

Genetic role in post-traumatic stress

September 8 2011, By Bob Beale

When she first sought help at the UNSW Traumatic Stress Clinic, it was clear that Helen Fraser (not her real name) was in a bad way. A survivor of the appalling 2009 Black Saturday bushfires in Victoria, she could not shake from her mind the awful memories of the event.

She and her family had been lucky to escape: they ran for their lives as the wall of flame bore down and destroyed their house. Some neighbors were killed. In all, 173 people lost their lives on that day, hundreds more were injured and more than 2,000 homes were razed.

Those terrible events left Helen so fearful and distressed that she could not bear to rebuild her former life: “She was so petrified by the whole thing that she even had to leave Victoria,” recalls Scientia Professor Richard Bryant, who is director of the clinic, which is co-located on the Randwick campus of UNSW and at Westmead Hospital.

In the initial weeks after such a major stressful event – be it a natural disaster, a serious assault common for people to experience anxiety, distressing memories, disturbed sleep, nightmares and restlessness. “We also know, however, most mental health problems typically reduce over time,” says Bryant. “As people learn that the threat has passed, they typically get over the initial distress. Several months after a disaster, most people are able to psychologically adapt and recover.”

Helen, however, was one of the significant minority – between 10 per cent and 20 per cent – who have persistent problems. With her husband and children she had moved to Sydney to be in an urban environment

away from the bush, hoping that would make her life easier. It didn't. "When we saw her a year later she still had lots of generalised fear about being harmed again," says Bryant. "She was troubled by nightmares every night; she wouldn't cook because the idea of being near a stove and something catching fire was too threatening for her; she was afraid to leave the house and whenever she heard sirens – which were not uncommon in her area – it would increase her fear markedly."

Reliving a trauma

As a veteran of working with survivors of many disasters – including the Asian tsunami and the Bali terror bombings – it was no surprise to Bryant and his team that Helen's assessment confirmed she was suffering from post-traumatic stress disorder (PTSD). It can be a debilitating condition, affecting health, work, relationships and everyday functioning. It usually involves reliving a trauma through intrusive memories, nightmares and periods of emotional distress – and it can persist for years. A recent national mental health survey found that 4 per cent of Australians had experienced PTSD in the previous year.

What did surprise the team, however, was that Helen had elsewhere already undergone the treatment of choice for this problem – cognitive behaviour therapy (CBT) – and that the therapy had been given correctly and well but had failed. CBT works better than any other therapy and helps about two-thirds of PTSD sufferers to resume a relatively normal life.

Helen was enrolled in the clinic's own CBT program – a standard 12-week course. "It essentially works on the principle that if we revisit the things that are scaring us, in a safe therapeutic way, and we stay with those memories or situations that remind us of those terrible things then we can learn that they are no longer dangerous," says Bryant. In effect, the fearful response is gradually extinguished – a process known as

extinction learning.

During her treatment, Helen revisited the day of the fires and re-engaged with things that reminded her of the trauma, such as cooking and other sources of heat. She also had cognitive therapy, aimed at correcting her extreme catastrophic appraisals about what had happened to her and the likelihood of her life being threatened again.

Yet at the end of the course she only felt a little better than she had at the beginning: “She was highly motivated and trying to do the right thing. But when we tried to engage her on what was reminding her so much of the fires, she simply couldn’t cope with that anxiety. There were times in the therapy room where she’d get very, very anxious and just want to run out.”

Source of frustration

Six months later, when the team made a routine follow-up with Helen, her condition had deteriorated and she subsequently dropped out of contact. For Bryant, such experiences have been a source of frustration not only for the sake of people like Helen but also for the scientific puzzle they pose.

Alternative drug treatments are available that can relieve the symptoms of anxiety but, unlike CBT, they do not extinguish the source of the anxiety itself: “If you come off the drugs, the symptoms can return. But once you’ve successfully finished the CBT, typically, you’re fixed.”

Tackling the puzzle of why CBT has a failure rate of about 30 per cent has led Bryant’s team into groundbreaking research, looking at whether biological differences between individuals might account for their different responses. In a landmark paper last year in the journal *Biological Psychiatry*. Bryant and other researchers from Westmead

Hospital and the UNSW Schools of Psychology and Psychiatry, went beyond monitoring brain activity and analyzing body chemistry to show there is a fundamental genetic basis for how people respond to CBT.

They looked at the serotonin transporter gene, which comes in both a long and a short form. Other studies have shown that people with the short form of the gene are more likely to suffer clinical depression after an adverse life experience. Bryant's team found that those same people were the ones for whom CBT was unsuccessful. Indeed it was the first study to show a genetic predictor of the likely outcome of psychological treatment of any anxiety disorder.

While a full understanding of this phenomenon is some way off, it seems that having the short form of the gene makes extinction learning far more difficult. Most of us soon realise after a car accident, for example, that we need not fear having an accident every time we drive. But for people with the short serotonin transporter gene they never reach that more realistic perspective.

Genetics may affect treatment response>

The findings raise important questions about whether people who carry these genetic variants should be given CBT at all, especially since the therapy itself can end up being yet another distressing experience. But they also open up new possibilities for effective treatment.

Bryant's team, for example, is now examining whether the main focus for such people could be cognitive therapy alone, or perhaps a longer period of preparatory work before commencing CBT. "We vary in our capacity to tolerate distress," notes Bryant. So perhaps an alternative treatment option could be to boost their tolerance of high emotional states by better understanding that such states are transient.

Whatever the eventual research outcome, it seems increasingly likely that someone like Helen Fraser may soon have a more personalized treatment option, starting with a simple genetic test.

More information: For more on the clinic, go [here](#)

Provided by University of New South Wales

Citation: Genetic role in post-traumatic stress (2011, September 8) retrieved 26 April 2024 from <https://medicalxpress.com/news/2011-09-genetic-role-post-traumatic-stress.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.