a practitioner's guide to the

2026

POLYVAGAL THEORY DEBATE

A white paper on what trauma-informed practitioners and educators actually need to know about the 2026 Polyvagal Theory debate

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about us

This paper is a free resource, produced as part of Trauma-Informed Leadership's social enterprise mission: making rigorous, honest trauma-informed education available to the practitioners and communities who need it most.

I'm Renée Robson - a trauma-informed practitioner, educator + organisational consultant working at the intersection of nervous system regulation, somatic practice, psychosocial safety and organisational systems design. I am a certified TCTSY facilitator and RYT500 yoga teacher specialising in complex trauma and nervous system dysregulation.

Through Trauma-Informed Yoga Australia I facilitate 1:1 and group therapeutic yoga and support yoga teachers, teacher training schools, and workplace and mental health settings to build genuine capacity in trauma-informed practice.

Through Trauma-Informed Leadership I work with organisations and leaders - particularly in for-purpose, mental health, and high-impact environments - delivering keynotes, learning programs + strategic consulting.

This work is grounded in evidence, informed by lived experience, and built on the belief that trauma-informed practice belongs everywhere people are.

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introduction

In 2026, a paper signed by 39 researchers in physiology and evolutionary biology was published in Clinical Neuropsychiatry arguing that Polyvagal Theory is scientifically untenable. The headline has spread quickly - often without much context, and amplified by influencer-style explainers: high on clickbait, low on practice, evidence or lived experience.

If you have been using Polyvagal Theory to explain your work, or have built training programs around it, you are might be asking:

- Do we throw it out?
- What actually needs to change?
- What is settled and what is genuinely up in the air?
- Is this about terminology, or does the substance of the theory shift?
- And what does any of it mean for how you practice, explain and educate in 2026?

Before moving into that, something broader needs naming:

When Western clinical research challenges a theory that has become foundational in psychotherapy, education, yoga and social work, that institution moves to the centre of the room. Rigorous science is how knowledge evolves, and that matters. It is also worth being clear that communities and traditions working with breath, body, and relational safety for thousands of years do not require a published study to confirm that their practices are real. Speaking from experience, it is considerably easier to explain a breathwork technique to a boardroom by referencing a Harvard study than by referencing decades of somatic practice. That is a fact about power and credibility in Western institutional spaces.

Polyvagal Theory is one way of explaining what is happening in a person's experience and in their body - a lens shaped by Western science in the 21st century. It is often referenced as a key part of trauma-informed practice education, and it has more to do with how human experience gets explained through science than it does with the actual human somatic experience. Like all things, it's not infallible, neither is the critique of it.

Supporting people experiencing trauma and chronic stress in person-centred ways matters. Much of what trauma-informed somatic and yoga practice is built on are also cultural and spiritual practices that have existed for thousands of years - without requiring Western institutional validation, clinical studies, or peer review to demonstrate their value.

Polyvagal Theory isn't the 'foundation' of trauma-informed practice. The window of tolerance, co-regulation, Trauma-Informed Practice Principles and somatic/body-based approaches to trauma all have roots well outside Porges' framework. What Polyvagal Theory provided was a particular biological narrative that made embodied practice legible to clinical and institutional audiences. Some of details now need to be updated - but the practice, the work, that stands.

This paper assumes two things can be true, and asks the ready to consider:

1. That clinical, research, and practice expertise are valuable and central to trauma-informed practices, and
2. That lived experience is centred, and cultural practices are not dismissed or minimised because they fall outside a narrow clinical model, or have not yet been studied in ways that institutions/hierarchies recognise.

It is through open, honest engagement with changes in evidence that trauma-informed practice will continue to grow and embed itself where it is needed most. That is the spirit in which this paper is offered, and with the greatest thanks to all of those who have progressed this work to where it is now - and the future leaders who will take it further.

what is polyvagal theory again?

Polyvagal Theory was developed by neuroscientist Stephen Porges from 1994 onwards. It proposes that the autonomic nervous system - the part of the nervous system that regulates involuntary functions like heart rate, breathing, and stress responses - does not simply toggle between activation and calm. Instead, Porges argued it operates across three functional states, organised hierarchically on a 'ladder':

- A social engagement state (associated with felt safety, connection, and flexible response)
- A mobilisation state (associated with fight or flight)
- An immobilisation state (associated with freeze, shutdown, or dissociation)

Polyvagal theory gave trauma-informed practitioners a biological narrative for why people respond to threat the way they do, and why relational safety - not just cognitive reframing - is central to recovery. It became a foundational language and key training theory in trauma-informed training, yoga, social work, and education over the past couple of decades.

what happened? the 2026 debate

The Grossman et al. paper (2026) argued that some of the physiological and evolutionary claims within Polyvagal Theory are not supported by current evidence. The authors included specialists whose own research had previously been cited by Porges in support of his theory - their position has now shifted to discredit the Polyvagal Theory framework as an inaccurate biological model for clinical practice.

