The Autonomic Nervous System and "Window of Tolerance"

The Autonomic Nervous System (ANS) is part of our Peripheral Nervous System, which connects the brain and spinal cord to the rest of the body. The ANS is divided into three branches: 1) the Enteric Nervous System regulates digestion; and 2) the Sympathetic and 3) Parasympathetic Nervous Systems (on which we are focusing) work together – through opposing responses – to regulate internal body processes like blood pressure, heart and breathing rates, body temperature, metabolism, and more. The ANS is also our personal surveillance system, communicating with the brain to ensure we survive in moments of danger and thrive in times of safety. Below conscious awareness, it assesses internal and external cues of “safety” or “danger” and initiates a response to manage our situation. Of course, we also have conscious influence over how we respond to things, once we are tuned into what's occurring.

When a potential or real threat is detected, the Sympathetic Nervous System, or “fight or flight” defense response, is activated. The brain triggers stress chemicals to be released into the bloodstream, and we mobilize to deal with the stressor. This “hyper-arousal”, or mobilization, is like pushing the accelerator (or completely letting up on the brake). If the threat is real, we flee or fight, which is an adaptive defense response. Once we become safe again (or realize we were not actually in danger), the brain activates the Parasympathetic, or “rest, digest, repair, and social engagement”, response. A large portion of the Parasympathetic Nervous System is made up of the Vagus Nerve, the largest cranial nerve and important in the regulation of our organs and physiological processes. Consider the vagus nerve the brake; with the Parasympathetic response, the brake is gently pressed to bring us back into a regulated state, and we feel safe, calm, balanced, and engaged. This is characterized as the “optimal arousal zone” and is where we function most effectively.

When in "fight or flight", if we are unable to escape the threat (or potential threat) and the situation is interpreted as hopeless, the ANS interprets that we are in a potentially life threatening situation. We move from hyper-arousal to “freeze”, which manifests as feeling physically "frozen" but still activated internally. If we continue to feel stuck, we shift into a "shut down" or "collapse" state of defense. This is called "hypo-arousal", or the immobilization response, which is the Parasympathetic "brake" being slammed down. Again, if there is a true threat, this is an adaptive defense response.

Sometimes, people stay caught in chronic hyper-arousal due to unrelenting (perceived or real) “threats” or stressors. Or they bounce between hyper- and hypo-arousal, dysregulated much of the time. Neither of these situations is good for us, and can lead to maladaptive coping and chronic illness over time. Being in a persistently stressed state is often indicative of the ANS being mis-attuned; a stress response is activated AS IF we’re under threat, but we're NOT. In addition to that subconscious process, we can also consciously appraise things incorrectly. In other words, we may perceive situations as more "threatening" than is actually true. Incorrectly appraising a situation happens more easily when we are dysregulated, because the lens through which we are appraising the situation is not as clear. Of course, chronic dysregulation could indicate we're facing true threats much of the the time, but it's much more likely that we are just stuck in old, learned patterns.

The following diagram outlines examples of how we may experience each physiological state. The “Window of Tolerance” was coined by Dr. Dan Siegel and refers to our optimal zone of physiological "arousal". When we are in our Window (parasympathetic ventral vagal state), we feel safe and regulated. Our goal is to stay in our window except when it is adaptive for us to mobilize or immobilize (i.e., when we need to manage true stressors or threats). The Window is flexible; if we take care of our needs in a healthy way, it stays nice and wide to allow us to handle our day and engage well with others. However, if we don't take care of ourselves, our window narrows and we become dysregulated more easily, with even normal, every-day things feeling unmanageable. Our goal is to keep our window nice and wide, and appraise situations correctly so we only move into a stress response when it's truly needed; when it's adaptive vs. maladaptive.

Our Autonomic Nervous System is the neural platform beneath every experience; it does not tell us WHO or WHAT we are, but HOW we are. In other words, everything we experience is filtered through the lens of our physiological state, and that drives our psychological, physical, and behavioral responses. So, our “story” - how we interpret and manage things - follows our state. Mindfulness helps us tune into our current autonomic state and recognize the difference between being under true threat vs. just caught in old patterns. This awareness helps us respond proactively with healthy coping skills to calm (if hyper-aroused) or re-energize to get ourselves back “online” (if hypo-aroused). Mindfulness helps us stay regulated when appropriate, which changes our story and our lives.

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The Autonomic Nervous System and "Window of Tolerance"

HYPERAROUSAL

Sympathetic Nervous System ("fight or flight")

emotional, cognitive, and behavioral symptoms

- diminished capacity to socially engage / not "present"
- difficulty concentrating / focused on "threat"
- out of control / impulsive / overwhelmed / flooded
- anxiety / panic / fear / anger / rage / poor judgment
- hypervigilance
- racing thoughts /rigid or chaotic thinking
- intrusive imagery / flashbacks / nightmares

physiological symptoms

- body prepares to fight or flee
- adrenaline, cortisol, etc. are secreted
- increased breathing, heart rate, blood pressure
- muscle tension / sweating / pupils dilate
- increased oxygen and blood to muscles, heart, and other vital organs
- sleep disruption
- suppressed digestive & immune systems

DYSREGULATED

WINDOW OF TOLERANCE (optimal arousal zone; "rest, digest, repair and tend and befriend/social engagement")

Parasympathetic Nervous System - ventral vagal response

emotional, cognitive, and behavioral symptoms

- emotionally regulated (access to full range of emotions)
- present moment awareness
- managing stressors well / can self-soothe
- feel safe, open, curious, relaxed, calm, and alert
- intuition / insight / can feel and think simultaneously
- can integrate information and make decisions calmly
- socially engaged / connected / feel empathy
- manage work & relationships well

physiological symptoms

- heart rate and blood pressure are regulated
- circulation in non-vital organs
- normal breathing
- muscle tone more relaxed
- digestion and immune system are functioning
- body can repair and heal

REGULATED

LEVEL OF AROUSAL

HYPOAROUSAL ("freeze", "shut down", or "collapse")

Parasympathetic Nervous System - dorsal vagal response

emotional, cognitive, and behavioral symptoms

- blunted emotions / relative absence of sensation
- flat affect / depression / shut-down / numb / empty
- passive / withdrawn / disconnected
- shame / embarrassment
- hopelessness / helplessness
- loss of interest / minimal energy
- slow thinking / memory loss / “blank”
- spacey / zoned out / dissociative / not present

physiological symptoms

- exhaustion / collapse / shut down
- feel numb / go limp / faint
- decreased heart rate and blood flow
- diminished muscle tone and facial expression
- senses shut down
- increased storage of fuel
- increase in pain reducing endorphins/analgesia
- feeling "paralyzed" (freeze = physically immobilized but still hyperaroused inside)

DYSREGULATED

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How Stressors and Coping Impact our Window of Tolerance

HYPERAROUSAL

Stressors can shrink our Window of Tolerance

WINDOW OF TOLERANCE

It's difficult to stay regulated within such a narrow window

Stressors can shrink our Window of Tolerance

HYPOAROUSAL

HYPERAROUSAL

WINDOW OF TOLERANCE

Healthy coping skills widen our window and keep us regulated

HYPOAROUSAL

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