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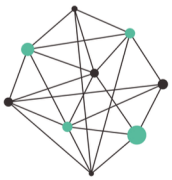

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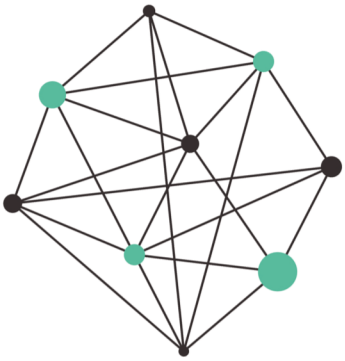

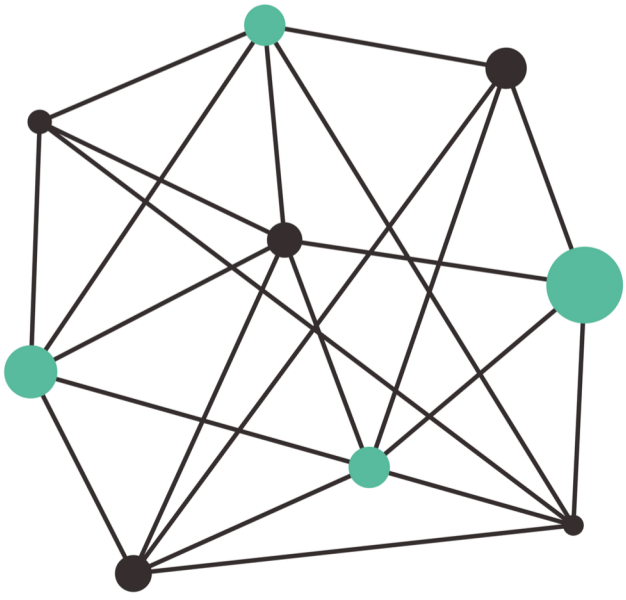

Addressing the confusion in language within the literature of trauma: A reflective account and conceptual synthesis

Michael Guilding

Abstract

There is much confusion in the literature concerned with our biological responses to threat particularly as regards the states of "Freeze" and "Tonic Immobility". The term "Freeze" is used by various authors to describe three quite different biological states, while an unchallenged decades-old hypothesis concerning Tonic Immobility may have obscured our understanding of parasympathetic shutdown in response to a seemingly inescapable threat to life. This confusion can prevent therapists from clearly understanding trauma responses and thus limits our ability to help our clients. This article examines some contradictions in the literature and proposes a clearer terminology for describing human fear responses.

This reflective account, that synthesizes selected literature with clinical and personal observations, is an extract from Michael Guilding's forthcoming book "Fear in the Therapy Room: A survival guide for working with complex trauma", due to be published in June 2026 by Hammersmith Books, who have given permission for its inclusion in the Journal.

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Outlining the problem

In the course of trying to understand our fear-system there have been many occasions where I hit a "roadblock" and just couldn't make sense of what I was reading. Over time, the problem resolved into two main issues.

1. I could not understand why there was such confusion over the use of the word "Freeze". It is used with great frequency throughout the literature of threat-response, but it means different things for different writers. Some use it to describe the Orienting Response where we evaluate a threat and prepare to respond to it, some use it to describe a rigid "locked-muscle" state of hyper-arousal where the fight-flight response is active but "put on hold"[1], while many others use it to describe the state of metabolic shutdown when death seems imminent.

2. I struggled to get my head around the concept of "Tonic Immobility" and whether this refers to a rigid or a weak muscle tone. Tonic Immobility is a phrase used by scientists who study animals in their natural environment, to describe the physical collapse of prey animals when caught by a predator. Stephen Porges' Polyvagal Theory[2] explains the evolution of this physical collapse as a parasympathetic shutdown with weak muscle tone triggered by the dorsal vagus nerve. This appeared to conflict with many authors who describe Tonic Immobility as a state of sympathetic nervous system arousal characterised by rigid muscle tone.