Porges responded in the same journal issue, arguing that the critique evaluated a version of his theory that does not accurately represent its published claims, and that many of the objections had already been addressed in the peer-reviewed literature over the previous two decades. His central point was that the critics had confused anatomy with physiology - the physical structures of the vagus nerve with how those structures are organised and used. In his reading, the theory remains intact.

What has followed in practitioner spaces is largely a product of influencer-style analysis: Polyvagal Theory is either codswallop or completely vindicated, depending on who you are reading and which sources you're listening to. Neither position reflects what the papers actually say. The truth sits in the detail, and the detail is more useful to practitioners than either extreme.

The specifics of the argument

To understand what Grossman et al. are actually challenging, it helps to be clear about what Polyvagal Theory does and does not claim.

Polyvagal Theory has never argued that the physical structures of the vagus nerve are unique to mammals. The claim is that mammals use these structures in a functionally distinct way - integrating heart rate regulation with the social engagement system, including facial expression, voice, listening, and the breath-movement coordination that underpins co-regulation between people.

Grossman et al. identify three specific areas of challenge that practitioners and educators need to understand:

1. The Polyvagal ladder
2. The 'reptilian' brain & the evolutionary timeline
3. The anatomy vs physiology distinction.

A brief summary of each follows:

1. The Polyvagal ladder

The ladder model proposes that the nervous system moves up and down through states in a fixed sequence - from social engagement, down through fight/flight, and into freeze. It has been a widely used teaching tool. In practice, many trauma-informed educators had already moved away from the purist 'ladder' explanation, because it doesn't match what people actually experience. Grossman et al.'s critique lands on ground experienced somatic practitioners had already been navigating.

What the evidence actually suggests:

- Autonomic states are not sequential. They operate simultaneously.
- A person can be both mobilised and socially engaged at the same time.
- Movement between states is not a ladder - it is dynamic and multi-directional.
- The nervous system responds in real time, not in a fixed order.

The nervous system is not a ladder. It is a whole-body, adaptive system.

2. The 'reptilian' brain & the evolutionary timeline

Polyvagal Theory draws on an evolutionary narrative in which older neural structures - particularly those linked to freeze and shutdown - were framed as primitive 'reptilian' remnants. Grossman et al. challenged this on two grounds.

1. On the evolutionary timeline:

- Research across vertebrate groups has documented myelinated cardiac vagal control in species dating back approximately 500 million years.
- This predates mammals and is present across fish, amphibians, reptiles and birds.
- The idea that these structures are uniquely or distinctly mammalian does not hold up to current evolutionary biology understanding.

2. On the 'reptile brain':

- No part of a living nervous system is simply 'older' or less evolved.
- The nervous system is an integrated whole, continuously shaped by evolution across all species alive today.
- The "reptilian brain" concept is from MacLean's Triune Brain model from the 60s - which has been being questioned for decades. Some of the biological explanations and definitions in Polyvagal Theory draw from it.

3. The anatomy vs physiology distinction

Grossman et al. also argue that the functional distinctions Polyvagal Theory draws between its two key nerve centres - the Nucleus Ambiguus and the Dorsal Motor Nucleus - are not as clear as the theory implies. In plain English: they found no convincing evidence that the specific nerve pathway Polyvagal Theory associates with freeze and shutdown actually causes the dramatic physiological responses the theory describes in humans (ie to a full 'freeze' with the heart slowing to almost a stop).

Porges' position is that this misses the point and that the presence of similar structures in other species doesn't answer how mammals have organised and used them. His theory describes how the system works as a whole - not which anatomical structures/biology is exclusive to which species.

Where both sides agree:

- The vagus nerve is involved in regulation.
- Safety, co-regulation, and stress responses are real and physiologically grounded.
- The clinical framework for trauma-informed practice doesn't change as a result of this debate.

Where they disagree:

- The biological specifics of some the mechanisms explaining how the theory works
- What we can reliably measure, and
- What the evolutionary story is.

