

Post-Traumatic Stress Disorder (PTSD)



Post-traumatic stress disorder (PTSD) is an anxiety disorder that some people develop after seeing or living through an event that caused or threatened serious harm or death. According to the 2005 National Comorbidity Survey-Replication study, PTSD affects about 7.7 million American adults in a given year, though the disorder can develop at any age, including childhood. Symptoms include strong and unwanted memories of the event, bad dreams, emotional numbness, intense guilt or worry, angry outbursts, feeling “on edge,” and avoiding thoughts and situations that are reminders of the trauma.

Yesterday

- PTSD was once considered a psychological condition of combat veterans who were “shocked” by and unable to face their experiences on the battlefield.
- Much of the general public and many mental health professionals doubted whether PTSD was a true disorder.
- Soldiers with symptoms of PTSD often faced rejection by their military peers and were feared by society in general.
- Those with PTSD symptoms were often labeled as “weak” and removed from combat zones, or sometimes discharged from military service.

Today

- In 1980, PTSD was recognized as a disorder with specific symptoms that could be reliably diagnosed and was added to the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders*.
- PTSD is recognized as a psychobiological mental disorder than can affect survivors of not only combat experience, but also terrorist attacks, natural disasters, serious accidents, assault or abuse, or even sudden and major emotional losses.
- PTSD is associated with changes in brain function and structure and these changes provide clues to the

origins, treatment, and prevention of PTSD. Some cases may be delayed, with only subtle symptoms showing up initially and more severe symptoms emerging months after the traumatic event.

- Effective treatments are available, including talk therapies such as exposure therapy, cognitive behavior therapy, and medications such as sertraline (Zoloft) and paroxetine (Paxil). For some people, getting relief from symptoms involves trying more than one approach if the first approach does not work.
- Central to PTSD research is studying how strong emotions, such as fear, are linked to memory formation and retrieval. Scientists are working to find important factors that influence these responses, including relevant brain structures, biological or genetic traits, and psychosocial factors. Some examples include:
 - In 2009, NIH-funded scientists for the first time selectively blocked a learned fear memory in humans with behavioral manipulation. Participants remained free of the fear memory for at least a year. The research builds on past animal studies that indicated retrieval or reactivation of an emotional memory opens a window of opportunity in which a training procedure can alter it.
 - Learning not to fear, a process called fear extinction, appears to depend on a specific type of cell in the amygdala, a brain structure known for its role in emotion, learning, and memory. Disabling these “intercalated” (ITC) amygdala cells impairs extinction, suggesting that therapies which can boost ITC function may improve treatment effectiveness.
- Early stage research suggests that virtual reality exposure therapy (VRE) may serve as an effective and efficient alternative to traditional exposure therapy. Immersive technology that can recreate a multisensory experience—sight, sound, smell, and

touch—in the relative comfort of a doctor’s office may be more acceptable to clinicians and their patients.

- Early studies have shown that certain medications may help reduce fear, manage sleep problems, and reduce stress. These medications may be used in conjunction with psychotherapy. Further studies are testing whether such treatments are also effective for people with PTSD and determining the optimal timing and dosage for treatment.
- Researchers are studying the use of medications that may speed-up and enhance the positive effects of talk therapy. There is promising evidence that so called “cognitive enhancers,” when taken prior to talk therapy, make the process of diminishing fear memories (extinction) more efficient.
 - Research on corticosterone, a hormone in rats involved in responding to stress, and energy-producing cell structures called mitochondria revealed how individual cells adapt to cope with sudden or extreme stress. In humans, the hormone cortisol is believed to work in the same way as corticosterone does in rats. This finding may be relevant to research on a number of stress-related illnesses, including PTSD, and suggests new pathways for improving treatments.
 - A study on mice showed that the ability to adapt to stress is driven by a distinctly different molecular mechanism than is the tendency to be overwhelmed by stress. The NIH-funded researchers mapped out both mechanisms—components of which also are present in the human brain— which may one day help scientists learn how to enhance this naturally occurring phenomenon to promote resilience to psychological stress.

Tomorrow

- In the last decade, rapid progress in research on the mental and biological foundations of PTSD has led scientists to focus on prevention as a realistic and important goal. Some of the prevention strategies currently being tested are:
 - Exploring the optimal time to begin exposure therapy after trauma exposure to prevent the

development of PTSD. This treatment involves education about trauma reactions and PTSD, breathing exercises, exposure to trauma-related stressors, and talking through the trauma. Researchers will also seek to identify predictive markers, such as hormone levels and genes, for the disorder.

- Using the medication hydrocortisone, which mimics cortisol, to examine whether increasing cortisol levels may prevent or reduce PTSD symptoms.
- Related to prevention goals, research on resiliency—the ability for some people to recover from traumatic experiences or avoid adverse reactions entirely— may lead to ways to predict who is most likely to develop PTSD following highly stressful events. Treatment efforts could then be targeted more efficiently toward those who need it most.
- For improving response to mass trauma events, NIH researchers are testing creative approaches to making cognitive and behavioral therapies and other interventions widely available, such as with Internet-based, self-help therapy and telephone assisted therapy.

For more information, please contact the NIMH Information Center at nimhinfo@nih.gov or 301-443-4513.

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