Why does this matter?

Each of the three fear-system responses, which I characterise as Fear-Alert (the Orienting Response), Fear-Arousal (Fight, Flight, Freeze and Fright) and Fear-Collapse (Tonic Immobility)[3], is a distinct set of biological processes, so applying the same word, "Freeze", to these different responses is a recipe for confusion. Lack of clarity around Tonic Immobility limits our ability to help our clients recognize and understand the biological processes related to trauma. This confusion cost me a lot of time as I struggled to make sense of the biology of trauma and delayed my efforts to fully integrate it into my work with clients. A number of therapists attending my workshops reported experiencing similar difficulties.

My first struggles to understand

I first hit this confusion reading Peter Levine's book, In an Unspoken Voice[4]. I found it eye-opening and exciting, but on second reading I had some problems with understanding, starting with this passage:

[1] Kozlowska et al. (2015), p.267.
[2] Porges (2011).
[3] Guilding (2020).
[4] Levine (2010).

"When an organism perceives overwhelming mortal danger (with little or no chance for escape) the biological response is a global one of paralysis and shutdown. Ethologists[1] call this innate response Tonic Immobility (TI). Humans experience this frozen state as helpless terror and panic"[2].

This last sentence seemed to contradict both my own experience of an immobility collapse, and what I had been reading of Stephen Porges:

"In humans we observe a behavioural shutdown, frequently accompanied by very weak muscle tone. We also observe physiological changes: heart rate and breathing slow, and blood pressure drops." [3]

Both my experience and Porges' observations related to parasympathetic nervous system collapse, while Levine's description of Tonic Immobility in humans places it clearly in sympathetic nervous system arousal, matching Le Doux's definition of "Freeze"[4]. It also seemed to contradict much of what Levine himself had written. For example, Levine gives an example of an experience of "overwhelming mortal danger" using the explorer David Livingstone's account of being attacked by a lion which seized him by the shoulder, and shook him like a rat:

"It caused a sort of dreaminess in which there was no sense of pain nor feeling of terror, though quite conscious of all that was happening…. The shake annihilated fear, and allowed no sense of horror in looking round at the beast"[5]

As I examined sources to try to make sense of this confusion, it gradually dawned on me that, taken as a whole, the literature relating to our biological threat responses was a mess. Before reaching this conclusion however, I struggled with a sense that something had gone wrong with my brain because I couldn't arrive at a coherent understanding of what I was reading.

[1] Scientists who study animal behaviour in the wild.
[2] Levine (2010), pp.23-24.
[3] Porges (2011), p.14.
[4] Le Doux (1998), pp. 141-142. He describes a rat, subjected to a fear conditioning experiment which "…stops dead in its tracks and adopts the characteristic freezing position – crouching down and remaining motionless, except for the rhythmic chest movements required for breathing. In addition, the rat's fur stands on end, its blood pressure and heart rate rise, and stress hormones are released into its bloodstream".
[5] Levine (2010), p.50.

An overview of different frameworks

I found it helpful to draw up a chart which reflects my understanding of the terminology used by the key authors I examined in trying to resolve this issue. (Fig.1).

	Orienting	Mobilising			S	
	Sympathetic Nervous System				Parasympathe	
	Body preparing for action	Body active		Body locked	**Tipping-Point**	Mild shut-down	Mc shu
Cannon 1915		Flight	Fight				
Le Doux 1997		Flight	Fight	Freeze			
Bracha 2004	Freeze	Flight	Fight	Fright & Tonic Immobility		Colla	
Levine 2003, 2010	Arrest	Flight	Fight	Freeze & Tonic Immobility		Fold & (but often	
Schauer & Elbert 2010	Freeze	Flight	Fight	?	Fright & Tonic Immobility		
Baldwin 2013	Freeze-alert	Flight	Fight	Freeze-Fright & Tonic Immobility		Flac	
Kozlowska et al. 2015	Arousal	Flight	Fight	Freeze	Tonic Immobility	Co	
Guilding 2020	Fear-Alert	Fear-Arousal				F	
		Flight	Fight	Freeze	Fright		
Symptoms	Anxiety		Anger & Rage	Panic		Low Mood	D

