group (n = 20):
  • First trial: 8 seconds → Cold
  • Second trial: 1 minute → Cold + PAIN
• VAS ‘urge to withdraw hand from the water’ at 8 seconds (range 0-100; labeled “urge absent” – “maximal urge”) as a proxy of the threat value of the cold sensations as a proxy of participants’ fear of these sensations
• Control variables:
  • Negative Affectivity (NA; PANAS)
  • Pain Catastrophizing (Pain Catastrophizing Scale)
  • Fear of Pain (Fear of Pain Questionnaire)

RESULTS

Predictions:

Experimental group:
increase in urge to withdraw hand from trial 1 to trial 2 [“Cold predicts pain → escape/avoid”]

Control group:
absence of increase in urge to withdraw hand from trial 1 to trial 2

CONCLUSION

We did not observe the expected learning effect in the full sample.

Selecting participants high in Negative Affectivity did produce the expected effect, but sample size was small.

Although these results need replication, they provide the first evidence for a role of interoceptive conditioning in the acquisition of pain-related fear.

Future studies may rely on truly interoceptive stimuli such as esophageal stimulation.

Acknowledgements

Steven De Peuter is a post-doctoral fellow of the Research Foundation – Flanders (FWO-Vlaanderen). This contribution of Johan W.S. Vlaeyen was supported by the Odysseus Grant “The Psychology of Pain and Disability Research Program” funded by the Research Foundation – Flanders (FWO-Vlaanderen).