

CLINICAL SUPPORT –

A deepening embrace of the neurobiology of anxiety, trauma and healing

To better understand...

- normal feelings
- patterns of emotional instability
- how dysfunctional childhood experiences can impact later life stability and love relationships
- clinical anxiety, depression, trauma
- psychological healing

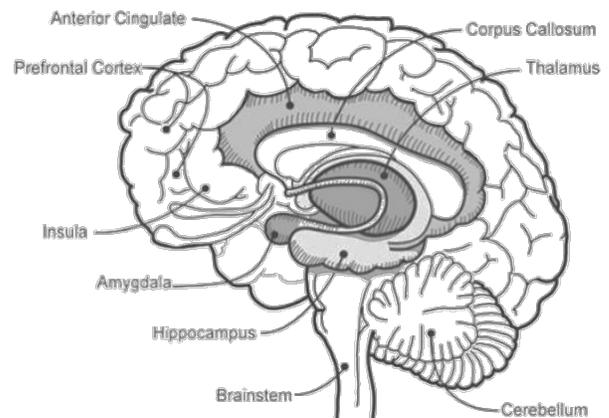
...it is valuable to review these overlapping topics:

- the autonomic nervous system (ANS)
- the sympathetic nervous system (ANS subcomponent)
- the parasympathetic nervous system (ANS subcomponent)
- the biological/maternal attachment system
- the polyvagal system

The **autonomic nervous system (ANS)** controls a set of *automatic* processes. Automatic or autonomic means unconscious, out-of-awareness. “Automatic” or “autonomic”, however, is a partial truth. A partial truth can serve to distort reality, which is why one must swear to tell the “whole truth” in court. Aspects of the ANS are in fact partially automatic and partially under control of consciousness. Which aspects, and the dividing line with respect to these varies greatly. Most importantly, the extent to which each one of us can gain volitional control over ANS functions is anything but fixed or predetermined. *No expert on earth can tell you how far you can move this line within your own being.*



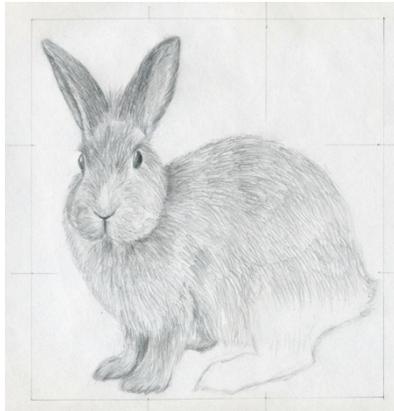
Humans’ autonomic nervous system provides the backdrop of experience – and is also present in birds and mammals!



The ANS links us to our deep animal past, through the richness and variety of feelings, and the somatic underpinnings of feelings.

ANS neurobiology embeds both predator and prey perception and experiential modalities.

“Autonomic” is a 400 year old word. It comes from auto which means ‘self’ and nomic (from nomos) which means custom or law. Thus autonomic refers to self-ruling, self-governing, and self-controlling. This distinguishes the ANS from purely volitional aspects of the nervous system, for example, those involved in consciously tailored actions such as throwing a ball or speaking someone’s name.



Perhaps other mammals have a sense of in-group/out-group, friend/foe, me or we vs. enemy

The ANS is always there in the background in making sure we get the right amount of air and blood to our heart and lungs, adjusting to the situation, for example, to sitting or climbing stairs. It ensures our heart rate fits the situation, quickly juicing it up when we feet threatened. The ANS makes sure we sleep, digest stomach contents and keep our internal state at about 98.8 degrees. So much is effortless and automatic that we tend to not to reflect more deeply on the miracle of the ANS.

Vigilance and rapid escalation of fear is a major dimension of humans’ evolutionary inheritance

Most critically, the ANS is not purely autonomic or automatic. On the one hand, we do not need to remember to breathe, think about digesting a meal, or decide what heart rate or blood pressure is best in a given situation. However, the fact that we don’t have to be aware of the ANS should not stop us from appreciating the power of mind over matter! The miracle of the ANS is two-fold: 1) part what it does without any attention or awareness, and 2) the wonders and benefits of “mind over matter”, of mental control of what are normally unconscious processes.



