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HOPE. ANSWERS. RESULTS.

the perfect storm

ADHD, autism, sensory processing, and neurological challenges in kids: what if they are not separate problems?

Presented by **Dr. Zach Conner, DC**
Van Every Family Chiropractic Center · Royal Oak, Michigan

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A VAN EVERY FAMILY

Joanne's son, before and after care.

A Montessori principal trusted her gut on her son's sensory struggles and stayed consistent with care.

Van Every • A parent's testimonial

BEFORE WE BEGIN

We support the root cause.

Neurologically-Focused Chiropractic Care. We are a proud, PX Docs affiliated office.

A NATIONAL MOVEMENT

Part of something bigger

Van Every is a proud, **PX Docs affiliated** office: part of a network of more than **1,000 offices** nationwide pooling data and refining this neurologically-focused approach. The Perfect Storm framework was pioneered by **Dr. Tony Ebel.**

WHERE THIS STARTED

Dr. Tony Ebel's son, Oliver

From a struggling baby to a thriving teen

As an infant

Thriving teenager

WHO THIS IS FOR

If this sounds like your family

- Your child struggles with chronic neurological challenges: **autism, ADHD, anxiety, seizures, PANS/PANDAS, sensory, chronic gut issues.**
- You have **exhausted the medical system** and come out with labels, but no root-cause answers and no drug-free action steps.
- You have already tried **diet, supplements, and detoxes**.
- You want the **daily struggles to get better**, not just the diagnosis.

TONIGHT, WE WILL ANSWER FIVE QUESTIONS

The roadmap for tonight

1. What is the real **root cause** of my child's challenges?
2. What the heck is **the Perfect Storm**?
3. What role do **birth trauma, the vagus nerve, antibiotics, and the brain-gut connection** play in all of this?
4. Why don't **medical doctors** know this and tell parents about it?
5. What **drug-free action steps** can I take to get my child and my family out of the storm and help them reach their full potential?

WHAT WE ARE UP AGAINST

The trend is rising

1 in 4

kids has a chronic illness

1 in 6

has sensory issues

1 in 36

is diagnosed with autism

THE MISSING KEY

One foundational key keeps getting missed

- The medical world, and even much of the natural-health world, is missing one foundational key: **the nervous system.**
- It is not simply genetics. Across the neurologically struggling kids in our PX network sample, only about **10%** had an obvious genetic variable; the rest were driven by environmental factors, and our genes take thousands of years to change.
- It is not only toxic load either, things like gluten, casein, environmental toxins, and vaccines among them. In the cases observed across the PX Docs network, toxic load was the dominant factor in only about **20 to 30%**, and those exposures have been around for generations.
- The bigger driver is **environmental stress on the nervous system.** It is time to stop scratching the surface and get to the **real root cause.**

IT IS ALL CONNECTED

Not separate problems in separate silos

- Autism, ADHD, anxiety, seizures, gut and immune issues are **not separate problems in separate silos.**
- One system links the brain and body and runs digestion, immunity, motor tone, sleep, speech, and emotion: **the central and autonomic nervous system.**
- Medicine sends these to separate specialists and misses the forest for the trees.

A FAIR FRAME

An incomplete system, not bad people

Our acute and trauma care is the best in the world. Ironically, that same system can be among the weakest at chronic care. The doctors are **not bad people**, they are doing the best they can inside an incomplete system, because they were never taught to look at the nervous system as the cause. We are simply adding the missing piece.

PARENTS, YOU HAVE OPTIONS

Three real paths (you have a choice)

01

Traditional Medical

Pediatrician, neurologist, geneticist, gastroenterologist. Excellent at acute and trauma care. Often labels without a root-cause answer.

HAS ITS PLACE

02

Functional / Integrative

Diet, supplements, detoxes, the gut and the microbiome. Helpful and important, but works from the outside in.