Fig. 1 Terminology used for fear-system respons

More than a century ago Cannon[1] wrote of the Fight or Flight response, which later became very well known, and dominated our understanding of fear responses until relatively recently. By the time I first came across the concept of a "fear-system", Cannon's Fight and Flight had already been supplemented by the Freeze response, a hyper-aroused but "locked" rigid-muscle sympathetic nervous system response adopted when there was no obvious escape route from danger[2].

Bracha[3] expanded Cannon's work and included the Orienting Response (the body's preparatory response to danger at a distance) in the fear-system, but he named it "Freeze", while describing the state Le Doux had called Freeze as "Fright". Bracha also described Fright as Tonic Immobility. Having therefore characterised Tonic Immobility as a rigid-muscle hyper-aroused state, he then proposed the term "Collapsed Immobility" to cover the parasympathetic state of loss of muscle tone.

Levine[4] also included the Orienting Response in the fear-system but used the term "Arrest" for this stage, instead of Freeze. He reserved the word "Freeze" for hyper-arousal (consistent with Le Doux's use of the word) and proposed the term "Fold" for parasympathetic collapse. He used the term Tonic Immobility for both Freeze and Fold, (though he often also referred to both as Freeze).

Schauer and Elbert[5] in their "Fear-Cascade" followed Bracha's terminology (Freeze) for the Orienting Response but described Fright (which they also described as Tonic Immobility) as a tipping point into a parasympathetic collapse. They divided this collapse into "Flag" and "Faint". Their model does not appear to cover a state which is aroused but locked but does not necessarily tip into collapse – hence my question mark in fig.1.

Baldwin[6] named the Orienting Response "Freeze-Alert" and called the state of locked hyper-arousal both "Freeze-Fright" and "Tonic Immobility". He described parasympathetic collapse as "Flaccid Immobility".

Kozlowska and others[7] termed the Orienting Response "Arousal". They posited a Freeze state which was separate from Fright, and agreed with Schauer and Elbert in seeing Fright (which they also described as Tonic Immobility) as a tipping point into parasympathetic collapse, which, in agreement with Bracha they termed "Collapsed Immobility"

[1] Cannon (1915).
[2] Le Doux (1998).
[3] Bracha (2004).
[4] Levine (2003).
[5] Schauer and Elbert (2010).
[6] Baldwin (2013).
[7] Kozlowska et al. (2015).

Examining the evidence

Apart from the confusion of terminology, what I found difficult to understand in all this was why the term "Tonic Immobility", taken from the sudden collapse of animals in the wild in the context of predation, was being used to refer to hyper-aroused states of Freeze and Fright, and not to parasympathetic collapse, (apart from in Levine's 2003 article). It seemed clear to me from the work of Porges[1] on the evolution of the dorsal vagus, that animal and human Tonic Immobility was a form of parasympathetic collapse.

Case illustrations in the literature, supposedly describing Tonic Immobility, simply reinforced this view. For example, Kozlowska and others[2] gave a couple of vignettes of Tonic Immobility which seemed to describe a parasympathetic collapse, not a hyper-aroused state. One vignette described a 9 year old girl suffering from dissociative states, with no evidence of rigid muscle tone presented, and including an observation that her father "used gentle touch" to shift her out of these episodes, (exactly as the female doctor did for Levine himself when he was dipping in and out of parasympathetic collapse after his car accident.[3])

Their second "Tonic Immobility" vignette presented an account of a soldier, who experienced shutdown during a firefight, describing him as:

"feeling strangely detached from the situation. He was unable to lift his head, move his limbs or aim his rifle. He recalled a sensation of being drawn to the ground, a heavy sensation that he could not resist."[4]

He recovered from this collapse only when joined by another soldier, and not until he returned to his base did he realise he had been incontinent of both urine and faeces.