How ANS physiological processes are mediated by the brain is now very well understood. These include those we bodily experience when suddenly surprised or threatened—most notable increases in heart rate, blood pressure and respiration. Paradoxically responding rapidly to a predator involves the same escalation of physiology as predators use to pounce, chase and attack.

The ANS is easy to understand from the outside - conceptually, but harder to appreciate as a living experience. Part of the reason for this pertains to the fact that we have partial control of its repertoire. We can, for example, breath faster on cue. But it's not as easy to alter blood pressure. So each of us tends to have a direct, conscious sense of familiarity. Partial control is another very unique and essential characteristics. This partial control served to enhance our species survival and procreation.

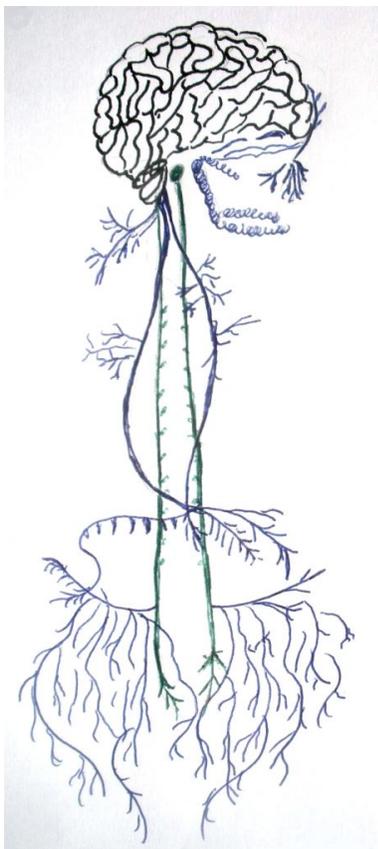
Evolution refined our emotions for an entirely different world. We make sense of our lives in this one through an ancient, invisible mind. It was designed for a life immersed in nature, very close to that of other animals, hugely dependent on tribal cohesion, prepped to fight or flee, always on the edge of fear, yet compelled to relate and bond with others.

Awareness and control are two different things. Awareness of ANS phenomenon increases the potential for control. We may be aware our heart is racing after something has startled us. Some people may be able to then consciously will their heart to slow down. Others may not and may suffer an experience of a heart with a mind of its own. They perceive their body, their anxiety, heart rate, breathing as exploding, as not listening to reason, as a runaway train. During a **panic attack**, there is a sort of sense the body as a wild bucking horse—and in a sense this is a very accurate description. The body is reacting as any animal does in response to a sudden threat. Learning to be a horse or body-whisperer is an act of love and respect.

