



Guide to The Human Nervous System

- inquiry -

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Baseline and Balance

The autonomic nervous system controls all human bodily functions that happen without conscious input, like heart-rate, breathing, digestion, and hormone levels. The nervous system's baseline is one of balance during periods of perceived safety. When an individual perceives a threat to safety the nervous system is then capable of moving into different states in order to respond to the threat.

When the nervous system perceives that conditions are safe, it balances its 'sympathetic' (energizing) and 'parasympathetic' (resting and restorative) aspects. This allows individuals to feel energized and alert while also being calm enough to rest, to digest food, and to relate well with other people. In this state, there is enough blood flow available to use the entire brain, particularly those parts that allow self-awareness, self-reflection, compassion, and collaboration.

The human nervous system has evolved to spend most of its time in this baseline state, called Social Engagement, and small amounts of time in a stress response. In this baseline state, the body continually restores itself, and individuals are most available for creativity, empathy, and social engagement with others. This is the state in which individuals are best able to collaborate in group projects, to sustainably carry out work in the world, and to which they can ideally return after a short period of activation.

In contrast, an activated nervous system (i.e. in stress response) produces physical changes in the body and the brain which create readiness and ability to respond to threat and danger. This also leads to an increase in behaviours such as defensiveness, judgment, criticism, blame, and readiness for conflict. Finding ways to restore balance and signal safety to the nervous system, especially after it has become activated, has the potential to increase the wellbeing and effectiveness of both individuals and groups.

Danger Responses

This section describes common physical cues, experiences, and contexts in which defensive nervous system activation might occur. By learning to notice when defenses are activated, individuals can use practices to return to Social Engagement, and restore the ability to relate and/or cooperate for both individuals and groups.

The human nervous system took its present form in the Stone Age, approximately 2.5 million to 10,000 years ago. During this time, it became specialized to notice danger cues – such as sudden fast movements, or loud sounds – that might indicate the approach of a predator or a natural disaster. This serves as an early warning system – the ability to perceive danger and respond to it to ensure survival.

In response to perceived danger, the autonomic nervous system can transform the body in a split-second in one of two ways.

1. **Activation.** The fight / flight / freeze response, leading to feeling edgy and aggressive; or
2. **Immobilization.** The fainting response, numbing the body to protect it from the pain of attack or injury, leading to feeling collapsed or lethargic, or even dissociated or withdrawn.

Both of these responses prepare the body to deal with potential danger. Typically blood leaves the brain, and high levels of stress hormones are produced.

During an Activation response, the body increases production of the hormones adrenaline and cortisol, which greatly increase the activity of the lungs, heart, and digestive system. This is the nervous system's short-term solution to a perceived danger. As the body metabolizes the extra energy (by fighting, fleeing, or hiding), the level of stress hormones in the body typically reduces. This signals safety to the brain, which helps the nervous system relax back into its baseline of Social Engagement.

Perceived Danger: Physical

The basic responses of the human nervous system haven't changed much since the Stone Age; however, the modern world has. Many physical aspects of modern life might be perceived as dangers and activate the nervous system for a defensive response. For instance, busy urban environments where multiple sights, sounds, or movements could be misinterpreted as dangers. Such as:

the stress of traffic congestion

abrupt loud noises

sudden slams, jolts, or jostles

areas with several people shouting

chaotic movements nearby

small spaces crowded with people

Perceived Danger: Psychological

The nervous system does not distinguish between perceived dangers that are physical or psychological. For thousands of years, human survival depended on being included in small family groups with long-term relationships. The nervous system is calibrated to perceive dangers within group relationships, including psychological cues indicating acceptance (survival) or rejection (danger). Perceived dangers to an individual's security in a group might include:

unacknowledged conflict

work deadlines and expectations

emotional charge

physical isolation

criticism, actual or perceived

psychological or emotional isolation, prejudice and discrimination

Ignoring Physical Cues

Many individuals, while cognitively aware that their lives are not truly in danger, can easily overlook physical cues that their nervous system has perceived danger. Ignoring these physical cues is rewarded in some parts of modern society. Some people have learned to feel ashamed if they 'get worked up over nothing.' Over time, those who ignore their physical cues can develop compensating strategies, behaviours, attitudes, or stories to explain away their nervous system response to danger.

