

The Social Defense

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On February 16, 1983, after years of severe drought, a series of nearly 200 fires now known as the Ash Wednesday bushfires swept through southeastern Australia. The wildfires displaced thousands of people, many of whom would later lose their homes, and resulted in nearly 100 deaths and more than \$1 billion in property damage.

Of the many psychological hardships that the disaster caused survivors, one in particular interested APS James McKeen Cattell Fellow Richard A. Bryant: the effect of being temporarily separated from a caregiver during a traumatic event as a child.

Psychological scientists have long known from studies of orphanages in areas such as Romania after World War II that enduring abuse and trauma as a child without parental support can inhibit a person's ability to form secure relationships throughout their lifetime. The Ash Wednesday bushfires, however, took place largely in one day, separating kids from their parents nearly at random depending on whether they were at school when the evacuation order went out. This unfortunate chain of events offered researchers a unique opportunity to study attachment, said Bryant, a professor of psychology at the University of New South Wales, Sydney, during his Award Address at the 2018 APS Annual Convention in San Francisco.

More than 800 children were psychologically assessed after the Ash Wednesday bushfires. Twenty-eight years later, Bryant and colleagues surveyed 500 of those now-adults and found that those who were separated from their parents during the fire were significantly more likely than those who were not to have an avoidant, insecure attachment style, which in turn translated to higher rates of post-traumatic stress disorder (PTSD).

“I’m not saying that’s the only explanation for this,” Bryant said. “This could also then have led to a cascade of different parenting styles and all sort of things that might have contributed to it, but it’s a teasing, tempting interpretation that just having that brief separation through a very, very intense time of threat can actually threaten one’s attachment style.”

How Attachments Are Born

Attachment theory was first popularized more than 50 years ago by British psychological scientist John Bowlby and further supported by Harry Harlow’s classic study of infant rhesus monkeys. While psychological scientists previously believed that infants bonded with their mothers simply to maintain a source of food, Harlow found that orphaned monkeys spent the majority of their time cuddling a soft cloth “mother” rather than a functional wire one equipped with a milk bottle.

“What the ‘monkey’ was doing here is giving comfort contact, and of course this is a hardwired need that we have,” Bryant said. “From a very young age we, and other species, have to rely on our attachment figures as a way of surviving. They feed us, they protect us, they nurture us in times of need.”

When those needs for social support are met, Bryant explained, children can internalize that secure attachment, allowing them to activate a mental representation of the people they are close to even when no one is there to support them. Having an inconsistent or abusive attachment figure, on the other hand, can cause children to develop an insecure attachment system characterized by anxious or avoidant behavior.

Linking Attachment, Memory, and PTSD

Memories are a pivotal part of PTSD, Bryant noted — in many ways, intrusive memories, or “intrusions,” are the fuel that drives other PTSD symptoms. Current models suggest that it may be arousal at the time of encoding traumatic memories that actually leads to intrusions, he continued.

With that in mind, Bryant undertook a series of studies designed to pinpoint how, exactly, secure attachments might serve as a psychological buffer in traumatic situations.

In one study, participants were shown subliminal flashes of images depicting either attachment figures, such as a mother with her baby, or a person standing alone followed by images of graphic medical scenes or neutral scenes. Two days later, they were invited back to the lab to report on the intrusive thoughts that may or may not have been caused by those images.

Participants with a secure attachment style who received the attachment prime before encoding

memories of the graphic images were found to have fewer intrusive thoughts than those who did not. People with an insecure attachment style, however, didn't benefit from the prime at all. In another study, securely attached people also were found to have fewer intrusive memories if the attachment prime was introduced 2 days after the initial viewing when participants were asked to retrieve memories of the graphic images. In this case, the control group was primed with positive images, such as a bag of cash, to account for the buffering effect of good mood.

When memories are retrieved, they enter a "labile" state during which synaptic plasticity allows them to be modified and reconsolidated, Bryant said. His next question, therefore, was this: If practitioners can destabilize a traumatic memory in this way before having a person think about their attachment figure, would that help reduce the impact of intrusive memories?

Bryant investigated this question using an experiment similar to those above. On the first day, student participants watched a graphic film on the aftermath of a car crash in California culminating in a body being pulled from a vehicle. Two days later, they were shown nontraumatic parts of the film to reactivate those memories and were asked to think about either an attachment figure or a positive experience. Across the next few days, participants recorded the frequency of intrusive memories, as well as how distressing and vivid those recollections were, using a mobile app on their phones.

In this case, thinking about an attachment figure while reactivating traumatic memories was found to have no impact on the frequency of intrusive thoughts. It did, however, cause participants to report them as being markedly less distressing and vivid — regardless of their attachment style.

If practitioners can help patients destabilize and alter trauma memories by thinking about attachment figures, it could provide a practical treatment option for people with PTSD, Bryant said.

Researchers have also found that thinking about attachment figures can help people repress their startle response and other fearful behaviors. This convergent evidence suggests that social support may function as a safety signal that can interfere throughout the habituation, acquisition, and extinction phases of fear acquisition.

"This is really important, because this is the process by which we understand how PTSD develops in people," Bryant said.