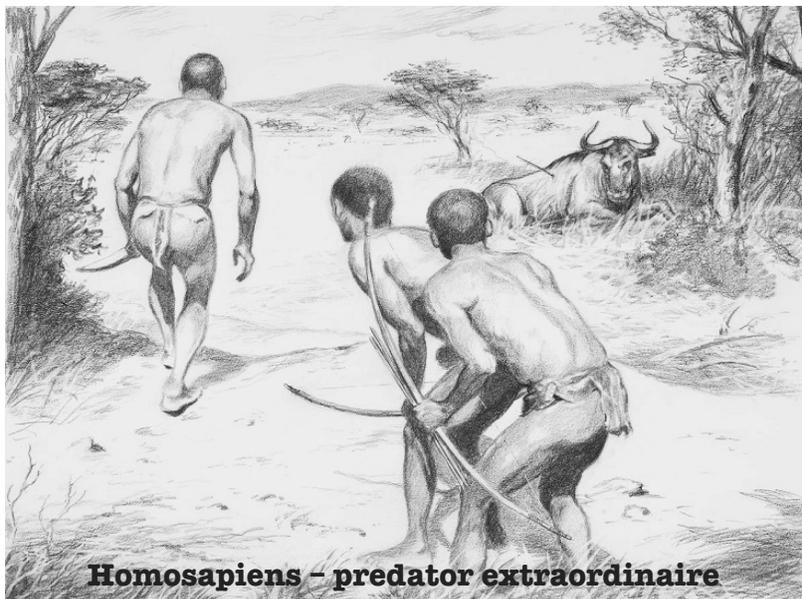


ANS defensive aggression system is popularly known as, but not identical to “fight-flight”. The core processes are genetically encoded to be partially, but powerfully shaped by the environment. For better or worse, us animals learn to associate certain phenomena as threatening.

The ANS’ higher psychological, experiential levels involve a range of ‘negative’ emotions, fear, anger and paranoia. These states correspond to activation of the what is recognized as the defensive aggression system in animals. Most people are familiar with “fight-flight”. The counterbalancing side is less familiar, so-called “rest-digest”. **Much less familiar is the fact that much of the same aroused ANS occurs with excitement, thrill and so-called positive emotional states.**



ANS is two-sided, the sympathetic or flight-flight side is counterbalanced by the 'rest-digest' side. The importance and subtleties of the rest-digest / parasympathetic side is critical for treatment/insight, healing of anxiety and trauma.



Homosapiens - predator extraordinaire

Having hunted-gathered, efficient use of hard earned calories relies on the parasympathetic side of the ANS, the 'rest-digest' side...



The ANS includes an accelerator – which mobilizes us for either/both fight/flight—and on the other side a braking system. De-escalating, or braking, relies on the parasympathetic side. Recently, this capacity has been linked with include **maternal attachment!** Through attachment experiences, we develop a capacity for 'self-soothing'. The capacity to quell anxiety is similar to learning our 'mother tongue'. In both cases, the word "learn" is not very accurate. First we are immersed in a field of language long before we "acquire" language. Similarly, first we are immersed in a field of loving attachment or something not quite loving, long before this outer field is internalized as an internal operating system. Early attachment, for better or worse, tends to form our emotional baseline. It tends to shape out capacity, be this functional or dysfunctional, for emotional regulation and resilience.

Findings from attachment theory demonstrate that humans' rest-digest ANS has another critical role in fostering tribal and interpersonal cohesion.

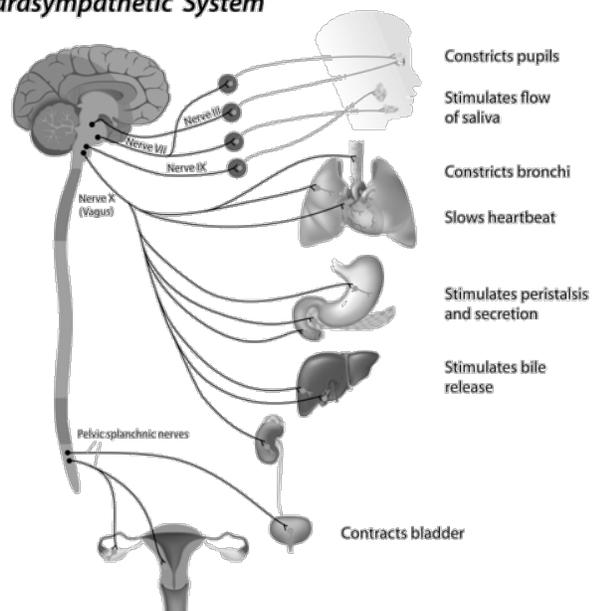


ANS on the highest, human level forms the emotional, experiential, intuitive sense of ‘me’ – for example, of the interior experience of oneself interacting with others. This level powerfully shapes the emotional essence of ‘me’, one’s living experience, be this excitement, confusion or hurt feelings. This shapes the emotional dimension of the perceptions and interpretations of others in our lives. Insight into the ANS begins at this everyday, normal, internal juncture and proceeds toward the body, breath, sense of tension and deep intuition – more than the usual ‘me’ but me-as-arising-from-my-body. There are many wonderful “somatic practices” to help with this.