So - we need to decide on how we move forward as practitioners*****.

***** *practitioners: inclusive of any/all trauma-informed practice practitioner - whether it's yoga, mental health, education, justice or other areas.*

Dr Peter Levine + Somatic Experiencing

I have long relied on Peter Levine's Somatic Experiencing framework more than Polyvagal Theory to explain how the body experiences threat. Levine's explanation of how the nervous system organises responses to overwhelming experience - and how the body holds and releases those responses through movement and sensation - doesn't depend on the specific claims now being debated.

Clinical and somatic understandings of trauma have always been larger than any single theory. Polyvagal Theory provides one explanatory layer. Its updating does not shift practice significantly - and if you already tend toward Levine's or TCTSY* language in your practice or teaching, you may find very little needs to change at all.

What is *TCTSY - and why it matters to this paper

Trauma Centre Trauma-Sensitive Yoga (TCTSY) is a clinically developed, body-based intervention for complex trauma and PTSD.

Originally created at the Trauma Centre in Boston and now delivered by certified facilitators internationally, it uses yoga shapes - movement, breath, and present-moment awareness - as a therapeutic tool, not a fitness practice. It is designed specifically for people with trauma histories and can be delivered in group or individual settings.

I am a certified TCTSY facilitator, and it sits at the centre of my clinical practice alongside yoga for chronic stress and anxiety. I also teach trauma-informed yoga within yoga teacher training programs, mental health settings, and workplace wellbeing contexts. This paper is not written from the outside of this debate - it is written from inside the practice, with the people this language is used with every day in mind.

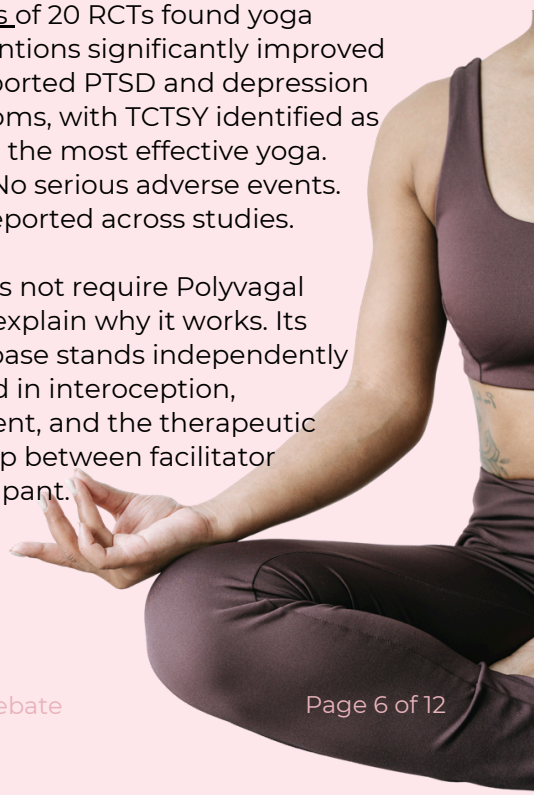
TCTSY is one of the most researched trauma-sensitive yoga models in the world. Key findings include:

- In a randomised clinical trial published in JAMA Network Open (2023), TCTSY produced symptom improvement more quickly than Cognitive Processing Therapy (CPT), with significantly higher treatment completion — 65% compared to 46% in the CPT group, in a population of women veterans with PTSD related to military sexual trauma.

- A 2024 study found that individual TCTSY sessions significantly improved anxiety, depression, post-traumatic stress symptoms, attention regulation, self-regulation, and body awareness over time.

- A 2024 systematic review and meta-analysis of 20 RCTs found yoga interventions significantly improved self-reported PTSD and depression symptoms, with TCTSY identified as among the most effective yoga. types. No serious adverse events. were reported across studies.

TCTSY does not require Polyvagal Theory to explain why it works. Its evidence base stands independently - grounded in interoception, embodiment, and the therapeutic relationship between facilitator and participant.



so what exactly are we updating?

This section is about practice - specifically, what language needs updating and why. What follows focuses on what this means for how we explain, educate, and work with people - how do we change our practice based on the updates to how we understand the science working?

From 'ventral vagal state' to flexible engagement

The regulated, socially connected state that Polyvagal Theory calls the 'ventral vagal state' is the equivalent of what the window of tolerance describes as the zone of optimal arousal: the state in which a person can think, connect, learn, and respond flexibly.

