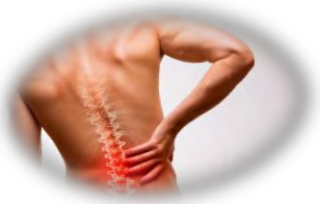
Introduction

Pain-related learning: identification & avoidance of potentially painful/life-threatening situations (protective behavior).

Fear of pain: hard to extinguish & potential of reinstatement.

Evidence: altered pain-related learning in different chronic pain conditions[1].

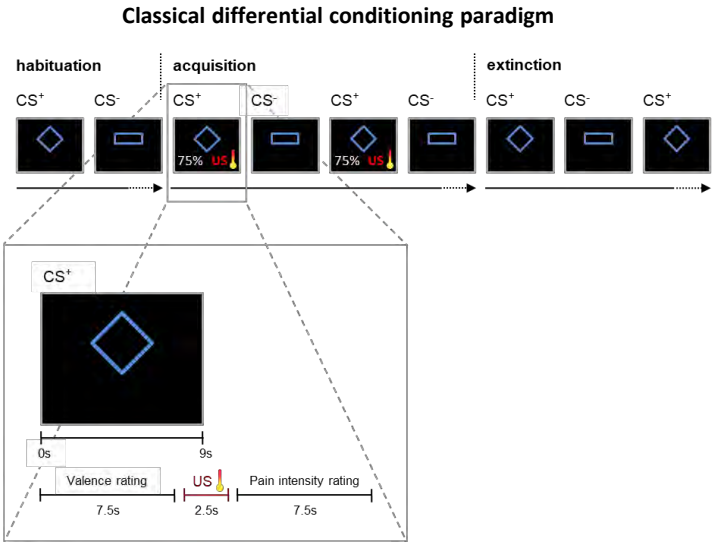
Aim: Differences between non-specific chronic back pain (CBP, n=62) patients & healthy volunteers (HC, n=61) on acquisition, extinction & reinstatement of pain-related associations and the influence of stress on extinction recall & reinstatement.



Related publications:

[1] D. Harvie *et al*, Journal of Pain (18), 2017

Methods



Conditioned stimulus (CS):

Geometrical figures presented on a computer screen.

Unconditioned stimulus (US):

Heat pain stimulus to the volar forearm by a thermal stimulator (*CHEPS, Pathway System, Medoc, Israel*).

Outcome measures:

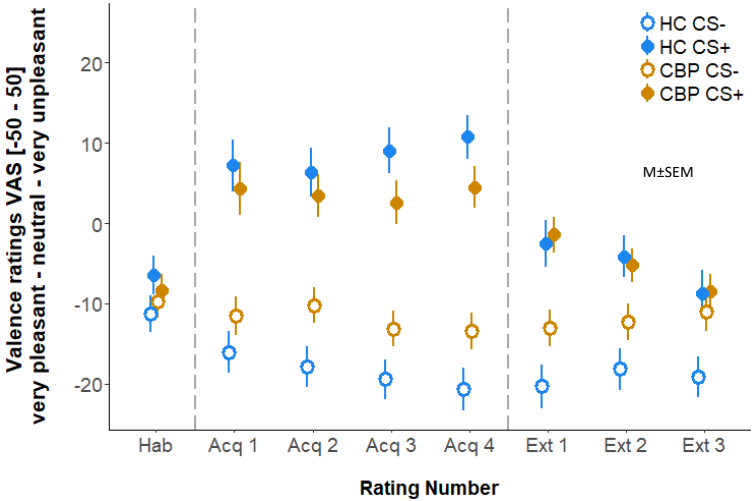
Valence ratings (emotional aspects of pain-related learning)

Pain intensity ratings

Skin conductance responses (SCRs)

CS-US contingency ratings after acquisition & extinction

Results



Succesfull differential acquisition and extinction in CBP & HC

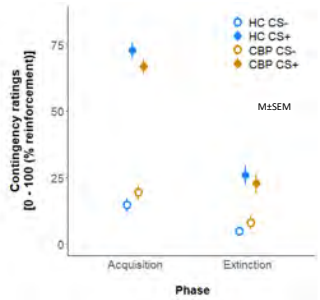
Acquisition: Sign. IA time × CS: CBP: p<0.001, d=0.74; HC: p<0.001, d=1.31
Extinction: Sign. IA time × CS: CBP: p<0.001, d=-0.92; HC: p<0.001, d=-1.31

Impaired differential acquisition of threat & safety cues in CBP

CS^+: Sign. IA time × group: CBP: p<0.001, d=0.74; HC: p=0.05, d=-0.22
CS^-: Sign. IA time × group: CBP: p<0.001, d=-0.92; HC: p=0.03, d=0.25

More persistent safety learning in pain-free HC vs. CBP

Extinction, HC, CS^-: Sign. ME phase × CS: p<0.001, d=-0.51



N.s. MEs or IAs in contingency rating

Discussion / Conclusions

Impaired differential learning in CBP:

Impaired differential learning of pain-related emotional responses (valence ratings) could lead to excessive, maladaptive protective behavior possibly contributing to the maintenance of chronic pain.

Enhanced / more persistent safety learning:

The disability in the recognition and evaluation of safety cues and in the development of robust safety associations possibly plays an important role in the development and maintenance of chronic pain.

Outlook:

Longitudinal studies are needed to investigate whether learning deficits are the cause or the consequence of chronic pain and when those deficits can be addressed therapeutically.

Functional MRI studies could shed more light on brain mechanisms that are involved in pain-related learning and are possibly altered as well.