



Human Memory: Why Bad Memories Stick

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"I'm incredibly stressed out, and this Arizona thing has really put me over the top," complained my patient, just this week, a woman in her mid fifties. "I just can't seem to let it go. It's like I'm always on edge," she lamented. Looking at her intake paperwork, I noted that her stated reason for the appointment with me was "trouble with memory." Right at that moment, I wondered if she had any idea how deeply connected were her verbal and written complaints.

Bad things happen. And the human brain is especially adept at making sure that we keep track of these events. This is an adaptive mechanism important for survival. When we are exposed to a real or perceived threatening situation, powerful things happen in the brain to memorialize aspects of the event, including all manner of associated circumstances like where, when and how it occurred. This package is stored in the brain under the direction of a structure located deep in the temporal lobe called the hippocampus. While the hippocampus itself doesn't store memories, it serves to triage our experiences based upon their survival significance.

Dangerous events are stress producers, and as such, they are associated with activation of the "fight or flight" response in which the adrenal glands increase their production of the hormone cortisol. And it is cortisol that alerts the brain as to the importance of an experience, priming the hippocampus to store the event in a "high priority file." This is the mechanism by which the traumas of our lives or the traumatic events in the lives of others are more securely stored in our brains and explains why events like the recent violence in Arizona don't readily fade from memory. These memories, while stressful, permit us to consciously modify our behavior to avoid dangerous circumstances.



Cortisol can have other more sinister effects upon the hippocampus however. When this stress hormone is persistently elevated it actually proves toxic to the very brain cells it would normally nurture -- the neurons of the hippocampus. This is why persistent stress is associated with damage and shrinkage of the hippocampus and a resultant decline in memory function.

We shouldn't forget about events like the tragic shootings in Arizona, but we should endeavor to remember the event with association to more positive feelings. Holding the victims and their families in our thoughts and prayers is an important part of healing as it begins to associate the event with our senses of compassion and empathy. But constantly revisiting the tragedy itself creates persistent stress leading to persistent cortisol activation, ultimately damaging the hippocampus, one of our most fundamentally important brain structures.

Professor Santiago Ramon Y. Cajal, Spanish neuroscientist and winner of the 1906 Nobel Prize in medicine stated, "Every man can, if he so desires, become the sculptor of his own brain." **What we choose to focus on changes our brains in a very real physical and functional sense, and this has profound implications for how our lives will play out.** As Gandhi counseled, "Keep your thoughts positive because your thoughts become your words. Keep your words positive because your words become your behaviors. Keep your behaviors positive because your behaviors become your habits. Keep your habits positive because your habits become your values. Keep your values positive because your values become your destiny."

Mental fitness is served by consciously redirecting our attention away from the constant bombardment from the media whose reason to be seems to be focused on keeping us in a state of constant alert. Living our lives locked in the situation room creates brain pathways that nurture a persistent sense of fear and foreboding, ultimately fostering the likelihood that our actions will reflect this perception, culminating in choices reduced to "flight or fight."

President Obama called upon the nation to observe a moment of silence following the Arizona tragedy. Hundreds of people gathered in prayer outside the hospital where Representative Giffords was fighting for her life. We are drawn to the calmness offered by prayer and mediation in times of anguish, and during those brief moments in which we embrace the stillness, we are redirected away from the imposition of fear and mistrust, and instead behold the goodness. In the end, this is powerfully therapeutic for us as individuals, and as a species.

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