Grossman et al.'s position is that describing this state as driven primarily by the ventral vagus nerve overstates the role of a single pathway. The updated understanding is that this state reflects integrated activity across the brain, heart, lungs, and nervous system. It is not one nerve (well, technically the 'nerve' is two vagus nerves) switching on. It is whole-body coordination.

For practitioners, this means moving away from language like 'activate your vagus nerve' or 'your ventral vagus is engaged' and toward language that describes physiological integration or flexible engagement. The experience being described is identical, but this explanation is a little bit more accurate.

Useful language:

- Integrated state
- Regulated state
- Flexible engagement
- Social-safety state

These describe the functional reality without saying it's all about just one nerve pathway.

Reframing the freeze response

The language of 'dorsal vagal shutdown' and the framing of freeze as a regression to a primitive or reptilian state has been in use long enough to become embedded in how many practitioners explain this response to clients and students alike.

As discussed earlier, the evolutionary and anatomical basis for that framing does not hold up. Moving away from this language is a genuinely person-centred improvement - and one that I hope encourages all educators and practitioners to move away from framing that is often taught as an absolute.

When a person who has experienced trauma might be told they 'dropped into their reptilian brain,' the implicit message is that they became less evolved, less human. That type of phrasing and frame *can* deepen shame. The updated explanation simply describes what the nervous system is actually doing: organising the whole body toward survival - which is of course helpful for a less shame-based practice and education more generally.

Freeze is not a failure, it's more of a demonstration of the body's protective intelligence. The body goes still when mobilisation is not possible because stillness is, in that moment, the most viable option available. That is sophisticated adaptive behaviour, not a breakdown.

The freeze response is the nervous system doing exactly what it is built to do. Our language should reflect that.

But it's a real state - the heart just doesn't slow to a stop. The freeze state - and the continuum of experiences up to that point - is an important one to be able to educate and explain accurately. This can include experiences like:

- Feeling groggy or heavy
- Communication becoming difficult
- Thoughts becoming clouded
- Engagement and connection becoming harder to access
- Feeling absent, numb, or dissociated..

Useful language:

- Defensive immobilisation
- Protective stillness
- Conservation state
- Metabolic conservation

A smartphone analogy can be helpful: when your phone reaches 1% battery, it enters power save mode. It shuts down non-essential processes to protect the core, slowing and moving energy towards where it is most needed.

what isn't changing then?

The current debate is about the accuracy of certain neurophysiological and evolutionary explanations within Polyvagal Theory. It does not challenge the clinical concepts trauma-informed practices are built on. The following remain fully supported:

- Safety is a felt, somatic experience. The body evaluates threat and safety before the conscious mind does. Porges' term for this is neuroception. It is not in dispute and is key to somatic, trauma recovery work.

- The Window of Tolerance is a valid clinical framework. Whether you work in social work, education, yoga, or psychology, the zones of hyper- and hypo-arousal and the regulated zone between them remain as relevant as ever - it is an excellent framing for stress-response literacy.

- Co-regulation is real and evidenced. The capacity of one person's regulated nervous system to support another's regulation is supported by decades of research in developmental psychology and attachment theory.

- Breathwork, movement, and somatic practices have genuine physiological effects. The description of the mechanism is being updated. The impact is not in question.

- Trauma and chronic stress have measurable, significant impacts on the nervous system, behaviour, learning, and health.

- Body-based approaches to trauma recovery are effective. TCTSY, for example, has demonstrated clinical outcomes in peer-reviewed research independently of Polyvagal Theory's specific claims - and the broader evidence base for somatic therapy stands on its own foundations.

Grossman et al. explicitly acknowledge that the psychological concepts underpinning polyvagal-informed practice, including psychological safety, co-regulation, and dissociation, predate Polyvagal Theory by decades. They did not emerge from it.

If your trauma-informed practice centre in another modality, a grounding in trauma-informed somatics/body work or yoga can be immensely beneficial.

These practices support building the capacity and possibility for experiences of safety, grounding, interoception and choice/decision making.

possible language shifts in 2026

A practical reference for practitioners, educators, and facilitators to consider when updating their language.

There is no requirement to do so - but in the interests of accuracy, and to avoid explanations that can perpetuate misunderstandings, you may wish to consider how you use the following terms.

Depending on your specific trauma-informed practice, there may be other terms more appropriate to your work or the specific communities you work with.