DOWNSTREAM

03

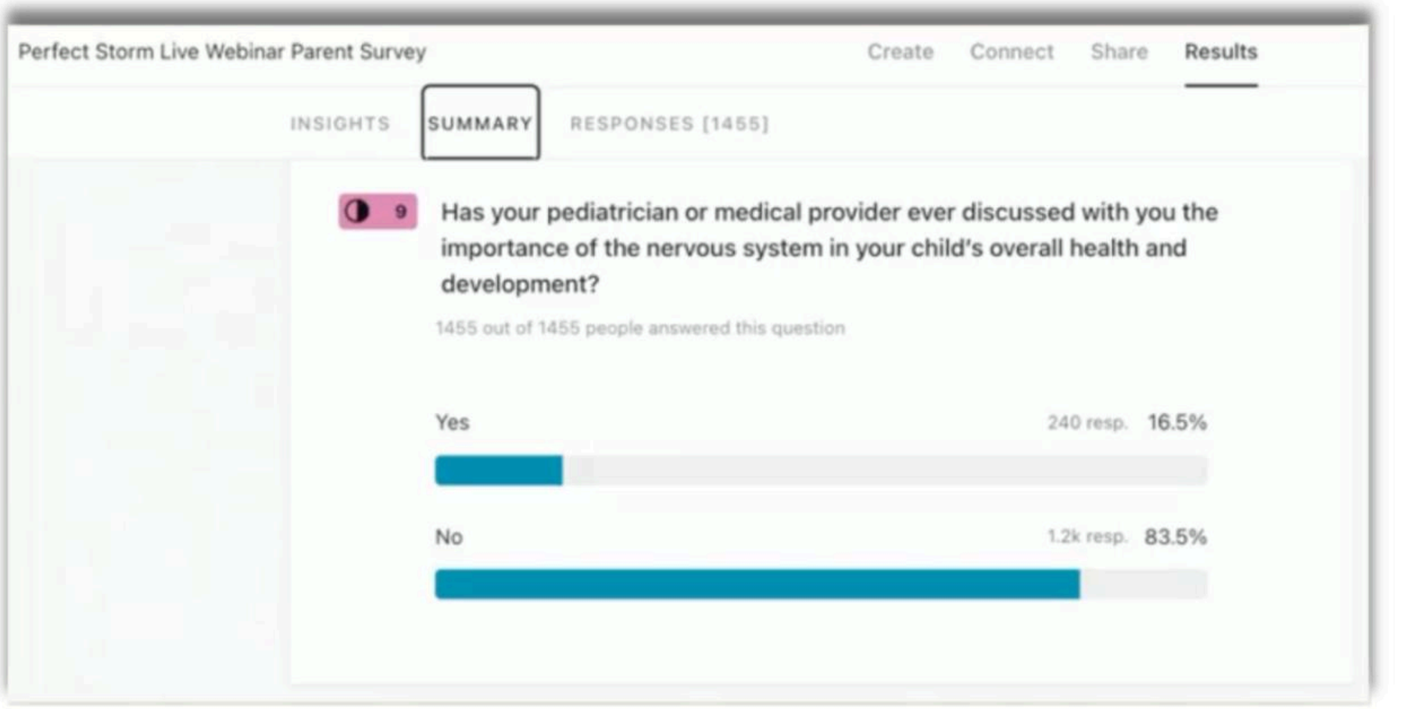
Neurologically-Focused

Start at the nervous system itself, the source. Gentle, drug-free care that supports regulation from the inside out.

THE ROOT CAUSE

WHAT PARENTS TELL US

Has anyone ever told you about the nervous system?



When we ask parents whether a pediatrician or medical provider ever discussed the **nervous system's role** in their child's health and development, the answer is almost always no. It is not the third path most families are ever shown.

“

It is called the Perfect Storm because there is not just one thing driving the rise in ADHD, autism, sensory challenges, seizures, and chronic illness. It is a *multitude* of things, but there is a pattern, a missing link the system is not picking up.

The pattern is what we are here to find.

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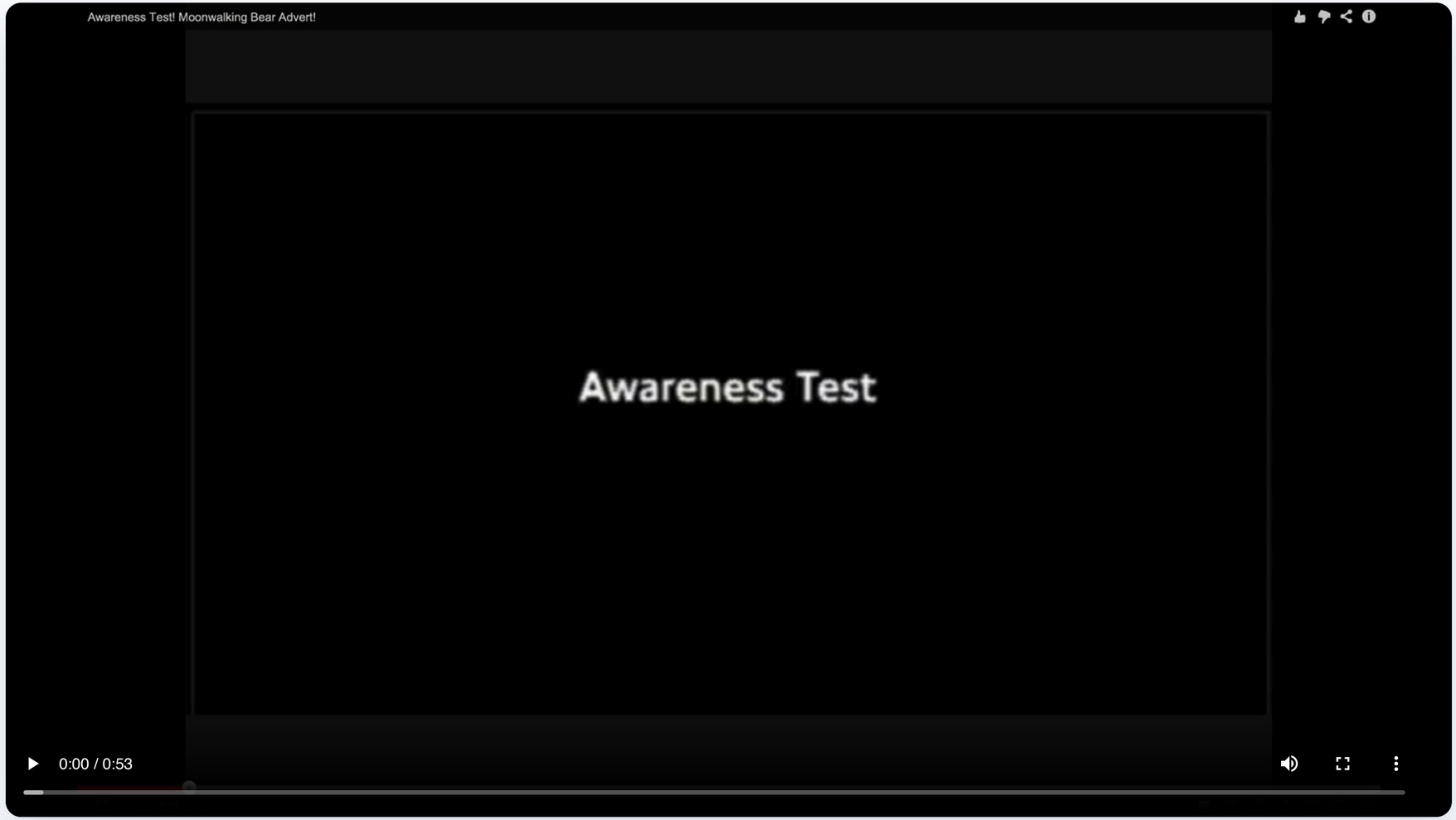
THE MISSING LINK

