

Investigating the Dynamics of Pain-Related Learning

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Presentation Abstract Summary Aversive experiences such as pain are known to lead to fast associative learning but can be highly resistant to extinction. This asymmetric learning is discussed as a key psychological mechanism involved in the maintenance of chronic pain. We used model-based MRI design to characterize and examine differences between acquisition and extinction of pain-related associations in a probabilistic learning paradigm in healthy volunteers. Multiple methods of behavioural analysis identified differences between acquisition and extinction, and particular lack of extinction later in the task. This was observed to be driven by lack of learning from no-shock trials in the second half of the trials. The analysis of fMRI data revealed dissociable brain regions to be involved in aversive and appetitive prediction error. Further inquiry into the fMRI data identified dissociable regions responsible for processing feedback information and updating of future expectations.

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