Term to reconsider	New language options	Why it matters
Ventral vagal state	Integrated state / Flexible engagement / Regulated state	Reflects whole-body coordination rather than attributing regulation to one nerve pathway.
Dorsal vagal shutdown	Defensive immobilisation / Protective stillness / Conservation state	Removes the 'primitive regression' framing and honours the protective intelligence of the freeze response.
The vagal ladder	Adaptive flexibility / Dynamic regulation	The nervous system does not move through states in a strict sequence. Parts work simultaneously.
Vagal tone (measured by RSA - Respiratory Heart rate Variability)	Cardiorespiratory coordination	RSA reflects heart-lung coordination, not a singular measure of safety or nervous system state. It is one data point among many.
Reptilian brain	Integrated neural platform / Whole-body adaptive response	No part of the living nervous system is 'older' than another. This framing removes the shame embedded in survival responses.

what this means for trauma-informed practice educators

The 2026 debate is an invitation to examine something worth examining regardless: the tendency in trauma-informed practice to treat a single theoretical framework as the definitive account of how the body experiences safety and threat. This is the most common organisational issue I come across in systems work - where one specific framework has been relied on over improving internal capability, or a practice framework is applied only to direct care staff and managers rather than to the organisational system or leadership as a whole.

If we don't start with a deep and holistic approach to trauma-informed education, we risk being wedded - when the science changes, as it has now - to explaining very real bodily experiences through only one lens.

Polyvagal Theory became popular in training because it gives a clear, teachable model with memorable language. That clarity is valuable. It helps people who had never considered the nervous system begin to connect bodily experience to behaviour and history.

But frameworks and theories are just that - the best we can do with clinical research, clunky language, and a mediocre understanding of the biomechanics of the human body to explain the lived experience of the people we work with.

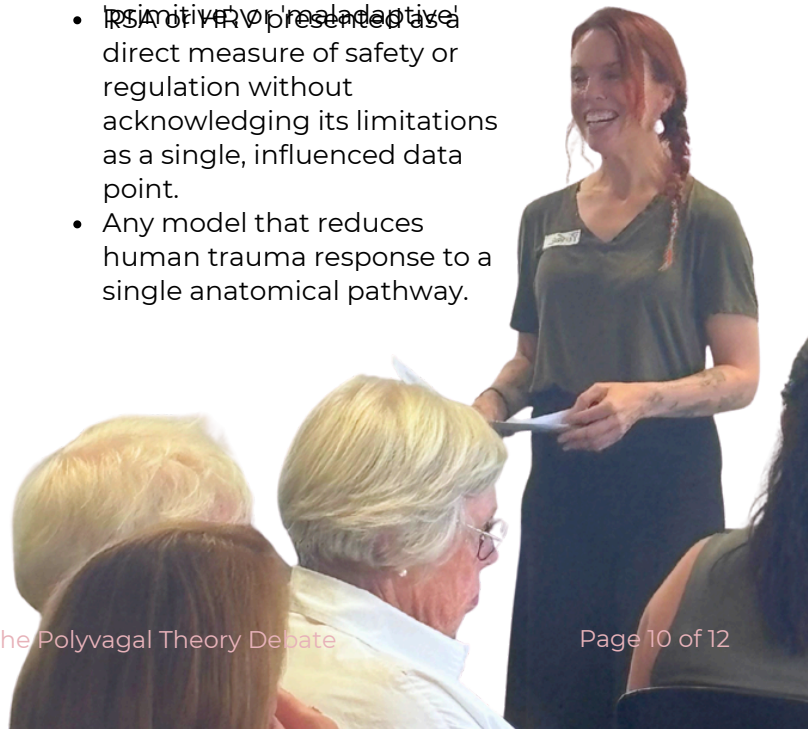
For educators, the mandate is clear. The technical details of how specific processes occur in the body may not change the day-to-day practice of a trauma-informed social worker or teacher. But they absolutely change what evidenced, well-informed education and training looks like. That's us - we need to be across the nuance.

This means more of:

- Multiple frameworks being presented and no single theory is treated as the complete account.
- Somatic and lived experience are centred alongside, not subordinated to, clinical research.
- The training distinguishes between well-evidenced concepts (safety, co-regulation, the Window of Tolerance etc) and theories that have debate around them (Polyvagal Theory, practice-specific applications etc)
- Practitioners are supported toward reflective practice rather than rote application of a framework.
- Language about stress responses honours the protective intelligence of the body rather than pathologising normal human survival responses and adaptations.