Noticing Physical Cues

Even though everyone shares the same basic nervous system responses, each individual's experience of perceived danger will vary depending on their life experience. One person's nervous system might interpret a situation as safe, while another might perceive a danger.

By regularly paying attention to and noticing physical cues, an individual can begin to identify what their nervous system perceives as dangers. Noticing physical cues is a first step toward restoring balance, and signaling to the nervous system that it is safe from danger.

Signs of Activation. Preparing to fight, run, or hide from danger.

This might include:	This might feel like:
Blood moving from the brain to the muscles	Tension or energy in the arms, hands, legs, feet, and jaw
Adrenaline being released into the bloodstream	Racing heartbeat
The heart beating faster in readiness for action	Shallow, rapid breathing
Dilated pupils.	Sudden sweating
	Racing thoughts, often related to danger, anxiety, or worry.

Signs of Immobilization. Numbing the body to protect it from pain.

This might include:	This might feel like:
Dramatically lowering the heart-rate	Drowsiness, fogginess, or spaciness
Bringing breathing, circulation, and digestion to a near standstill	Dissociation, feeling withdrawn from reality
Fainting or loss of consciousness	Fainting or loss of consciousness
Evacuating the bowels.	

Signaling Safety

If simply reading this section has activated your nervous system a little, body movements can really help to calm your nervous system so try wiggling your fingers and toes, or gently shaking your arms, legs, shoulders, or hips to release tension.

Burnout

Burnout is a common and debilitating problem among Transitioners, their wider communities, or anyone who engages in change-making work. Many change-makers are motivated by their care and concern for the planet and all who live on it, which are important sources of their commitment and energy. During times of perceived urgency, change-makers can overcommit themselves and overtax their inner resources. This can lead to burnout, which is a physical and emotional condition related to the activation of the nervous system over a prolonged period of time.

On a daily basis, change-makers engage with major issues like climate change, inequality, oppression, or violence. These are often long-term issues with no simple solution; and they threaten the wellbeing of everything on the planet. To the nervous system, a Stone Age creation, this is like receiving a number of danger signals that won't go away. They may be experienced in the same way as a dangerous group of predators constantly at the door.

In response, the nervous system can remain activated and alert for a long time without an opportunity to use the extra energy, to fight or to run from the danger. The body can also sustain elevated levels of stress hormones for a prolonged period of time. This results in physical and emotional symptoms – tension, exhaustion, insomnia, or digestion problems – which are commonly associated with burnout and a dysregulated nervous system.

When the nervous system is regularly stressed over time, it can become dysregulated and begin to dysfunction. Activation of the nervous system can happen more often, at a much lower threshold, and feel much more intense. In groups, this can lead to various problems. Groups can bring more awareness of individual stress levels by regularly checking in about their stress. Groups can support individuals more with agreements that normalise calling attention to each other's stress levels and inviting individuals to complete their stress cycle.

Researchers Emily and Amelia Nagoski suggest that repressing or ignoring the nervous system's stress cycle can have many negative impacts on health and well-being. Completing the stress cycle often yields many benefits. The Nagoskis offer 12 ways to complete the stress cycle, including: **physical activity, crying, touch, laughter, positive storytelling, social connection, sleep**, etc.

Returning to Safety: The Feeling of 'Enough'

The Nagoskis recommend separating stress from the stressor. An individual cannot always address the actual stressor, the thing causing their stress — especially if it is abstract or pervasive like climate change or social injustice. Individuals can pause, step away from interacting with a stressor, and complete the stress cycle so as to return to a baseline of Social Engagement. It can be much easier to re-engage with stressors after doing this.

Ideally individuals can prevent burnout by not over-stressing their nervous system in the first place. This is easier when feeling that it's okay to not engage in an activity that activates a stress response.

Additionally, to counteract a prolonged elevation of stress hormones, individuals can regularly signal safety to the nervous system (see '**Signaling Safety**'). By receiving signals that the perceived danger has passed (however temporarily), the nervous system can return to its baseline of Social Engagement.

Even though the reality of a situation may not actually be 'safe,' it can be helpful to signal safety to the nervous system. For those whose change-making work often requires engagement with perceived dangers, individuals can regularly calm their nervous system, which is beneficial for wellbeing.