This account with the emphasis on the sensation of "heaviness" combined with complete physical collapse and the loss of bladder and bowel control would appear to indicate a powerful dorsal vagal response with flaccid rather than stiff muscle tone.[5]

[1] Porges (2011).
[2] Kozlowska et al. (2015).
[3] Levine (2010).
[4] Kozlowska et al. (2015), p.272
[5] Defecation during flight appears to be common in the animal world, involving a co-activation of dorsal vagal and sympathetic nervous system responses, but this example described a collapse rather than a flight, with no evidence presented of high muscle tone.

The origin of the confusion?

As I followed sources to try to understand how Tonic Immobility came to be associated with the (hyper-aroused) Freeze response, the evidence pointed back to Gordon Gallup[1] who worked on inducing states of Tonic Immobility in animals, by restraining them (or turning them upside down). The immobility states could last from a few seconds to hours, and Gallup noted that the higher the level of fear immediately before the restraint, the longer the animal remained immobile. Gallup proposed the hypothesis that Tonic Immobility may be "the evolutionary precursor to catatonic schizophrenia in man."

He described the chickens he experimented on in words that clearly convey his hypothetical perspective. He claimed that the restrained chicken

"...assumes an almost catatonic-like state" and also that in this state, "the legs may be flexed or extended, (often exhibiting signs of catatonic-like waxy flexibility)."[2]

"Waxy flexibility" refers to "a condition in which a patient's limbs retain any position into which they are manipulated by another person, and which occurs especially in catatonic schizophrenia."[3] In other words, there is a degree of muscular rigidity which can defy gravity.

I would suggest that doubts might be raised about the scientific objectivity of Gallup's observations. I suspect that his observations may have influenced subsequent researchers, and that this may be the chief reason that so many describe Tonic Immobility as a state of hyper-arousal, which then gets confused with the state of Freeze as described by Le Doux. Indeed, this approach is now built into a psychological measurement tool for evaluating Tonic Immobility[4] which precedes each question with "When I Freeze…", or "After unfreezing…". These are leading questions which will preclude experiences of Fear-Collapse that don't feel like a rigid-muscle "Freeze" state.

[1] Gallup (1977).
[2] Gallup (1977), pp.41-43.
[3] Merriam-Webster.com Medical Dictionary
[4] Lloyd et al. (2019).

The inclusion of such questions as “When I Freeze I take short quick breaths”, alongside “When I Freeze my muscles go limp” shows that two opposing biological states are being shoehorned into the “Tonic Immobility Response” which in my mind deprives it of any value as a scientific or clinical concept. If we are to understand our fear responses and their underlying biological processes, the language we use in describing our observations needs to be precise, the metaphors accurate. If I translate the sentence “When I Freeze my muscles go limp” into plain English, it conveys the meaning “when my muscles go rigid, my muscles are not rigid”. I think this neatly sums up the mess we have got into with the concept of Tonic Immobility.

For me, the key question at the centre of this confusion is whether there is tension or not in the muscles when an animal or human goes into a collapsed state when there is an imminent threat to their life. I would invite the reader to refer to https://www.youtube.com/watch?v=lAtW7nJUcRA, available on YouTube[1] This video shows an antelope in a state of Tonic Immobility, having been caught by a leopard. The antelope’s nose is being held in the leopard’s jaws, but when the leopard is distracted and loosens its grip, the antelope’s head simply flops to the ground. Its muscles appear to show no sign of “waxy flexibility”, but rather the flaccidity associated with “Collapsed Immobility”.

Gallup, in describing his experimental subjects observed “Parkinsonian tremors of the limbs”[2]. This makes me wonder whether, in his understanding of Tonic Immobility, he is conflating an immobile collapse (without muscle tone) with the subsequent transition out of immobility, (where muscle tone is recovered and tremoring often follows).

