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Learning to not be afraid: UW psychologists treat PTSD with drug known to enhance learning

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News and Information

UWs Center for Anxiety & Traumatic Stress

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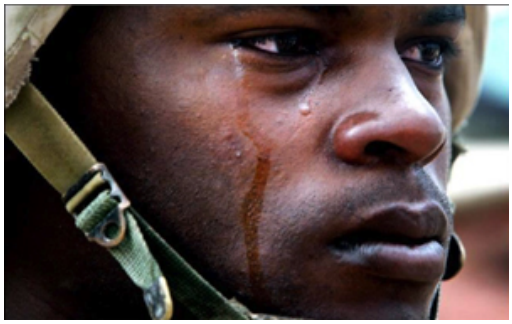
A young woman sees her boyfriend kill himself. He comes to her workplace, shoots himself in the head in front of her.

Everything linked to that violent moment – from the baldness of her boyfriends head to the violence of guns – become intrusive, unpredictable reminders that she cannot quell.

The woman, suffering from post-traumatic stress disorder (PTSD), began a therapy, in which she recounted and imagined the incident repeatedly with a therapist. Like watching a horror movie over and over again, it starts out frightening and then gradually changes.



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"It may seem counterintuitive to ask someone to repeatedly recount an event that is so scary," said Lori Zoellner, director of UWs Center for Anxiety & Traumatic Stress. "But as someone does this he or she begins to look at the memory differently and the memory has less control over their lives." The once terrifying movie becomes not so upsetting.

The PTSD therapy – called prolonged exposure therapy – works well. About two-thirds of the PTSD patients treated with it no longer have PTSD after 10 therapy sessions lasting 90 minutes each.

But Zoellner, along with colleagues at the University of Pennsylvania and the University of Texas at Austin, has a plan to make it even better and faster. In a new study, the researchers scaled down the therapy to six daily 1-hour sessions. Each session is followed by a placebo pill or a dose of a

drug called methylene blue, which is believed to help strengthen learning and insights that occurred during the therapy session. The compound is FDA-approved for other uses and has been used safely for years with few significant side effects.

The researchers are recruiting participants for the study, which is a clinical trial funded by the National Institute of Mental Health.

“This is a huge shift in how we think about psychiatric medications for treating PTSD,” Zoellner said. “Previously anxiety and depression medications have been used to treat PTSD, but in this study, were using a drug that is well-known in animal studies for improving learning how not to be afraid.”

Post-traumatic stress symptoms often emerge immediately after traumatic experiences, such as combat experience, abuse, rape, robbery, accidents and natural disasters. For a minority of individuals, these symptoms continue for months or years after the event and are called PTSD.

People with PTSD are distressed and distracted by their intrusive memories, which pop into the mind out of the blue or are triggered by reminders of the trauma. Patients also often feel anxious and depressed, including feelings of guilt or shame. They can have sleeplessness, nightmares, and even flashbacks of the event.

Edna Foa, one of the studys collaborators, developed prolonged exposure therapy to treat PTSD. She said the new study is the next step in enhancing the efficacy and efficiency of the therapy.

“With the wars in Afghanistan and Iraq, the number of PTSD patients is enormous,” said Foa, director of the University of Pennsylvanias Center for the Treatment and Study of Anxiety. Treating the thousands of military personnel who potentially have PTSD “becomes unmanageable,” she said.

“We want to exploit knowledge from animal models on memory, especially memory of the extinction of fear,” Foa said.

Animal studies show that methylene blue improves fear extinction, or learning how not to be afraid. The researchers hope that, when combined with prolonged exposure therapy, methylene blue will enhance PTSD patients ability to become less afraid of their traumatic memories.

Since prolonged, repeated recall of traumatic memories during behavior therapy stimulates new adaptive learning around the memories, the researchers predict that patients given a memory boost with methylene blue immediately after therapy sessions will make more lasting gains during therapy than those who do not take the medication.

Taken orally, the chemical properties of methylene blue make it attracted to activated regions, such as parts of the brain stimulated after thinking about a memory.

“Methylene blue easily crosses the blood-brain barrier and accumulates inside activated brain cells,” said Francisco Gonzalez-Lima, one of the studys collaborators and a psychology professor at the University of Texas at Austin. Once inside the neurons, the substance zooms in on

mitochondria – the power house of the cell – to keep it active and enable the brain cells to keep processing the memory.

The goal isnt to forget the traumatic experiences, though. The treatment is intended to help "people gain better control over their memories so that they will not be as frightened or paralyzed by them," Zoellner said. "We hope that combining talk therapy with methylene blue will help them be better able to lead happy and productive lives."

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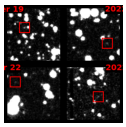

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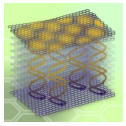

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