The Moonwalking Bear

A quick attention test. Count the passes, and watch what almost everyone misses.


Awareness Test! Moonwalking Bear Advert!
Awareness Test
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“

It is easy to miss something you are not *looking* for.

You cannot find what you do not know you are looking for.

THE POINT OF THE DEMO

The nervous system is the bear

Everyone gets the number of passes right, and almost no one sees the bear walk through. That is the whole point. **The nervous system is the bear the medical system was never told to watch for.** Once you know to look, you cannot un-see it.

IN FOUR WORDS

Stress, stuck on.

That phrase is the whole talk in miniature. Keep it in mind as we go.

A nervous system that turned its stress response on and never fully turned it back off. Almost everything ahead traces back to this one picture: **stress, stuck on.**

“

The function of the nervous system is to *perceive* the environment and control behavior.

Dr. Bruce Lipton

THE UNIVERSAL SEQUENCE

Perception, coordination, behavior

- **Perception** is the input. **Coordination** is the processing. **Behavior** is the output.
- Scramble the body's ability to perceive, and the coordination is off, so the behavior everyone sees downstream is off too.
- When a child is misbehaving, they are often **responding to misinformation** in the nervous system.

THE ROOT METAPHOR

The body responds perfectly to its own perception

The body is not malfunctioning. It is responding **exactly right** to the information it is getting. Change the information, through the nervous system, and the response changes. This idea sits underneath everything else in this talk.

TWO HALVES OF THE AUTONOMIC SYSTEM

The gas and the brake

01

Sympathetic (Gas)

Fight-or-flight. Alert, defend, react. Essential in short bursts, exhausting when stuck on.

TOO MUCH

02

Parasympathetic (Brake)

Rest, digest, heal, regulate. The calm-and-grow side, carried largely by the vagus nerve.

TOO LITTLE

03

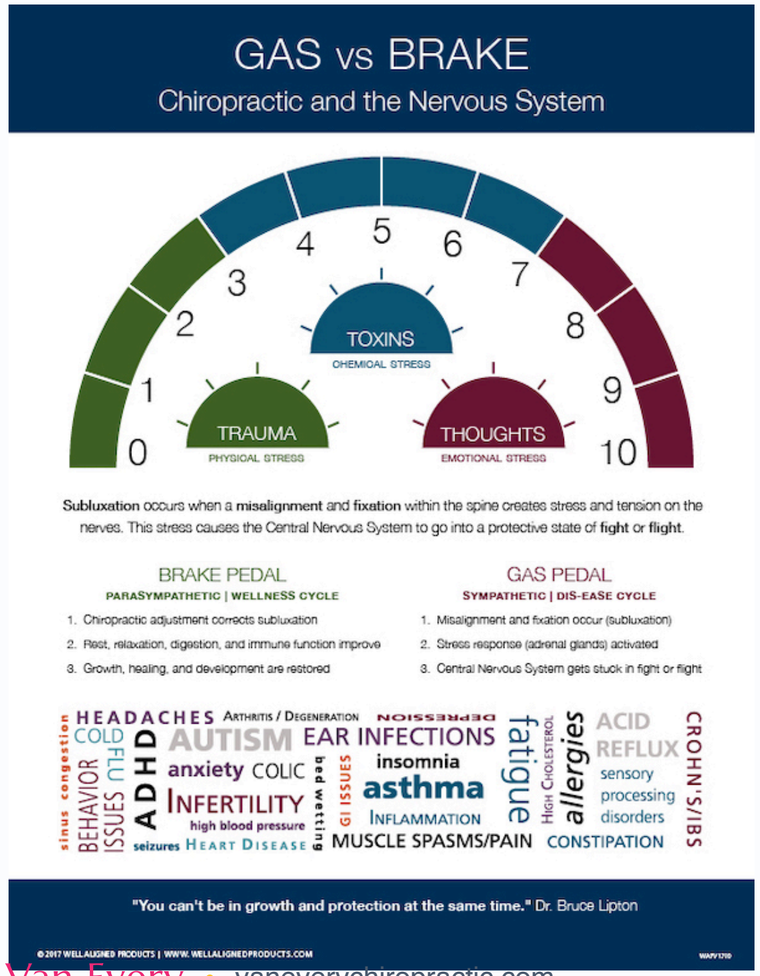
The hallmark

In these kids: too much gas, too little brake. A nervous system stuck in defense instead of growth.