For an individual, burnout may result from a feeling that they have not done 'enough,' or a perception that doing more will help. For change-makers engaged with long-term issues, it can be difficult to tell whether they have done 'enough.'

The nervous system will respond to either kind of signal: that danger is present, and activation is required; or that danger has passed and a calm baseline can be restored. Preventing burnout relies on signaling safety to the nervous system. Similarly, it relies on individuals feeling that they have 'done enough,' for the time being, and can rest and relax for a time.

Even at a time when all efforts seem like they won't ever be 'enough,' it can be beneficial to signal to the nervous system that danger has passed, and an individual can relax. This will allow individuals to continue more ably with their change-making work.

Preventing burnout relies on an Inner Transition, for individuals and groups, which empowers change-makers to regularly practice strategic self-care. Burnout can be prevented if the nervous system is offered a bodily felt-sense of rest and restoration. This will both respect and sustain individuals' finite resources and capacities. Ideally, this will enable individuals and groups to sustain their change-making work with vibrancy, harmony, and resilience.

The Effects of Trauma / Post-Traumatic Stress Disorder (PTSD)

In modern societies, the effects of trauma, including Post-Traumatic Stress Disorder (PTSD), are remarkably common. The effects of trauma can be particularly relevant to populations which have historically struggled with oppression. Such effects can also be seen in groups working to create social change, who may experience vicarious trauma. This is when someone takes on the trauma of another; either by hearing their stories, or by regularly engaging with the world's traumatic impacts on others. This section offers some introductory information to help groups understand, welcome, and express compassion towards those experiencing the effects of trauma, including PTSD and its often debilitating symptoms.

“Psychological trauma is the unique individual experience of an event or enduring conditions, in which:

- The individual's ability to integrate their emotional experience is overwhelmed, or
 - The individual experiences (subjectively) a threat to life, bodily integrity, or sanity.
- (*Pearlman & Saakvitne, 1995, p. 60*)

Psychological trauma overwhelms an individual's ability to cope, and leaves that person fearing death, annihilation, mutilation, or psychosis. Traumatic circumstances commonly include abuse of power, betrayal of trust, entrapment, helplessness, pain, confusion, and/or loss. This broad definition of trauma includes responses to powerful one-time incidents like accidents, natural disasters, crimes, surgeries, deaths, and other violent events. It also includes responses to chronic or repetitive experiences such as child abuse, neglect, combat, urban violence, concentration camps, battering relationships, and enduring deprivation.” -- *Esther Giller, 1999.*

“Catastrophic events are traumatic in their impact, but I define trauma differently. Trauma is not what happens to a person, but what happens within them. In line with its Greek origins, trauma means a wound — an unhealed one, and one the person is compelled to defend against by means of constricting their own ability to feel, to be present, to respond flexibly to situations. Wherever we're wounded, there's scar tissue that forms, and scar tissue is always harder, less resilient, and less flexible than the tissue that it replaces. When psychological trauma happens, our psyches become more rigid and harder, less flexible and responsive. We become more rigid in our responses to life, to ourselves, to relationships, to stimuli.” -- *Gabor Maté, 2019*

Most trauma activates the autonomic nervous system into a defensive response, involving an increase of energy and activation in the body, usually as a way to preserve life. Once the trauma has passed, the nervous system looks for signals that safety has returned. Often, when it perceives safety, the nervous system can release any extra energy in the body with involuntary trembling and shaking (amongst other ways) until it returns to a balanced baseline.

Sometimes this process of energy release doesn't happen, for a number of reasons. It may be due to a lack of perceived safety; or to restrictions to bodily movement, like contracted or paralyzed muscles. Or due to a medical procedure using medication to artificially inhibit or repress this response by relaxing the body. Also trauma doesn't

always result from one incident, it can build up over a period of time, especially if someone is constantly feeling stressed. So there are many ways that an individual can develop a dysregulated nervous system that is commonly known as Post-Traumatic Stress Disorder (PTSD).

(A note on the term 'disorder.' Historically this term may have been used as a label to attach social stigma, marginalise, and disempower. It may not be helpful to label someone who is regularly struggling with stress as having a 'disorder.' They may not, in fact, have a 'disorder.' At the same time, the clinical definition of Post-Traumatic Stress Disorder is based on objectively observable dysregulation of the nervous system which can cause repeated dysfunction. PTSD is a serious neurobiological condition; it is not a label to ascribe lightly.)

