



TRAUMA, NERVOUS SYSTEM & TRAUMA-INFORMED SUPPORT

Polyvagal Theory

A clearer guide to the theory, the language people use
and what the science can - and cannot - tell us.

The key idea

Polyvagal Theory is one way of describing how the body may shift between connection, mobilisation and protection. Some people find this language useful, but parts of the theory's biological explanation remain debated and should not be presented as settled fact.

Start with the simple version

Your autonomic nervous system helps regulate automatic body functions such as heart rate, breathing and digestion. It also changes how your body prepares for activity, rest and possible danger. Polyvagal Theory is a particular theory about how these changes relate to safety, threat and social connection.

In everyday language

The theory gives people a vocabulary for experiences such as feeling calm and connected, keyed-up and ready to act, or withdrawn and difficult to reach. The experience can be real even when the theory used to explain it is still being debated.

What does 'polyvagal' mean?

The vagus nerve is a major cranial nerve involved in parasympathetic regulation of organs including the heart. 'Polyvagal' refers to the theory's proposal that different vagal pathways contribute to different patterns of regulation and behaviour.

Example

Think of the theory as a map. A map can help someone describe where they feel they are, without every line on the map necessarily being a complete description of the underlying biology.

The three-state model

Polyvagal Theory is often taught as three broad states: a socially engaged or 'ventral vagal' state, sympathetic mobilisation, and a more immobilised or 'dorsal vagal' state. This is a theory-specific way of organising experience, not three laboratory switches that can be directly observed turning on and off.

Key distinction

Sympathetic and parasympathetic nervous-system activity are established physiology. The specific three-state hierarchy and the meanings Polyvagal Theory assigns to those states are parts of the theory.

Ventral vagal and social engagement

Within Polyvagal Theory, 'ventral vagal' language is used for states associated with feeling sufficiently safe for flexible social engagement. People may feel more able to talk, listen, think, play, connect or rest. These abilities are influenced by many factors and are not proof that one particular vagal pathway is 'in control'.

What this might look like

A person who felt tense when they arrived at an appointment gradually settles as the practitioner explains what will happen, answers questions and gives them time. Their breathing becomes easier and conversation feels less effortful.

Sympathetic mobilisation

The sympathetic nervous system helps prepare the body for action. Heart rate may increase, muscles may tense and attention can narrow towards possible danger. This is part of established autonomic physiology and overlaps with what people commonly call 'fight or flight'.

Example

Someone hears an unexpected crash behind them. Their heart races, their body tenses and they turn quickly towards the sound before they have had time to think through what happened.

Dorsal vagal and immobilisation

Polyvagal teaching often uses 'dorsal vagal' or 'shutdown' language for profound withdrawal, low energy or immobilisation. This can be a useful description for some people, but it should not be used as a universal biological explanation for dissociation, depression, freezing, fatigue or fainting.

Important clinical point

Different experiences that look like 'shutdown' can have very different causes. Reduced speech, exhaustion, dissociation, tonic immobility and vasovagal fainting should not automatically be treated as the same nervous-system state.

Neuroception

Neuroception is a term introduced by Stephen Porges for a proposed process through which the nervous system detects cues of safety, danger or life threat without requiring deliberate conscious thought. It is a theoretical construct rather than a separately established sensory system.

In everyday language

Sometimes your body reacts before you have consciously decided that something feels unsafe. Polyvagal Theory uses 'neuroception' as one way of talking about that experience.

Example

You enter a crowded room and immediately feel tense. You cannot point to a clear danger, but noise, unfamiliar people, sensory load or previous learning may all be influencing the reaction. The reaction is real; 'neuroception' is the theory's interpretation of how it may arise.

Co-regulation

Co-regulation describes the ways one person's presence, communication and behaviour can help another person regulate. Calm pacing, predictability, respectful tone and responsive support can matter. This does not require assuming that one person's vagus nerve is directly 'regulating' another person's.