THE PATTERN

TWO PEDALS, ONE NERVOUS SYSTEM

The gas and the brake



The sympathetic side is the **gas**: alert, defend, react. The parasympathetic side, carried by the vagus nerve, is the **brake**: rest, digest, heal, regulate. The hallmark in these kids is too much gas, too little brake.

ALTERED PERCEPTION (SUBLUXATION) = ALTERED FUNCTION

When neuro-motor input is altered, everything shifts

01

Motor 💪

Tone, coordination, milestones. The motor system is the foundation the rest is built on.

02

Gut 💩 · Immune 🤧

Digestion and roughly 70% of the immune system, both run by the nervous system.

03

Speech 🗣️ · Brain 🧠

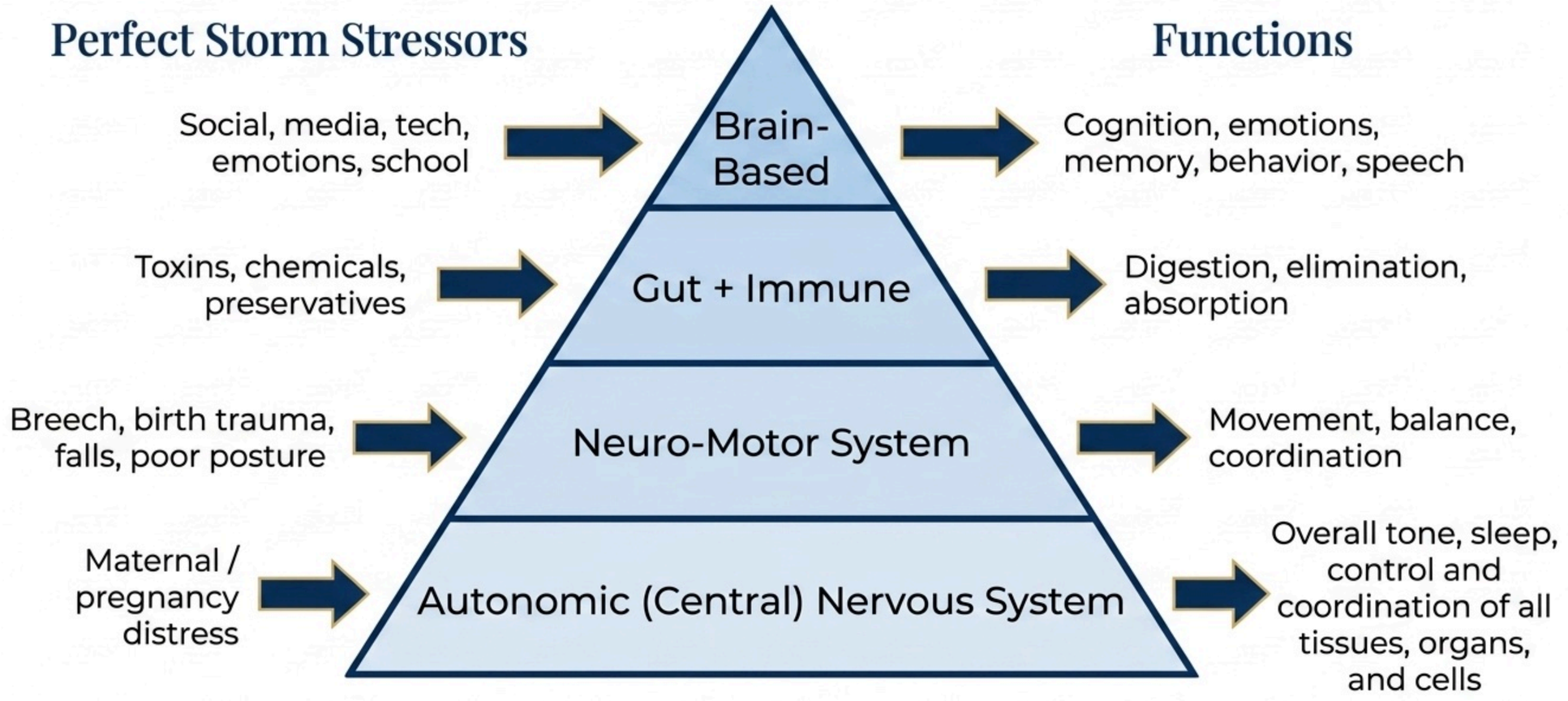
Brains are built bottom-up, back-to-front, over time. Alter the input and development shifts.

BUILT FROM THE BOTTOM UP

The neurodevelopmental hierarchy.

Development is built like a pyramid:
foundation first, higher skills last.

The Neurodevelopmental Hierarchy



BUILT FROM THE BOTTOM UP

Foundation first, higher skills last

Development is built like a pyramid, from the bottom up: a regulated **central nervous system** is the foundation, then autonomic balance, then neuromotor tone and immunity, and only then the higher brain-based skills. Stress at the base shifts everything built on top of it.