In ‘down-regulating’, for example, from a flood of fear and moving in the direction of homeostasis and a sense of safety, the associated subcortical structures have been identified. These include the right (hemisphere) insula, right anterior cingulate, right orbitofrontal cortex, amygdala and the hypothalamus.

Understanding “fight-flight” and ANS as a model or theory occurs on an impersonal level. Rather than an internal, intimate, emotional ‘me’ basis, understanding the ANS as a concept occurs in ‘the third-person’. This is the ‘it’ (he, she, they) level. Experiencing our ANS in living color – as ‘first person’ - is far subtler, more challenging and more rewarding. This level of inner knowing is slow to become a stable mode of knowing. An inner capacity for inner peace is, of course, the antithesis of an anxiety disorder.

Parasympathetic System



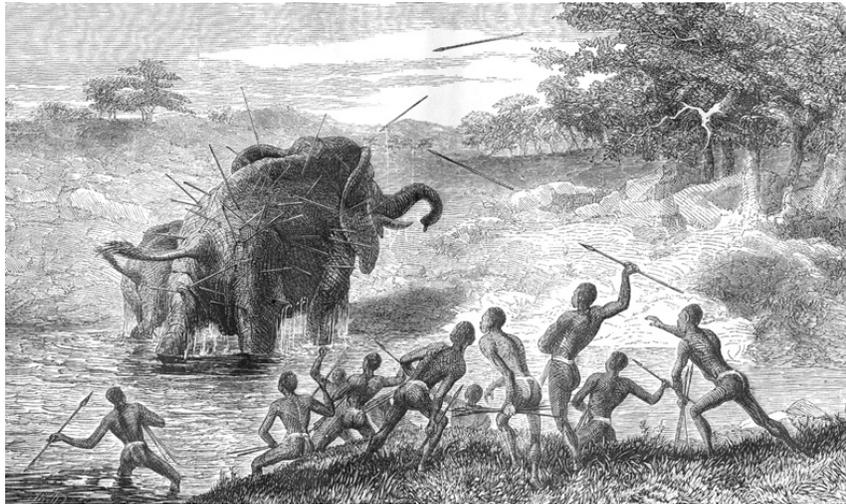
Psychologically the same person and their underlying ANS informs the first, second and third person.

Experiencing (first person) the ANS at scale or aperture of the human threat-safety response system (third person) is achievable. One has to listen, note, observe, and hang-in-there, and increasingly connect emotions with corresponding body signals—not just the immediate thoughts. This is somewhat unnatural. We are designed to be outward-oriented. If someone suddenly steps on your toe, then yells at you that you deserve it, you’re unlikely to take note of changes in your body other than the pain in your foot! When someone hurts our feelings, a similar outward-orientation is dominant. We feel the hurt or anger emotionally, not so much at more subtle body levels, and cognitively, we go over and over the events and conversations and what we want to ask or say.

Intuition refers to aspects of emotional intelligence first honed in the earliest phases of life. Emotional neglect produces tremendous, consistent terror. Efforts to intuit caregivers' moods, behavior and unconscious signals are an invisible dimension in the struggle Darwin called, 'survival of the fittest'.



Pretty much everyone will agree on whether a human toddler, cat or dog is afraid or angry. Anger and fear are sides of our innate threat response system. Major emotions correspond to what are effectively ANS sub-systems. Jaak Panksepp, the brilliant founder of affective neuroscience, has located seven primary affective systems. Each manifests in typified, recognizable emotional-behavioral patterns. In our species, emotions comprise 'nonverbal' communication. Anger displays are used often to maintain status but avoid physical altercation with, for example, a potential enemy or rival. Babies need to signal their moms to elicit care matching their needs. Most of us can accurately recognize when someone is not just angry vs. afraid, but when they feel both, or even when they are hiding their "true feelings". What psychological science has now demonstrated is that in humans this emotional repertoire (both to recognize in others, and experience in ourselves) develops and stabilizes during early life – specifically, mainly through 'attachment' experiences. The process involves mirror neurons and lays the foundation for empathy in adulthood.