Altering Attachment Systems

The notion that attachment styles develop during childhood would seem to suggest that you're stuck with one for life, Bryant said. Cognitive bias modification (CBM), however, may provide an avenue for insecurely attached people to become more secure and thus more resilient to trauma.

CBM is based on the idea that people with anxiety conditions have an interpretive bias that leads them to view ambiguous stimuli as threatening or negative, Bryant explained. The training is designed to help anxious people appraise events more objectively.

Bryant led a study to test the CBM procedure by presenting 80 anxiously attached individuals with a set of 64 social scenarios such as the following:

“You realize you made a mistake at work and are afraid to tell your boss the next day. You talk to one of your parents about it and they seem to be...”

The participants then have to complete the sentence using one of two incomplete words. Those in the attachment condition were given supportive endings such as “c_mpassion_te,” while those in the nonattachment condition were given more isolating terms like “i_differ_nt.”

Having to complete the words themselves forces participants to process the phrase more deeply, enhancing the cognitive priming caused by CBM, Bryant explained.

After completing these scenarios, participants completed a series of recognition tests during which they read scenarios similar to the previous one and rated how similar in meaning two related scenarios were.

For example:

“You have just been let go from your job and you ring your best friend for support. Your friend answers your pho_e ca_l.”

Followed by:

“Your friend answers your call and tells you that they can call you back in 5 minutes” and “Your friend answers your call and tells you that they cannot talk.”

The participants’ rating of how similar the two sentences are is meant to provide an implicit measure of bias in interpretation, Bryant explained. A participant who views the scenarios from a more secure, objective perspective might rate the examples above as being roughly the same, for example, while a less securely attached individual might perceive the a friend who says they don’t have time to talk as being cold or distant. Those who were trained in secure CBM endorsed more secure sentences than those who were trained in insecure CBM.

“Essentially, what this is telling us is that by training someone to think in a biased way, we can actually shift how they’re interpreting their attachment scenarios,” Bryant said.

While shifting participants’ interpretive bias in an artificial lab environment is hardly the same as changing someone’s entire attachment system, he acknowledged, CBM for anxiety started out this way as well and has since been used successfully to help patients in clinical settings.

The real challenge, Bryant said, is to demonstrate that CBM can have the same effect on attachment style, providing once insecurely attached people with the benefits afforded by a more secure attachment style, such as reducing stress-hormone production and intrusive memories.

“It’s a big ask — I’m not sure if we can or not — but it is worth trying,” Bryant said. “We just need to start with the building blocks, which is what we see here, to see what ground we can make.”

Weathering the Storm With Social Networking

Despite the potential for therapies like CBM to improve PTSD patient outcomes, Bryant said one of his main criticisms of the trauma-research field is its emphasis on individuals rather than on the roles of relationships and community.

Even studies that touch on social support and community integration often rely on individuals' self-reported perceptions of their community, Bryant said. But social network analysis (SNA) can provide a more "sociocentric" view of mental health, he said.

SNA, a method popular among organizational psychological scientists and economists, maps the relationships among social entities, also referred to as "nodes" or "actors," whether they be people, organizations, or even countries.

"It looks at who is linked to whom, and then it looks at how those characteristics between these individuals are impacting or being impacted by other people within that social network," Bryant explained.

Four years after the Black Saturday bushfires, some of the worst wildfires in Australia's history, took 200 lives in 2009, Bryant used SNA to analyze the fires' effect on tightknit rural communities in Victoria, Australia. In addition to asking survivors about their rates of depression and PTSD, the epidemiological study also asked 1,056 participants questions about how they fit into their social network. These questions focused on whether or not there was any person or organization that participants felt close to and how, if at all, they gave or received practical assistance and emotional support.

Each participant also provided researchers with a list of up to 10 people that they knew, along with demographic information and a description of their relationship, which Bryant and colleagues used to create a social map of the more than 5,000 relationships that made up the community.

As one might expect, participants with social ties that involved supporting, or receiving support from, others were found to experience lowered rates of depression and PTSD. There was also evidence, however, for depression having a "potential contagion" effect in communities — the more depressed participants were, the more likely they were to have ties to other depressed people.

There are a few ways to interpret that, Bryant said. It could be that depression is actually contagious, causing one person's negative moods to bring other people down with them. It's also possible that depressed people are just more likely to spend time together. In addition, Bryant added, there could be other variables that cause people both to be close to one another and to be depressed.

This contagion effect didn't exist for PTSD, but risk for the condition was linked with how interconnected participants' support systems were found to be. Those in fractured social networks, knowing people who did not know each other, had an increased risk of existing PTSD, while those in more reciprocal social networks were at lower risk for the condition.

"Essentially, what that's saying is that if I'm part of a social network that's intact, then that is protective against PTSD," Bryant explained.

Bryant and colleagues are also analyzing how participants' attachment styles may overlap with these findings. Preliminary results suggest that gender may influence the ways that people with secure, anxious, and avoidant attachment styles interact with their communities.

SNA can provide a useful tool for understanding the factors that contribute to conditions like depression and PTSD, particularly in the wake of natural disasters, he added.

“If you’re talking about an earthquake or a hurricane or something like this, by definition they effect communities, large numbers of people,” Bryant said. “By focusing on the individual level, we’re actually missing out on a lot of important data, and that’s important not just for theoretical reasons but also for policy and planning.”