Letters

Does "Fight or Flight" Need Updating?

TO THE EDITOR: Walter Cannon's original formulation of the term for the human response to threat, "fight or flight," was coined exactly 75 years ago, in 1929.[1] It is an easily remembered catchphrase that seems to capture the essence of the phenomena it describes. It accurately evokes two key behaviors that we see occurring in response to threat. This phrase has led to certain ingrained assumptions about what to expect in our patients and, because of its broad usage, what they expect of themselves. It is a testament to the foundational significance of Cannon's work that the term he used continues to shape clinical understanding and to influence popular culture's understanding of stress as well. But the phrase has not been updated to incorporate important advances in the understanding of the acute response to extreme stress. Specifically, the term ignores major advances in stress research made since it was coined.

Both human and animal research on the pan-mammalian response to stress has advanced considerably since 1929, and it may be time to formulate a new form of this catchphrase that presents a more complete and nuanced picture of how we respond to danger.

The phrase "fight or flight" has influenced the understanding and expectations of both clinicians and patients; however, both the order and the completeness of Cannon's famous phrase are suspect. "Fight or flight" mischaracterizes the ordered sequence of responses that mammals exhibit as a threat escalates or approaches. In recent years, ethologists working with non-human primates have clearly established four distinct fear responses that proceed sequentially in response to increasing threat. The order of these responses may have important implications for understanding and treating acute stress in humans.

The sequence, originally described by Jeffrey A. Gray,[2] begins with what ethologists call "the freeze response" or "freezing," terms corresponding to what clinicians typically refer to as hypervigilance (being on guard, watchful, or hyper-alert). This initial freeze response is the "stop, look, and listen" response associated with fear. The survival advantage of this response is obvious. Specifically, ethological research has demonstrated that prey that remain "frozen" during a threat are more likely to avoid detection because the visual cortex and the retina of mammalian carnivores primarily detect moving objects rather than color.[3]

After this initial freeze response, the next response in the sequence is an attempt to flee, and once this has been exhausted, there is an attempt to fight—in that order. Thus, "flight or fight" is the proper order of responses rather than "fight or flight." This reversal of order may have nontrivial clinical implications that become clear once one examines the conflicting demands of biological and social imperatives often present in life-threatening situations. Overcoming the biological predisposition to act one way when sociocultural norms demand another type of action complicates an already overwhelming scenario.

To illustrate, consider a military combat situation. When a soldier encounters an initial sign of threat, the socially appropriate response, i.e., the response demanded by his military training and reinforced by other members of his unit, is usually the "stop, watch, and listen" heightened-alertness response. This behavior is consistent with the biological predisposition toward the first part of the sequence: the freeze response. As the reality of a firefight grows imminent, however, the biological and situational demands are no longer in concert. The evolved hardwired instinctual response to flee is in conflict with his/her military training. This conflict is bound to further increase the intensity of this already stressful experience. It is a conflict that is hidden, however, by the misconception that a human's first instinct is to fight.

In addition to the omission of the initial freezing response, other important fear responses have remained obscured, in part because of their omission from "fight or flight," and these other fear responses have important clinical implications as well. The next step in the sequence of fear-circuitry responses after fighting is tonic immobility. This response occurs during direct physical contact with the carnivore (or the human predator). Tonic immobility was referred to as "playing dead" in the early ethological literature and has been referred to as peritraumatic "panic-like" symptoms in the posttraumatic stress disorder literature.[4] We prefer a term widely used in Europe: "fright." The corresponding French term is "*effroi.*"[5] "Fright" is also the English word that best captures the Kraepelinean (and modern German) concept of "*Schreck*" as in "*Schrekneurosen.*"[4–6] Furthermore, the ethological term "freeze" discussed closely resembles the meaning of "freeze" in military and police parlance.

Unfortunately, in child psychology, "fright" (tonic immobility) has

also been referred to as "freezing." This has created much confusion. The tonic immobility (fright) response is panmammalian. Tonic immobility is most useful when a slow-moving vulnerable organism (e.g., the opossum) is confronted with a life-threatening situation involving mobile, large predators.[3,7] Tonic immobility may enhance survival when a predator temporarily loosens its grip on captured prey under the assumption that it is indeed dead, providing the prey with an opportunity for escape. It is also a response that may be adaptive in humans when there is no possibility of escaping or winning a fight.[7]

The clinical relevance of tonic immobility as a survival response may be illustrated best in relation to the behavior of some victims of violence or sexual assault who exhibit extreme passivity during the assault. Here again, an understanding of the hard-wired nature of the response might help ameliorate one dimension of the painful memories that plague some victims who wonder why they did not put up more of a fight.