The ANS has an 'outward bias'. Sights, sounds, air temperature occur outside the body but are interpreted within, literally, by the brain. Evolution ensures humans experience outward phenomena as outward, not as an internal nervous system calculation. If someone throws a rock at us, we have a better chance of ducking and avoiding it if we perceive it as outwardly real. In this case, the perception of the rock as outside the body tracks with bodily reality.

The **ANS outward bias** works this way: despite being an internal brain-based process, the system serves us by remaining unconscious and in the background. Consciously, we experience stressors and threats as somehow not within, but as coming at the self – as happening to the self. We experience many forms of suffering as forced upon us by another person. We experience their words, emotions and behaviors as something largely thrust upon us. Where love is unrequited, a form of the inverse of this is the norm. We experience them as uncaring and disconnected – and so, while different in character, still have a sense of powerlessness.



The ANS outward bias splits the first-person, from the second, from the third. This had powerful evolutionary advantages. Most of the time, this is most efficient way to interpret and shape an experience. It is most efficient to experience someone talking to us, throwing a punch towards us, or us picking up an object, not as brain activity ‘within’ but as permutations of our body and being inter-acting with others and the world. First/second/third person language is fused emotional experience. This fueled our species advances in tribal/social bonding.

The ANS’ outward bias tends to be a barrier for the goal of developing deeper mind-body connections and increased capacities for engaging our innate parasympathetic, relaxation capacities. Interpersonally phenomena involving deep emotion, say heartbreak, rejection, or longing for affection, also tends to be experienced as outside, in the sense of not-me. As attributable to another, an ‘other’ rather than produced within, by the self, by ‘me’.



The inward aspect of the ANS give rise to a constant, living, emotional felt-sense of ‘me’. Our general sense of calm/anxiety arises from our ANS. Our brain’s physiological ground is our emotional *back-ground*. This is what a person references when they make common attributions regarding their inner life and day-to-day felt experience: “my morning’s been...”, “my day was...”. The ANS give rise to our implicit psychological backdrop, the feeling-matrix within which everyday life unfolds. Such standard remarks as, ‘good for a Monday’, ‘almost Friday’ are common forms of repressing some sense of emotional discomfort in the present moment. If one has just taken a bite of some incredibly delicious treat, they are unlikely to refer the momentary experience, rather than the future as vaguely preferential.



The fiercest warrior was once a vulnerable infant in desperate dependency – something indigenous peoples have always implicitly understood.

According to polyvagal theory, the mother is an external nervous system regulator – meaning babies/infants rely on her nervous system to regulate their own. Specifically multiple (within brain) right hemisphere processes in combination with (outside the brain) vasovagal processes in the mother are the basis for signaling and expression, through her face, voice, gestures. These help both “down regulate” and “up regulate” the infant. A downregulated baby, for example, may be unfocused and emotionally adrift. Mothers through movement, speech and play will assist the baby in upregulating, ‘coming on line’, and emotionally connecting with mother – evidenced by attentional gaze and personally-directed alertness.



True courage develops not as an opposite of fear, but in a respectful interplay with fear.

HPA Axis / **Hypothalamic-Pituitary-Adrenal Axis** – is the predominant stress-regulating apparatus. This relies on hormone-secreting glands. In response to a perceived threat, the hypothalamus, which sits atop the brain stem, signals the nearby pituitary which dumps hormones into the bloodstream. These travel to the adrenal glands which sit on top of the kidneys. Cortisol is released, mobilizing the body for fight/flight.

Major ANS sub-systems include (within the brain proper) the *hypothalamus* involved in major regulatory functions: the *pituitary gland* and *endocrine system*, handles thermoregulation, food/water drives, *circadian rhythms*, and major aspects of memory; the *parietal lobes* which modulate touch, temperature, movement, pain, stretch, touch; the *sympathetic* and *parasympathetic* systems; within these (and mainly parasympathetic) is the vasovagal system. This extends out of the skull via the tenth cranial nerve and is the largest neurological system outside the brain. Polyvagal theory, highly focused on this system, has revolutionized our understanding of the mind-body connection in anxiety and trauma.

