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By Sharon Begley

A Spotless Mind May Ease Suffering, But Erase Identity

AS A TEENAGER, the woman had suffered a horrific rape, the memory of which she carried into adulthood. The slightest mention, on television or in conversation, of a child being harmed left her short of breath and bathed in sweat. She regularly relived the trauma in nightmares and flashbacks. Once, when she was having her hair done, a radio show began to discuss sexual assaults of children; she sprang from her chair and fled the salon.

For her and for every other victim of post-traumatic stress disorder, or PTSD, bad memories are only the beginning. Recalling a traumatic memory, scientists now think, does something even worse than trigger the disabling physiological response the woman suffered: It "reconsolidates" the memory, wiring it more strongly into the mind.

Tim Foley

Emerging evidence that remembering a trauma strengthens that memory is inspiring controversial studies in which people take a drug that may block memory reconsolidation, leaving the memory intact but weakened, and extinguishing the emotion associated with it. That raises a troubling question: Will the drug rob people of an essential, even defining, aspect of their selves?

IT IS NO MYSTERY why traumatic memories are so vivid. Compare your recollection of Sept. 11, 2001, with that of Sept. 10, 2001. "When we experience something traumatic, stress hormones such as noradrenalin are released from the brain stem and reach the amygdala," says Roger Pitman of Harvard Medical School, Boston. "The amygdala tells the [memory-processing] hippocampus to remember better, burning in the memory of that event."

Because memories run on chemicals, they can be altered by chemicals. Compounds called beta blockers, which treat hypertension, are the brain's version of pushy people who sneak into company parking spaces reserved for particular employees. The beta blockers occupy the beta receptors in the amygdala that noradrenalin ordinarily fits into. Just as an employee can't go to work if she can't park, noradrenalin can't burn memories into the brain if it can't get into the receptor.

In a 2002 pilot study, Dr. Pitman and colleagues gave a beta blocker, propranolol, to people arriving at an emergency room after accidents, and for 10 days after. Three months later, the patients had fewer PTSD symptoms, and weaker memories of their trauma, than ER patients given a placebo. When reminded of their accident, they recalled it with less suffering than the placebo group.

"We interpret that as saying that propranolol interferes with the consolidation of traumatic memories," Dr. Pitman says. "The result is that you don't remember a traumatic experience any better than an ordinary one." The memory loses its emotional sting.

Scientists also have seen hints that propranolol can intervene in memories long after they form. Given to lab rats that have learned to associate a tone with an electric shock, for instance, it erases the animals' fear of the impending shock enough that they no longer freeze in terror when the tone sounds.

"The theory is, when you reactivate a memory, it needs to be reconsolidated in order to be well retained," says Dr. Pitman. "In animals, propranolol interferes with this. If it does the same in people, you have another shot at helping them." Even though the original memory was consolidated, maybe drugs can weaken it and strip it of its emotion when it is recalled.

THAT IS WHAT psychiatrist Margaret Altemus of Weill Medical College of Cornell University, New York, and colleagues hope to find out. In their study, PTSD patients take a pill whenever they recall the trauma and succumb to panic, as the rape victim did in the salon. If the theory is right, propranolol should sever the link between memory and terror. The patients will recall the horror, but not be so crippled by it.

Proponents of the therapy take offense at those who caution against yet another drug that tinkers with the mind and the brain. At a time when we seem to drug every mental quirk from shyness to fidgetyness, it seems cruel and hypocritical to draw a line at alleviating the suffering of people with PTSD. Also, lifting the paralyzing emotion of traumatic memories could enable victims to use their experiences to alleviate the suffering of others.

Critics see the prospect of white-washing memories differently. Some worry that propranolol could be abused, perhaps desensitizing soldiers, or even terrorists, so that they could commit atrocities, unconstrained by bad memories.

Others who don't go quite that far still have concerns. "We are, in essence, the sum of our memories," says Andrew Solomon, author of the 2002 best-seller "The Noonday Demon," about his battle with depression. "To work through the trauma of a memory is important and valid; to eliminate that memory and its essential affect is to rob us of some of our deep humanity."

He also worries about the slippery slope. "PTSD is an acute illness that should be treated, but the temptation to start knocking out painful day-to-day memories could become irresistible," he says. "Obliterating something that makes us human is, to me, a terrifying prospect."

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