What this might look like

A distressed person is given more processing time, fewer questions and a clear explanation of what happens next. They begin to feel more able to speak and make decisions. The supportive interaction matters even without assigning it to a single biological mechanism.

Heart-rate variability and 'vagal tone'

Respiratory heart-rate variability describes changes in the time between heartbeats that occur with breathing and is influenced by cardiac vagal activity. It is affected by multiple physiological and measurement factors, so it should not be treated as a simple score of how safe, regulated or psychologically healthy someone is.

Evidence note

A physiological measure can be meaningful without being a direct read-out of a person's emotional state. Avoid statements such as 'low HRV means your nervous system is unsafe' or using consumer-device readings as a diagnosis.

Why therapists may still find the model useful

Some people find the language less blaming than describing themselves as 'overreacting'. It can encourage curiosity about body sensations, context, safety, connection and what helps. A framework can therefore be therapeutically useful even if some of its proposed biological mechanisms remain uncertain.

Example

Instead of 'Why am I being ridiculous?', someone might ask, 'What changed just before I became tense, and what would help me feel more able to stay present?' The helpful shift is towards curiosity and support; it does not depend on proving a specific vagal pathway caused the feeling.

The scientific debate

Polyvagal Theory has influential supporters and substantial critics. Debate concerns parts of its evolutionary account, the proposed hierarchy of autonomic states and how particular vagal pathways are linked to behaviour. It is therefore helpful to separate established autonomic physiology from theory-specific interpretations.

Important clinical point

Two questions can have different answers: 'Does this language help this person understand their experience?' and 'Has the proposed biological mechanism been established?' Therapeutic usefulness does not by itself prove the mechanism.

Neurodivergence and communication

Eye contact, facial expression, speech, movement and social communication vary widely. An autistic person avoiding eye contact, an ADHD person moving frequently, or someone becoming less verbal during sensory overload should not automatically be interpreted as being in a particular polyvagal state.

Example

A person looks away while listening because eye contact makes it harder to process speech. Treating the behaviour as evidence that they feel unsafe could misunderstand both their communication style and what support they actually need.

Using the language carefully

Use polyvagal terms as optional descriptions rather than diagnoses. Prefer 'you noticed your body become tense and alert' over 'your sympathetic state took over', or 'you became very quiet and withdrawn' over automatically declaring 'dorsal vagal shutdown'. Ask what the experience means to the person.

Practical check

Am I explaining the term in ordinary language? Am I describing the person's experience rather than assigning them a nervous-system state? Have I separated established physiology from Polyvagal Theory's specific claims? Could another medical, psychological, sensory or situational explanation matter?

References & Further Resources

These resources can help readers explore both Polyvagal Theory itself and the scientific discussion around it. The theory should sit alongside current clinical guidance rather than replace assessment or evidence-based treatment.

Porges - Polyvagal Theory

Work by the theory's originator explains its proposed links between autonomic regulation, social engagement and defensive responses.

Contemporary scientific critiques

Peer-reviewed critiques examine whether the theory's evolutionary and neurophysiological claims are supported by current evidence. Responses from Polyvagal Theory researchers dispute several of those criticisms.

Heart-rate variability guidance

Contemporary psychophysiology guidance supports careful interpretation of respiratory heart-rate variability and cautions against reducing it to a general-purpose measure of 'vagal tone' or psychological safety.

NICE NG116 - PTSD

UK guidance recommends evidence-based assessment and treatments for PTSD, including trauma-focused CBT and EMDR in specified circumstances. Polyvagal-informed ideas are not a substitute for these treatments.

How to use this resource

Polyvagal language can be used as a gentle way to explore patterns of arousal, connection and protection when the person finds it meaningful. Keep the language tentative, avoid turning states into identities, and do not use the framework to explain away medical symptoms, neurodivergent communication or clinically significant mental-health difficulties.