Child soldiers are exploited, traumatized and need to be rescued from their abusers.



Polyvagal theory stresses the importance and power of the mother's nervous system. Maternal attachment, from this perspective, involves evolution's huge investment in human's mother's role. She is the predominant force in shaping the child's initial development. This process is understood as *upregulating* and *downregulating*. The attachment-figure's nervous system is, in essence, an *outside* regulator of the *internal* one in her baby's body. This process is key to her child's fundamental mental health. If the mother-figure is not attuned to the child, she will not intervene when the child is too down-regulated (checked-out, disorganized, dissociated). On the other side, her role is intrinsic in **down-regulating** baby's agitation, in quelling fear, anger and mixtures of so-called negative emotions. These overly agitated states go by many overlapping names and are evident across mammals: anxiety, fight-flight, defensive aggression, agitation, and less commonly 'over-excitement'.

A more comprehensive definition of abuse is based in the new understanding of healthy attachment. Shortcomings in this by default comprise maltreatment.



Polyvagal theory views the attachment / polyvagal process as a form of basic, fundamental care. The polyvagal-attachment process is the only path for a child to develop fundamental brain processes. These manifest in capacities for self-regulation of mood and emotional resilience. Since affective regulation is a centerpiece of all major forms of psychopathology, this process by extension is critical for mental health. If the mother-figure is not attuned to the child, she will not intervene and up-regulate her child when she or he is too down-regulated (checked-out, disorganized, dissociated). On the other side, she will not adequately **down-regulate** her baby's agitation.

Down-regulating involves decreased sympathetic activation, and increased parasympathetic activation. Down-regulating is another way to refer to soothing, to quelling fear, assisting to reduce all forms of upset, including anger and sadness—and all mixtures of so-called negative emotions. These overly agitated states go by many overlapping names and are evident across mammals: anxiety, fight-flight, defensive aggression, agitation, inconsolable crying, wailing, screaming, tantruming, and less commonly in forms of 'over-excitement'.

There is now research backing many of psychology's oldest formulations, for example, the power of the unconscious, and the equating of therapists to the mother or parental role.

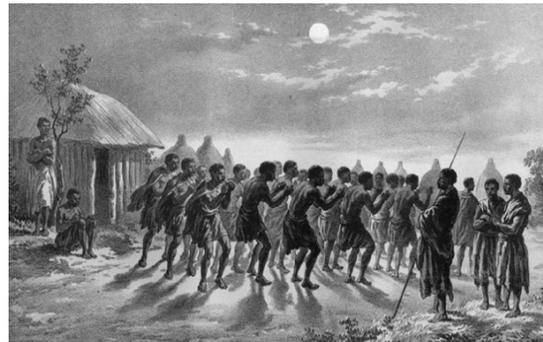


There are important brain-based parallels between 1) mother's role in regulating her baby's arousal states, and 2) the counselor / mental health therapist's work with client. According to the main scholar in this arena, Allan Schore, there is strong evidence for the old adage that a client can only go as far in healing as their therapist has, or can only go so far as the therapist can take them. The patient-doctor relationship is believed to mimick the mother-child one. The same largely unconscious, nervous-system based process is in play. Old, repressed, unconscious affects parallel ancient emotional wounds dating back to attachment shortcomings in early life. The therapist's own work on these, within themselves, their own maturation, level of integration and wholeness therefore operates like the proverbial house of straw, wood or bricks. Only therapists who have personally experienced and healed from similar, profound early-life experiences will recognize certain depths of suffering in clients. In the best match-ups, the therapist operates as a battle-ready haven of safety, a rich mixture of strength and tenderness.



The new science on attachment and regulation is in line with the timeless concept of one's potential benefit from a sage, shaman, mentor, teacher - and by extension, a therapist. He or she, saying goes, can only take you as far as they themselves have been. Another version of this is, only true love can be given away freely, and another is when the student is ready the teacher will appear. All these point to the relational dance, the therapy or teaching, as key, as dependent upon and evoked *between* the two participants.