HARVARD CENTER ON THE DEVELOPING CHILD

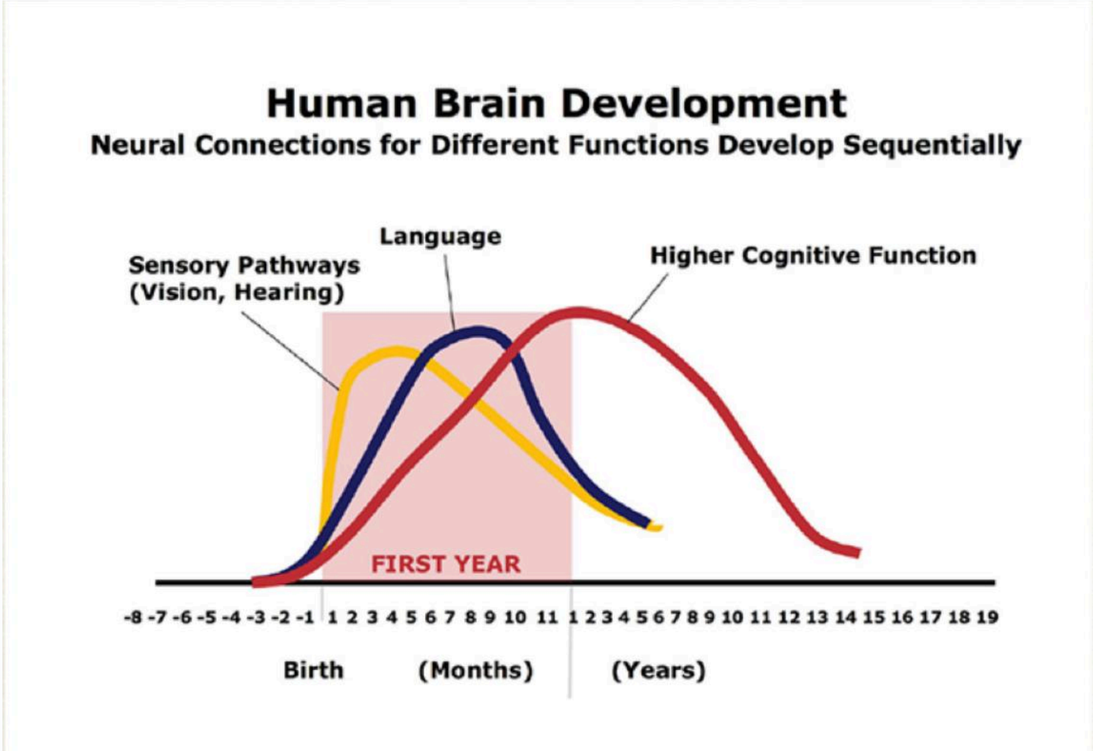
“

The interaction of *genes and experiences* shapes the developing brain.

Experience is not a side note. It builds the architecture.

HARVARD CENTER ON THE DEVELOPING CHILD

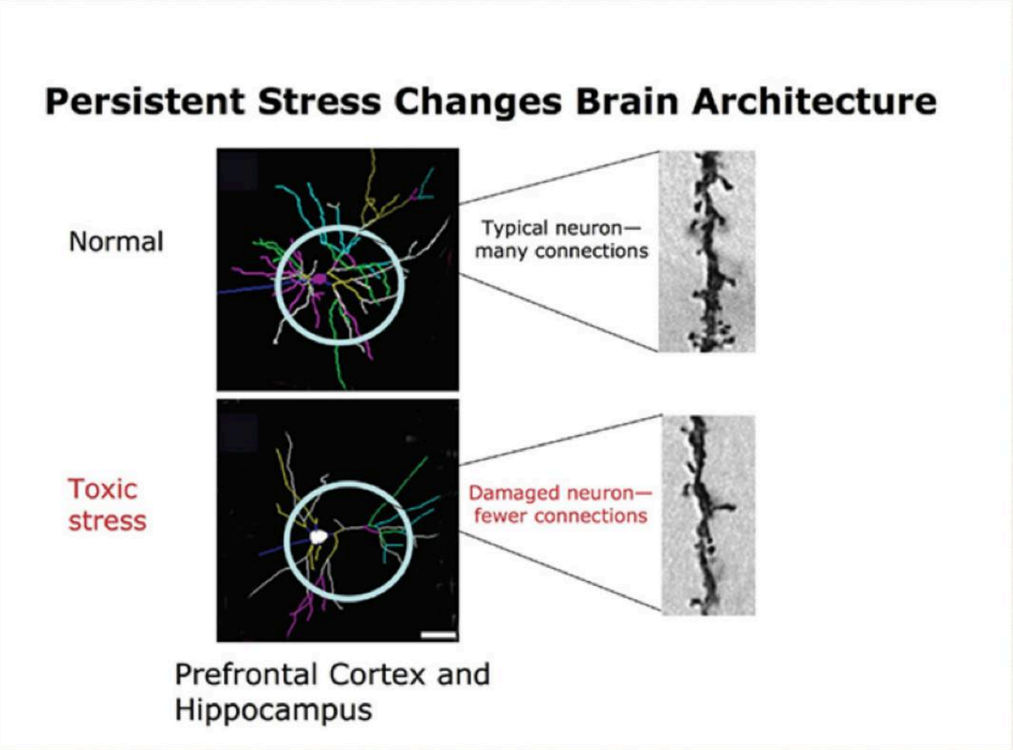
Neural connections develop in sequence



The brain is built in a sequence: **sensory pathways** (vision and hearing) peak earliest, around ages 3 to 4, then **language** around 7, then **higher cognition** around 11 to 12. Early disruption shifts everything built after it.

