

At the recent [conference of the Australian Pain Society](#) , I was delighted to see what had come of a very interesting research thread that I had been introduced to a few years ago. It concerns the role of learning circuits in the brain and their contribution to maintaining persistent pain.

[Prof Herta Flor](#) is a German psychologist turned neuroscience researcher who was one of the international speakers at the meeting. Her plenary lecture on the Monday morning was one for the ages, as she described her research on the role of learning, memory and emotional response in persistent pain states.

It turns out that your memories include those which you can recall and verbalise (known in the jargon as 'declarative' or ['explicit' memory](#)) but you also have a wide range of memories which you cannot directly recall, but which affect your behaviour. These are known as 'non-declarative' or ['implicit' memories](#) .

The role of implicit memory is to enable the brain to automate repetitive or learned functions, or act as a 'backstop' if explicit memories are not protective. Imagine if you had to consciously recall how to change gears or indicate every time you drove, and you get the idea.

It turns out painful experiences are potent creators of implicit memories. This makes sense, as we need to be able to learn to avoid injuring ourselves in the years before explicit memories develop. Many adult phobias are believed to have long-forgotten roots in persistent implicit memories from childhood.

There are some characteristics of persistent pain conditions which can hijack the brain hardware involved. This can result in the development of unusually long-lived or influential implicit pain memories. People who have ongoing difficulties adapting to life with chronic pain often have such pain-related implicit memories. Their daily behaviour and emotions remain conditioned by powerful but unconscious memories which for some reason do not reduce in intensity as time goes by. They don't know where the fear or distress is coming from, but they suffer the effects all the same.

There is a normal rate of forgetting (known as the [Ebbinghaus Forgetting Curve](#)) which was formulated nearly a century and a half ago for explicit memory. Implicit memories similarly should become less powerful and influential on behaviour as time goes by. Flor's body of work

has demonstrated that under certain conditions, persistence of influential implicit memories for pain can have extremely subtle and far reaching effects. Emotional responses and beliefs can be heavily influenced by negative implicit memories, resulting in triggering of fear responses in a way similar to that seen in Post-Traumatic Stress Disorder or severe anxiety. Even your experience of autobiographical memories can be [seriously altered by persistent pain](#).

The implications of Flor's work on implicit memory in the clinic are potentially significant. It may be that we need a new approach to the psychological management of a large group of patients for whom Cognitive-Behavioural Therapy (CBT) techniques are not hugely helpful. To be successful, CBT requires motivation for change and psychological flexibility, both of which can be impaired in the brains of chronic pain sufferers. This goes double for those with depression or other mental health conditions as well as their pain problem.

She has begun trialling other treatment approaches in comparison to classic CBT and the [early results](#) suggest that there may well be value in pursuing this further. Treatments aimed at facilitating the extinction of aversive implicit memories are well-recognised as effective for phobias and anxiety disorders.

We certainly need a few more arrows in the quiver for pain psychologists in the clinic. The [high-level evidence for CBT](#) suggests only modest efficacy despite dozens of RCTs. In practice, most pain psychologists have to take an eclectic approach and try to tailor the techniques they choose to the individual patient in front of them. It may well be that medications could be prescribed in conjunction with the psychotherapy as [‘cognitive enhancers’](#) to help get rid of the persistent aversive memories which are holding people back.

Most often, chronic pain sufferers are told that they have to ‘learn to live with it’. These new neuroscientific insights may lead us to help them un-learn to live with it!

An excellent overview of Herta Flor's work is [here](#) , but it's behind a paywall.

Got chronic pain? Just un-learn to live with it...

Written by The Conversation

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