The general term for healthy attachment outcomes (resulting from childhood, manifesting in adults) is "secure". The term for unhealthy, potentially problematic attachment outcomes is "insecure". In a recent research, secure attachment in North America was down from 75% to 58%. One of the insecure forms is characterized by avoidance of emotional intimacy. This is linked to narcissism and in this study had increased to 38%



Right hemisphere modulated, attachment-related processes include dedicated neural network. These facilitate facial recognition—as fast as 50 milliseconds. However, in neglect, when the attachment caregiver is not as evolution intends, a “haven of safety”, relational trauma ensues. Also called attachment trauma, research now shows the impact on autonomic functioning.



Research on neglect, long itself a neglected subject, is finally coalescing. Expert Allan Schore reports two-thirds of child maltreatment cases in the USA involved neglect. The underlying neurobiology neglect sets up in adults has incorrectly been lumped with typical forms of overt abuse. In fact, psychiatry needs better names for abuse, especially terms that differentiate sins of omission from sins of commission. Physical, verbal, sexual, psychological abuse are more in line with the former.

Neglect can be thought of as *omission-abuse*. Developmentally this involves an inversion of the fight-flight etiology associated with (‘regular’) commission-type abuse (e.g., physical and sexual abuse). In neglect, mothers/attachment figures are neither clearly *enemy* (attacker) nor *safety* (caring attachment figure). The situation confuses the child. The ‘threat’ is diffuse, spread across time and space, and interpreted as such. Being impossible to pin down, so general and nonspecific, fight-flight may be activated but it has no purchase. There’s no clear person or thing to run from or toward.



Neglect-distress responses are doomed to fail. An infant cheated of the emotional attachment needed for their ANS to flourish will experience and display distress and dysfunction. But neither their down-regulated, disengaged behavior nor hyper-aroused, agitation elicits consistent, robust caregiving. Emotionally, there is no one there to see or hear the baby/toddler even if physically they do have adults providing their basic needs, for example, food, shelter, daycare, school, and doctor visits.

Omission-forms of abuse, by definition, are the result of interpersonal emotional deprivation. Any prolonged problem triggers the polyvagal system's ancient 'dorsal' defenses. These are associated with most common cause of fainting and feigning death in animals. The dorsal vagal complex downregulates the child and sets up the child's own emotional distancing efforts in response to the caregiver's similarly emotionally detached stance. The right hemisphere's emotional centers do not develop correctly. Such kids display a decreased ability process attachment-related input.



So-called neglect involves omission. What is missing is the enemy, and so this invisible lacking is interpreted by the child's mind as a faceless, formless, global threat. As the world at large, as a sort of atmospheric dread and danger.

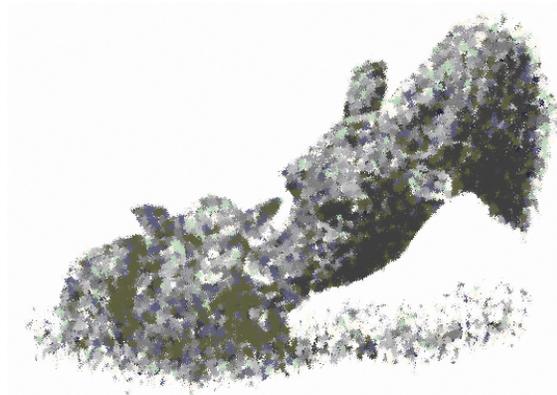
Omission-abuse, or omission forms of abuse, begin with the premise of attachment's importance. Just as the lungs need oxygen, human babies/toddlers/kids need adequate maternal attachment. Anything falling short is a problem of the omission variety. This side of child abuse is characterized in various ways: parents being emotionally unavailable, emotional neglect, hands-off parenting, consistently poor mirroring, disengaged parenting.