HARVARD CENTER ON THE DEVELOPING CHILD

Persistent stress changes brain architecture



Persistent, unrelieved stress measurably changes the **architecture** of the developing brain, especially the prefrontal cortex (higher reasoning) and the hippocampus (focus, attention, and memory). This is not behavior, it is structure.

THE PERFECT STORM

The Perfect Storm Algorithm

How much stress (the 3 Ts)? When did the stress occur? That equals how much care, for how long.

ANALOGY · THE LIBRARY OF CARDS

“

You do not get a small fixed hand of genetic cards for life. You get a whole *library*, and the environment decides which ones get played.

Genes load the gun. The storm pulls the trigger.

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THE STORM

Three stressors, one storm

Three stressors that, stacked together, dysregulate a developing nervous system.

THE PERFECT STORM

Three stressors, one stacked result

01

Prenatal & Maternal Stress

A high-stress pregnancy can begin to dysregulate baby's nervous system in utero. The cord can carry cortisol and stress markers, not just nutrients.

NEVER ABOUT BLAMING MOMS

02

Birth Trauma & Intervention

C-section, forceps, vacuum, induction. Normalized, but can stress and injure the upper neck and brainstem.

SUBLUXATION BEGINS

03

Toxins & Medication Load

Antibiotics, Miralax, nebulizers and everyday toxins. Often the straw on an already-stressed system.

THE TIPPING POINT

STRESSOR 1

Prenatal and maternal stress

- A high-stress or high-risk pregnancy can begin to dysregulate baby's developing nervous system **in utero.**
- Stress on mom's system can cross to baby. The cord can carry cortisol and stress markers, not just nutrients.
- The hallmark of these conditions, too much fight-or-flight tone, **often starts here.**
- This is never about blaming moms. Mom often needed that care. Knowing the trigger is simply what lets us address it.

THE TOXIC LOAD STARTS EARLY

Before the baby is even born

~287

chemicals found in the cord blood of healthy newborns

~180

of them known carcinogens (matches the well-known 2005 study)

STRESSOR 2

Birth trauma and intervention

- Interventions (C-section, forceps, vacuum, induction) have been normalized, but can stress and injure the **upper neck and brainstem.**
- In a large share of the toughest neurological cases, there is a significant birth intervention in the history.
- This creates **subluxation**: misalignment, tension, and neurological interference in the upper cervical spine and brainstem, the air-traffic-control for the whole nervous system.

ANALOGY · THE INDUCTION PILEDRIVER

“

When the body is not ready and labor is forced, an induction can land on a baby like a *piledriver*.

Vivid on purpose. Birth is the first big stressor.

C-SECTION TREND

More than one in three births

6% → 32%+

C-section rate, mid-1970s to today, and still rising

~80%

of C-section children showed sensory differences in one small study

THE TREND, IN ONE CHART

Cesarean rates keep climbing

Cesarean delivery has gone from a rare intervention to **more than one in three births**, and it is still climbing. Every one of those is a normalized, but real, stressor on a newborn nervous system.

THE MOONWALKING BEAR, AGAIN

Watch what a typical birth asks of a newborn.

Like the bear, it is easy to miss until you know to look.


My son being born. C-section video.
0:00 / 0:24

WHAT TO NOTICE

The torque lands on the brainstem

Notice the pulling and torque through the **upper neck and brainstem**, the air-traffic-control of the whole nervous system. Like the Moonwalking Bear, once you know to look, you cannot un-see it.

THE FIRST BIG STRESSOR

What that pulling lands on

Moments after delivery. The same torque you just watched lands on the **upper neck and brainstem** of a brand-new nervous system. This is why we look there first, gently, in every newborn.

Van Every • Royal Oak, since 1998

SOMATIC DYSFUNCTION (SUBLUXATION)

Birth itself is the first stressor

A study of one hundred healthy newborns found nearly all of them subluxated right after birth (about 99 of 100). A large share sit on the **right side**, because most birth providers are right-handed and the dominant hand jams that side during delivery. In 99 of 100 infants, at least one pattern of subluxation is present.

SIGNS PARENTS RECOGNIZE

It is not only birth

- **The nursing-side tip:** a baby who nurses happily on one side and fights the other often has something going on in the neck. We have two sides for a reason.
- **Everyday hidden trauma:** learning to walk and ride a bike is falling over and over.
- Hours a day in **car seats and bouncers** add up on a little spine. The home videos that are funny to everyone else can be cringe-worthy to a pediatric chiropractor.

STRESSOR 3

Toxins and medication overload

- Antibiotics (especially in the first two years), Miralax, nebulizers, plus everyday environmental toxins, often used instead of addressing the root cause.
- In a nervous system already stressed and less resilient, these become **the straw that breaks the camel's back.**
- Toxins matter, but usually the storm was already brewing underneath. This is factual, not anti-medicine. Medication has its place.