When a person develops PTSD, part of their nervous system becomes 'stuck' in a defensive response. Whenever something in the environment reminds them of their trauma, their nervous system activates as if the trauma were happening in the present moment. The individual may have very little control over their body's reactions. They may feel overwhelming fear, or intense aggression, or a total collapse of their body.

With the support of a trained specialist, individuals can heal from PTSD. While personal responsibility is a large part of any individual's recovery, it can be very helpful for individuals to receive support from others. There are several ways people can express care and compassion towards those experiencing PTSD. A good first step is to learn and practice how to signal safety to the nervous system so it can return to baseline after it's been activated (see "[Signaling Safety](#)").

This can be helpful for anyone. For instance, many people's nervous systems can become activated when they are nearby or witness someone exhibiting PTSD symptoms. In this situation, a witness who signals safety to their own nervous system can be very helpful for the person experiencing PTSD. Especially if that person can recognise what the witness is doing, and can begin to mirror the witness and calm their own nervous system.

For those experiencing PTSD, learning how to signal safety and calm the nervous system can lay a supportive foundation for more specialized treatment. Importantly, helping the nervous system return to baseline minimises the chances of re-traumatisation; which can happen if a person experiencing PTSD becomes over-stimulated or overwhelmed in ways that remind them of their original trauma.

Learning and practicing how to signal safety to the nervous system is a way to offer compassion to ourselves, to each other, or to anyone experiencing PTSD.

Response to Conflict

Although each individual's response to conflict will vary depending on their life experience, it may be similar to their nervous system response to danger. For some people, even imagining a potential conflict can activate their nervous system. This relates to an individual's perceived psychological safety in a group, and how they interpret various group and social cues. A perceived conflict with another group member – especially one with social rank, status, or influence – may be interpreted as a perceived danger, and thus activate a nervous system response.

When the nervous system has activated a defensive response to perceived danger, it is more difficult for an individual to collaborate or engage with others. Physically, there is less blood in the brain, reducing empathy and the desire to inter-relate with others. In the body, elevated levels of stress hormones cause individuals to feel either edgy, aggressive, critical, judgmental and blaming - or collapsed, exhausted and lethargic.

Types of Conflict: Internal and External

Internal conflicts are typically specific to one individual. They can be shared privately, or, less often, publicly. Examples include:

mentally criticising oneself	'This is not good enough.'
mentally criticising others	'They did not do what they said they would.'
doubt or hesitation about a decision	'Should I? What if?'
doing something you'd prefer not to do	'I hate myself for doing this.'
anxiety about how others may respond	'What will they think or do?'

External conflicts are typically between two or more individuals. They can be shared privately or publicly. A private conflict can escalate into a public one. Examples include:

confronting others about minor topics	'I disagree.'
confronting others about major topics	'Please change this soon.'
engaging in minor conflicts with others	'This is unacceptable.'
engaging in major conflicts with others	'Stop now.'
drawing others into a potential or an ongoing conflict	'Did you hear? We're not going to allow this.'

Avoiding and Engaging

According to Thomas and Kilmann, there are 5 major conflict styles — collaborating, competing, avoiding, accommodating, and compromising. Many free online quizzes based on their model are now available to determine which style individuals prefer (see for example [this Conflict Management Styles Assessment](#)). Knowing people's preferred conflict style can be helpful both for individuals and for groups.

Some people prefer to avoid conflict, and others prefer to engage with conflict to some degree. Many people act out a combination of avoiding and engaging in conflict. An individual's preference can relate to the way their nervous system responds to perceived dangers. An individual may prefer avoiding or engaging in conflict for reasons like:

	Avoiding:	Engaging:
A personal history of conflict with	negative consequences	positive consequences
Conflict reminds them of a lived experience that	they consider unpleasant	they consider valuable
A sense of identity that includes	avoiding conflict	engaging in conflict
A past nervous system response which	they consider unpleasant and wish to avoid	they consider valuable and wish to repeat

Conflict as Opportunity

Engaging with conflict constructively depends on individuals noticing when the nervous system is in an activated state of responding to a perceived danger. By noticing physical cues and becoming familiar with what it feels like when the nervous system is activated (i.e. self-awareness), individuals can take steps (i.e. self-management) to signal safety and restore their nervous system to a baseline state of Social Engagement (see '[Signaling Safety](#)'). Once an individual has done so, they will have more of their brain available, which allows them to literally bring more of themselves to the situation, increasing the likelihood for positive and enriching outcomes.