We propose the adoption of the expanded and reordered phrase "freeze, flight, fight, or fright" as a more complete and nuanced alternative to "fight or flight." While we cannot hope to compete with the legacy of Cannon's phrase in the culture at large, adoption of this alternative term within the clinical community may help keep clinicians aware of the relevant advances in understanding of the human stress response made since the original term "fight or flight" was coined three-quarters of a century ago.

H. Stefan Bracha, M.D.
Tyler C. Ralston, M.A.
Jennifer M. Matsukawa, M.A.
National Center for PTSD,
Department of Veterans Affairs,
Pacific Islands Health Care
System, Spark M. Matsunaga
Medical Center, Honolulu, Hawaii

Andrew E. Williams, M.A.
Department of Psychology,
University of Hawaii at Manoa,
Honolulu, Hawaii

Adam S. Bracha, B.A.
Biomedical-Research Consultant,
Honolulu, Hawaii

This material is based upon work supported in part by the Office of Research and Development, Medical Research Service, Department of Veterans Affairs, VA Pacific Islands Health Care System, Spark M. Matsunaga Medical Center. Support was also provided by a National Alliance for Research on Schizophrenia and Depression (NARSAD) Independent Investigator Award and the VA National Center for PTSD.

References

1. Cannon WB: Bodily Changes in Pain, Hunger, Fear and Rage: An Account of Recent Research Into the Function of Emotional Excitement, 2nd ed. New York, Appleton-Century-Crofts, 1929
2. Gray JA: The Psychology of Fear and Stress, 2nd ed. Cambridge, Cambridge University Press, 1988
3. Nesse RM: Proximate and evolutionary studies of anxiety, stress and depression: synergy at the interface. Neurosci Biobehav Rev 1999; 23:895–903
4. Bracha HS, Williams AE, Haynes SN, Kubany ES, Ralston TC, Yamashita JM: The STRS (shortness of breath, tremulousness, racing heart, and sweating): a brief checklist for acute distress with panic-like autonomic indicators; development and factor structure. Ann Gen Hosp Psychiatry 2004 (http://www.general-hospital-psychiatry.com/content/3/1/8)
5. Vaiva G, Ducrocq F, Jezequel K, Averland B, Lestavel P, Brunet A, Marmar CR: Immediate treatment with propranolol decreases posttraumatic stress disorder two months after trauma. Biol Psychiatry 2003; 54:947–949
6. Kraepelin E: Die schreckneurosen, in Ein lehrbuch fur studieren und aertze, vol II. Edited by Barth JA. Leipzig, 1899
7. Perry BD, Pollard RA, Blakley TL, Baker WL, Vigilante D: Childhood trauma, the neurobiology of adaptation, and "use-dependent" development of the brain: How "states" become "traits." Infant Ment Health J 1995; 16:271–291

Hypertensive Urgency With Clonidine and Mirtazepine

TO THE EDITOR: We report a case of hypertensive urgency in a patient maintained with clonidine and mirtazepine prescribed concurrently. This interaction has been previously reported in the medical literature as "hypertensive urgency".[1] To our knowledge, this is the first such report in the psychiatric literature and would benefit colleagues who practice psychopharmacology and need to be aware of this potential interaction, which can result in serious life-threatening hypertensive urgency.[2]

Case Report

Mr. A was a 53-year-old man with a history of major depressive disorder, posttraumatic stress disorder, alcohol dependence, hepatitis C, and hypertension. He was admitted to an inpatient psychiatry unit for alcohol detoxification. He was placed on a temazepam taper: day 1, 30 mg of oral temazepam every 6 hours; day 2, 30 mg every 8 hours; day 3, 30 mg every 12 hours; day 4, 30 mg/day; and then discontinuation. The taper was completed over 4 days with an uneventful detoxification.

On admission, Mr. A's antihypertensive medications were 0.1 mg of clonidine every 8 hours, 40 mg b.i.d. of lisinopril, 50 mg b.i.d. of metropolol, and a clonidine patch of 0.3 mg every 8 hours.

For the treatment of depression, Mr. A was given mirtazepine, 30 mg/day, on hospital day 1. On hospital day 4, his dose was increased to 45 mg/day, and the 45-mg dose was given at 9:01 p.m. Later that night, at 11:33 p.m., Mr. A's blood pressure increased to 250/130 mm Hg. He was asymptomatic and was taken to the emergency room, where he received two doses of intra-