EARLY ANTIBIOTICS

In an already-stressed system

2-4×

rise in allergies and asthma linked to antibiotics before age 3

24 mo

antibiotics in the first 24 months can affect neurocognitive outcomes at 11

THE ANATOMY OF THE STORM

Contributing factors, across the cases we see

~50%+

documented major prenatal stress

~80%

some form of birth trauma or intervention

~10%

genetics as the major variable

SUBLUXATION, DEFINED

Not just a bone out of place

From a Neurologically-Focused viewpoint, **subluxation** is misalignment, tension, and restricted motion in the neurospinal system that interferes with communication between the brain and body. It disrupts the body's ability to regulate and adapt, shifting the autonomic system out of balance. Not just a structural issue in the spine, a deeper disruption in the body's ability to communicate, adapt, and heal.

“

The spine serves as far more than a bunch of ligaments and bones. It is the *central highway and processing center* for the entire nervous system, the master system that controls and coordinates the function and healing of every cell, tissue, and organ in the body.

Dr. Tony Ebel

THE EFFECTS OF SUBLUXATION

The neuro fuse: one spine, system-wide

A cause-and-effect map of the spine: tension at a given level can echo out into **digestion, immunity, focus, sleep, and tone.** Each level connects to specific organs and systems.

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WHERE IT MATTERS MOST

The brainstem is air-traffic control

Tension in the upper neck and brainstem alters the signal for the whole nervous system. **"Are you talking about a bone, like T1 or T2?"** Not really the bone. The brainstem and the flow of information through that area. Tension there alters the signal. This is the line that separates this work from structural, bone-popping chiropractic.

SAY IT PLAINLY

Subluxation = Stress, stuck on.

The hallmark: too much sympathetic tone, too little vagal calm.

THE RESULT

Subluxation to dysautonomia

Subluxation of that area shifts the child into **dysautonomia**: too much sympathetic (fight or flight), too little parasympathetic and vagal (rest, digest, heal, regulate). When the vagal side is suppressed, the system cannot calm, soothe, digest, communicate, or regulate, all essential for development.

HOW SUBLUXATION PROGRESSES

The 3 progressive stages of subluxation

01

1 · Dominance

Sympathetic fight-or-flight dominance. The gas pedal is stuck on and the brake pedal is shut down.

GAS ON, BRAKE OFF

02

2 · Disorganization

Neurological disorganization, dysfunction, and confusion. The signals stop coordinating cleanly.

SIGNALS SCRAMBLE

03

3 · Exhaustion

Neurological exhaustion, depletion, and depression. The system has run in defense so long it runs low.

THE TANK RUNS LOW

ANALOGY · THE FERRARI

“

A child stuck in fight-or-flight is a beautiful Ferrari doing ninety. The brake is the *vagus nerve*, and our job is to gently tap the brakes, never slam them.

We support the root cause.

ANALOGY · TWO RIVERS

“

Proprioception (good movement input) and nociception (stress input) are two rivers feeding the brain, and the *louder one wins*.

In these kids the stress river is Metallica at full blast and the calm river is quiet elevator music. We turn the calm one back up.

MOTION IS THE FUEL

Why these kids go hunting for motion

The nervous system runs on motion. That is how the information flows, and a large share of that movement signal comes from the upper neck and brainstem, an area especially dense with movement sensors. When that area is locked up, kids go hunting for the motion elsewhere: the tapping, the toe-walking, the chewing, the teeth-grinding. Those are **recruitment attempts**, not just quirks.

A CORE PRINCIPLE

You cannot be in growth and protection at the same time.

A nervous system stuck in defense has no resources left for development.

BRUCE LIPTON

Growth or protection, never both at once

A body in protection (gas, sympathetic) cannot also be in growth (brake, parasympathetic). A system held in defense spends its resources **surviving, not developing.** Our work is to help it feel safe enough to grow again.

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NEXT SECTION

The 5 D's of Subluxation

It starts with disintegration: one stress, left in place, progresses step by step through the system.

THE PROGRESSION, IN SEQUENCE

From first stress to lasting change

1. **Dyskinesia**: abnormal alignment and movement.
2. **Dysafferentation**: abnormal sensory input to the brain.
3. **Dysautonomia**: imbalance of the autonomic nervous system, gas up, brake down.
4. **Dysfunction**: interference with the optimal function of other body systems.
5. **Dysponesis**: abnormal energy expenditure and output.

“

It is *easy to miss* something you are not looking for.

The Moonwalking Bear, again. The 10 D's are easy to miss until you know the pattern.

THE HONEST LINE

They do not grow out of it. They grow into a new diagnosis.

The same root issue just changes its name as the child grows.

THE STORM ACROSS A LIFETIME

One stressed system, seven stages

1. **Prenatal emotional stress** (documented in a majority of these cases).
2. **Birth intervention** (present in roughly 80%): C-section, forceps, vacuum, induction.
3. **The stressed, colicky, constipated baby** who cannot settle or sleep.
4. **The sensory, frequently-sick toddler** with reflux, ear infections, and reactions.
5. **The hyperactive or emotionally-stuck child**: where autism, ADHD, and anxiety labels arrive.
6. **The anxious or depressed teen** (now about 1 in 3).
7. **The burnt-out adult** still carrying the same dysregulated nervous system.