Ideally, whenever an individual is involved in a conflict, they can learn to be more compassionate with themselves and with others. This can help to reduce tensions and transform conflicts into opportunities for connection rather than disconnection.

A conflict can be a valuable opportunity for learning, leading to new ways of integrating information for both individuals and groups. By better understanding the nervous system, everyone can become better equipped to engage in conflict in constructive and transformative ways. This can lead to a shift in how individuals engage with each other - a good example of one kind of Inner Transition.

Inner Feedback for Personal Resilience

Feedback is a common process in the natural world, and a version of it called 'inner feedback' can be very helpful for personal wellbeing and resilience. When an individual notices an internal symptom or a signal that's taking them off-course, they can make an adjustment. Paying attention to 'inner feedback' can prevent individuals from getting overwhelmed, feeling 'out of control,' or burning out.

Examples include:

- a cyclist steering a bicycle away from the edge of the pavement
- a captain correcting a ship's course
- the switch that turns off an electric kettle before it over boils

Regular time for reflection can help individuals to notice 'inner feedback' and to make timely adjustments. Ways to notice 'inner feedback' include:

- taking time to pause, breathe deeply, or rest
- taking time for 'being' rather than 'doing'
- taking time in nature
- declining certain opportunities or activities in order to facilitate personal wellbeing

Examples of individual inner feedback:

	Negative	Positive
Physical symptoms	headache	vigor
	dizziness	focus
	breathlessness	excitement
	illness	wellness
	nausea	nourishment
	fatigue	vitality
	clumsiness	capability
	tension	ease
Emotional signals	anxiety	courage
	doubt	certainty
	anger	calmness
	frustration	gratitude
	envy	satisfaction
	sadness	happiness
	apathy	empathy
	numbness	aliveness

Mental symptoms	stress	flow
	depression	engagement
	bitterness	lightness
	confusion	clarity
	pessimism	optimism
	miserliness	generosity
	unkind thoughts	kindly thoughts
Worldview signals	aimlessness	purpose
	lack of value	value
	disconnection	connection
	lack of meaning	meaning
	scarcity	abundance
	nihilism	holism
	ruthlessness	wholeheartedness

Paying attention to 'Inner feedback' can contribute to personal wellbeing and resilience. Many individuals take time to discern and reflect about 'inner feedback' before deciding on an appropriate response or adjustment. It can take some practice to be able to notice all the subtleties. Try continuing to notice any inner signals that may benefit from a course correction. This is a good pathway toward personal health, wellbeing, and resilience.

Inner feedback can provide insight about changing “how” an individual does things, or their habitual patterns. This can ultimately affect “what” someone achieves, their goals and outcomes. This may also affect individuals' attitudes or behaviours, how they change over time, and how they may choose to continue participating. Ideally a group will grow in a way that assists individuals to develop trust, skills, and resilience while contributing to a group's effectiveness, harmony, and longevity.

Reflection questions for individuals:

Safety.

How safe do I feel to express myself? To represent a different viewpoint or to disagree with others?

Resilience.

When I get stressed, how do I take care of myself? How much support can I ask for?

Boundaries.

How often do I say “no” to projects, work, or activities? How much pressure do I feel, from myself or from others, to say “yes” and give more time and energy?

Pacing.

Do I feel a good balance of giving to and receiving from this project? How long can I keep going at my present rate of activity – 1 month, 3 months, a year?

Satisfaction.

How do I know that I'm "doing enough"? What personal practices help me to discern and to respect my accomplishments and my limitations?

Process.

How much do I trust this group's process? How strong are my relationships with the people involved?

Purpose.

How connected do I feel to the overall aims of this project? How is my participation in the project serving me? What adjustments might improve my sense of meaning or purpose?

Related resources:

Respecting "Yes" and "No"

Task-Process-Relationship model

Signaling Safety

[Action Reflection Cycle](#)

Coming Down to Earth -

<https://www.conflicttransformationsummit.org>

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