Conclusion

As a layperson examining this literature I am unconvinced that Tonic Immobility and Collapsed Immobility are separate biological states and would suggest that the introduction of the term Collapsed Immobility only became necessary because Gallup, in pursuing his dubious catatonia hypothesis, had hijacked the term “Tonic Immobility” as belonging to a rigid-muscle state.

[1] YouTube (100100 channel),
[2] Gallup (1977), p.41. He does appear to have a tendency to view his animal observations through the lens of human mental or neurological illness.

My own conclusion is that there is a rigid “locked” muscle state that can be properly termed “Freeze”, which indicates sympathetic nervous system hyper-arousal, (Fear-Arousal in my terminology), and a limp muscle state which could be termed Tonic Immobility, which involves a metabolic shutdown triggered by the parasympathetic nervous system, (which I call Fear-Collapse). Some of the confusion around this term may arise from the fact that the adjective “tonic” indicates muscle tone without specifying whether this is stiff or flaccid. However, as ethologists have used this term for many years for the collapse of animals in the face of an extreme threat to life, I think it should be retained for human collapse in similar circumstances. I would therefore discard the term Collapsed Immobility as being redundant.

The state of “Fright”, the peak of hyper-arousal, then straddles these two opposing systems as a tipping point, as Schauer and Elbert proposed. I have found this theoretical framework works well in clinical practice, describing my clients’ experiences with an accuracy that often evoked in them feelings of considerable relief.

It is easy to see how confusion arises in trying to describe fear responses, as they can shift so quickly from one state to another, and there are three types of “stillness” - Fear-Alert, Freeze (an aspect of Fear-Arousal) and Fear-Collapse - that might possibly be confused.

I understand the stillness of Fear-Alert as being underpinned by a moderate muscular tension which could switch into powerful action, but also quickly relax into rest. I see the Freeze state as involving a stronger, more rigid muscular tension which is holding in check the powerful energy of hyper-arousal and which cannot calm quickly.

As for using the term Freeze to describe Tonic Immobility (Fear-Collapse), this makes no sense to me at all. The word Freeze is associated in our minds with the rigid state of water at 0° centigrade, so it is an accurate metaphor for the “locked” or rigid-muscle state of Fear-Arousal (Fight-Flight “put on hold”) and creates confusion if applied to Fear-Collapse where the muscles are limp and without energy.

Postscript – Explaining my own terminology

The confusion of language in the threat-response literature compelled me to use my own descriptive terms – Fear-Alert, Fear-Arousal and Fear-Collapse - in order to reach a clear understand of the biology of our fear-system responses.

I chose the word “Alert” (used by Baldwin and, at times, by Levine) for the Orienting Response, as it seemed to most accurately convey the heightened attention in this “preparation for action” stage.

I chose “Arousal” for the Fight, Flight, Freeze and Fright responses, as this reflects the heightened metabolic state of hyper-arousal underpinning these responses.

I chose “Collapse” for the metabolic shutdown of last resort as this accurately reflects our experience of the continuum of energy loss from slight postural collapse to full physical prostration.

I then prefixed these words with “Fear-” to distinguish each response to external, social or imagined dangers from a range of other autonomic nervous system responses which use the same biological processes.

- The body’s “Alert” state appears to be activated when we give focused attention to a task such as mental problem-solving.
- The sympathetic nervous system’s “Arousal” response is activated in sports and many forms of manual work.
- The parasympathetic nervous system’s “Collapse” response is used by the body as a survival strategy in the event of major fluid loss, and as an energy-conservation response to allow the body to fight viral and bacterial infection, process toxins, recover from exhaustion and also assist the process of conception[1].

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[1] Levine (2010) who notes that the post-orgasm state of dreaminess is a dorsal vagus shutdown which increases the chances of conception.

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