And less of:

- Approaches that ignore lived experience or systems of harm.
- Polyvagal Theory presented as established neuroscience without acknowledging the current debate.
- Explaining the vagus nerves to be the ‘most important’ part of our stress or emotional response.
- The 'vagal ladder' taught as a fixed sequence without noting that the nervous system operates with considerably more simultaneity and complexity.
- Freeze responses described as 'reptilian', 'primitive' or 'maladaptive'.
- RSA or HRV presented as a direct measure of safety or regulation without acknowledging its limitations as a single, influenced data point.
- Any model that reduces human trauma response to a single anatomical pathway.



the systems-informed vision

The nervous system is a dynamic, whole-body system that organises itself differently in response to different conditions. Safety is registered below conscious awareness through processes involving the brain, body, environment, and relational context. When safety is sufficient, the system supports connection, learning, and flexible response. When it's not, the body mobilises or conserves in service of survival.

This logic doesn't just apply to an individual person. When we look at teams, organisations and systems, the same principles apply. A felt sense of safety - not just in its technical definition, but the embodied experience of whether an environment is safe enough to show up, speak, contribute, and be - is as relevant to a team, a workplace, or an institution as it is to a single person. Co-regulation is not only an interpersonal phenomenon. It describes what happens in groups, in cultures, and in the organisations we build and lead.

A dysregulated system produces dysregulated people. A regulated one creates the conditions in which people can do their best work.

For trauma-informed educators and practitioners working inside organisations and institutions, the 2026 debate is a practical opportunity - not just to update terminology, but to review how trauma-informed practice is actually embedded in the system you work within. That means looking honestly at:

- How people are hired, onboarded, and introduced to trauma-informed frameworks - and whether those frameworks are taught as fixed fact or as living, evolving knowledge.
- How supervision is structured - whether it creates genuine psychological safety or performs it.
- How people are supported through change - including changes to the very frameworks they have been trained in.
- How leadership models the values it asks practitioners to hold, particularly under pressure.
- Whether trauma-informed practice applies only to direct care or client-facing work, or whether it shapes how the organisation itself operates at every level.

The shift from a Polyvagal Theory explainer to a systems-informed one is a more honest account of the complexity of human experience. It is also entirely consistent with what practitioners centring somatic and relational approaches have been saying for a long time. The 2026 debate makes clearer that the science was always pointing toward complexity, integration, and the body as a whole.

what to hold going forward: a pause > a stop

The science is catching up to what trauma-informed yoga facilitators and practitioners have known in practice for a long time - the body is complex and regulation is a whole-person, whole-system experience. No single theory has ever fully captured that and no single critique dismantles it.

The 2026 debate is not a reason to abandon Polyvagal Theory completely, and it is not a reason to defend it unchanged. It is more of an invitation to hold frameworks more lightly, update our language where the evidence asks us to, and remain committed to our own ongoing professional development and reflective practice as trauma-informed practitioners.

With deep sincerity, a big thank you to Stephen Porges, the team of 39 on the critique paper and the many researchers, practitioners, lived experience advocates and ancestors who have all contributed to this conversation. I hope my brevity and clumsy wording did not offend. This paper's intent has been to provide a thorough but not academic overview of what has changed and what impact that might have on our practices going forward.

I recognise this is an ongoing conversation, and almost certainly one where my own perspective and practice will evolve over time. I hope it does for everyone reading this and considering their own practice too.

I don't see this as a stop to the use of Polyvagal Theory. Porges' arguments in response are valid, however more clarification in both theory and practice guidance is needed before an educator might feel confident being definitive about exactly how Polyvagal Theory should be referenced in professional training right now.

Rather, I propose a pause:

- A pause on being definitive about who is right and who is wrong on the detail, while the evidence develops and the current debate is re-evaluated.
- A pause on the clickbait headlines decrying the decimation of Polyvagal Theory or the complete rebuttal of Grossman et al.'s claims.
- A pause on uninformed debate. If you are publishing content as a trauma-informed practitioner or educator on this debate, that implies a deep level of education, supervision and active practice. There is absolutely a place for researchers and lived experience advocates, but be mindful about who you are getting your practice advice from and what their actual areas of expertise and practice are.

This paper is one contribution to a conversation that will keep evolving, as the evidence does and as our practice does. If it has been useful, share it with someone who needs it. If it has raised questions, bring them - connect with me on LinkedIn and Instagram, subscribe to our newsletter by visiting the website.

Thank you,

Renée Robson

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