Under duress, we look for a safe mother / attachment figure and/or physical refuge. Iterations of this involve blends of love-power. For an animal, the herd or pack offers the power to defend against a predator. For an human infant, the mother is the source of all nourishment and nurturing. The dynamic is one of weakness and power. In later life, those with a background of insecure attachment may seek escapes that others view as false, self-sabotaging and cyclical. But fleeting, rocky relationships, numbing with alcohol, other addictions and "comfort food" provide short-term psychological relief from background ANS-based emotional pain. A person may even engage in arguing/ fighting because there is a sense of reliability and consistency (paradoxically) within the chaos. Any patterned/ repetitive interpersonal phenomena may (paradoxically again) provide a temporarily sense of place, role, expectation and therein control.



Attachment achieves a tremendous crescendo in homo sapiens. It's much more than sweet moms and babies. It's the basis for the baby's future membership in s tribe, her or his capacity to work, hunt, kill, lead, persuade, bond, as needed.

In forms of emotional neglect, the mother/attachment-figure consistently disengages from emotional contact. Her right hemisphere is not available for the infant/toddler/child. The process of mirroring and attunement is marred. For the child attempting to emotionally attach, the disengagement is like a radio station which does not come in clearly, is far too staticky. For mother's right hemisphere to mentor the infant's, the radio station, her face, affect, vocal tone, eye contact, loving, interpersonal gestures must be consistent, coherent and clear.



When someone says, “I’m the type of person who...” or describes how other people’s personalities “drive me crazy”, they are referring to their attachment-formed psychological backdrop. They’ve become so used to this backdrop that, for them, this emotional-behavioral territory is the subjective “I”, the “me”.

In a neglectful dynamic, the attachment figure’s emotional invisibility is not simply invisible to the infant. The infant’s need to emotionally attach can be likened to the lungs need for air. Lungs will pull whatever they possibly can in. The lung will attempt to synthesize oxygen, regardless of the level of pollution or toxins. Similarly, the infant’s brain will seek to interpret whatever is available as caring. In time, of course, emotional damage ensues. This involves the active, mobilizing side of trauma, e.g., anger and anxiety (corresponding to fight-flight), as well as the other, immobilizing defenses. These manifest in blends of depression, anhedonia, avoidance, and disconnection. Therapy or healthy relationship in the face of these defensive patterns is very challenging. But when enough safety develops, a tenuous trust emerges like a winter sun through the fog of dissociation.



The human psyche was battle tested in the wild and is designed for the wild.

Though not positive-sounding on the surface, our species is emotionally steeped in fear. We are by design, vigilant and adept at negative scenario-building. Fear-based imagination aided survival of the fittest, as it does in rabbit, deer and prey animals.

The parasympathetic side of the ANS should not be idealized. The powerful parasympathetic nervous system is often cast as the good side of the ANS. It is critical for putting the brakes on, and slowing fight-flight escalation. It is instrumental in anxiety treatment, and in the overcoming and healing of anxiety and panic disorders. In this way, it brings heart rate, blood pressure and respiration back to a normal, healthy range. But this important role needs to be placed in context. The parasympathetic system can work alongside other, ancient autonomic controls aligned with feigning of death, 'playing possum' and vasovagal syncope—the most common cause of fainting. This power hints at how excess parasympathetic activation may be instrumental in depression, in emotional shut down, in the sense people describe of not caring, of overwhelm, suffocating shame. These states may correspond to a lowered ability to shift into higher, more appropriate levels of engagement with like.



The ANS threat response in each of us involves learned, established emotional-behavioral patterns. These are brain-based and at the ready, for better or worse, in each and every sort of encounter. Embedded in our response repertoire is a perception repertoire. This can involve all manner of distortion and inaccurate outcomes. Some people see threats everywhere, even when another person's gesture or intention is benign. Some blame themselves to extreme degrees and are 'their own worst enemy'. Some are way too submissive and easy for others to exploit. These ways we *perceive threat* tend to fit recognizable patterns, though sometimes psychotherapy is needed to help a person achieve related insight.