THE CASCADE, NAMED AT EVERY STEP

Same storm, different name

Can't turn head → **Poor latch** → **Drainage backs up** → **Ear infections** →
Antibiotics → **Ear infections again** → **Antibiotics again** → **Ear tubes** →
Adenoids / tonsils out → **Immune + gut take a hit** → **Asthma** → **Allergies** →
Gut issues

The colicky, constipated, cannot-sleep baby is often the fifth-grader with ADHD. **Same storm, different name.**

PERFECT STORM · GRADE SCHOOL

The colicky baby is the fifth-grader with ADHD

By grade school, the early storm has a new name. The baby who could not turn his head, who was colicky and constipated and could not sleep, is now the child who cannot sit still, cannot focus, melts down at transitions. **Same storm, new label.** And it is never too late to support the system underneath.

ANALOGY · DRAINAGE AND PLUMBING

Things have to be able to come out

The body is endlessly complex, but a lot of it comes down to something simple: **drainage and plumbing.** When the parasympathetic side is down, the drainage backs up, and that is when the ears and sinuses keep getting infected. Support the nervous system, and the plumbing starts to drain again.

THE RESEARCH IS CATCHING UP

A growing body of evidence

- Prenatal, perinatal, and neonatal factors in **autism and pervasive developmental disorders**.
- **Cesarean delivery** and sensory and neurodevelopmental outcomes.
- Early **antibiotic** exposure linked to allergies, asthma, and neurocognitive outcomes.
- **Vagal nerve stimulation** reduces intestinal inflammation (the brain-gut axis).
- **Cerebellum, sensitive periods, and autism** (Wang et al., Princeton Neuroscience Institute).
- Sensory processing differences and altered **parasympathetic and vagal** function.
- Persistent stress and **brain architecture** (Harvard Center on the Developing Child).

DYSAUTONOMIA & KEY BRAIN FUNCTIONS

Three players in the stress chain

01

Amygdala

The seat of emotions, specifically fear and anxiety. Overactive when stress stays stuck on.

FEAR CENTER

02

Hippocampus

Focus, attention, memory, and situational awareness. Gets crowded out when the amygdala dominates.

FOCUS + ATTENTION

03

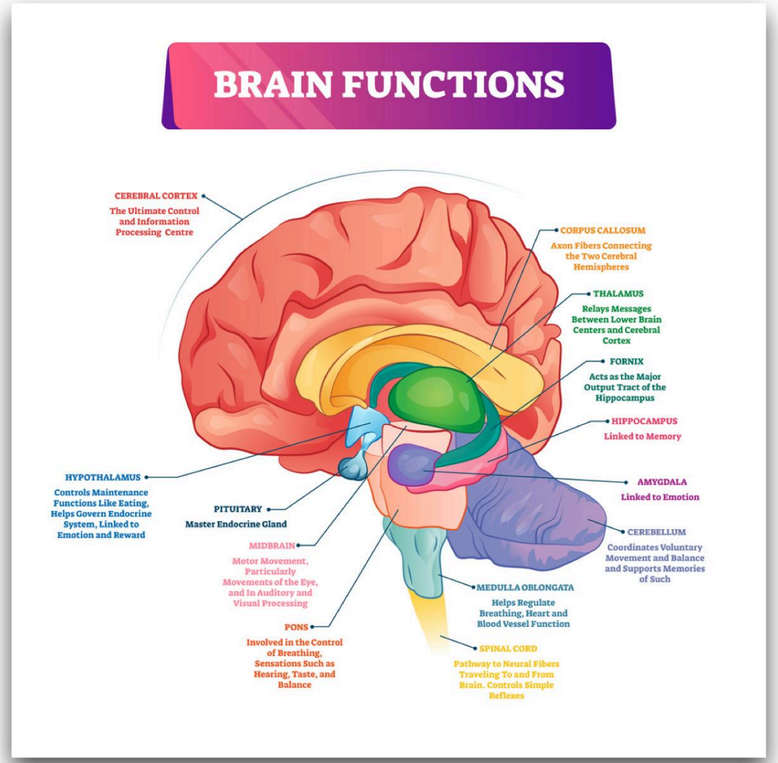
Prefrontal Cortex

Higher reasoning, judgment, and social skills. Starved last in the chain.

SOCIAL

KEY BRAIN FUNCTIONS

Where stress lands in the brain



The **amygdala** drives fear and anxiety, the **hippocampus** holds focus, attention, and memory, and the **prefrontal cortex** runs higher reasoning and social skills. Stuck-on stress keeps the amygdala in charge and starves the rest.

THE STRESS CHAIN

Why focus and behavior suffer

- Early stress keeps the **amygdala** (fear) overactive.
- That crowds out the **hippocampus** (focus, attention, and memory).
- Which in turn starves the **prefrontal cortex** (higher reasoning and social skills).
- Anxiety is fear of the future. That is the amygdala in the driver's seat.

THE SHARPEST REFRAME

“

A lot of people are told they have a chemical imbalance. But what we keep finding is a *neurological* imbalance driving the chemistry.

Address the neurology and the chemistry tends to settle on its own. Neuro-transmitters: neuro = nervous system, transmission = communication.

THE GUT CONNECTION

The brain-gut axis runs both ways

~70%

of the immune system lives in the gut, and the gut is run by the nervous system

~90%

of the body's serotonin is produced in the gut, which is run by the nervous system

THE CALM-AND-HEAL SIDE

The Vagus Nerve

Vagus is Latin for wander. It is the longest cranial nerve, and it wanders through the whole body, which is why upper-neck work can help digestion.

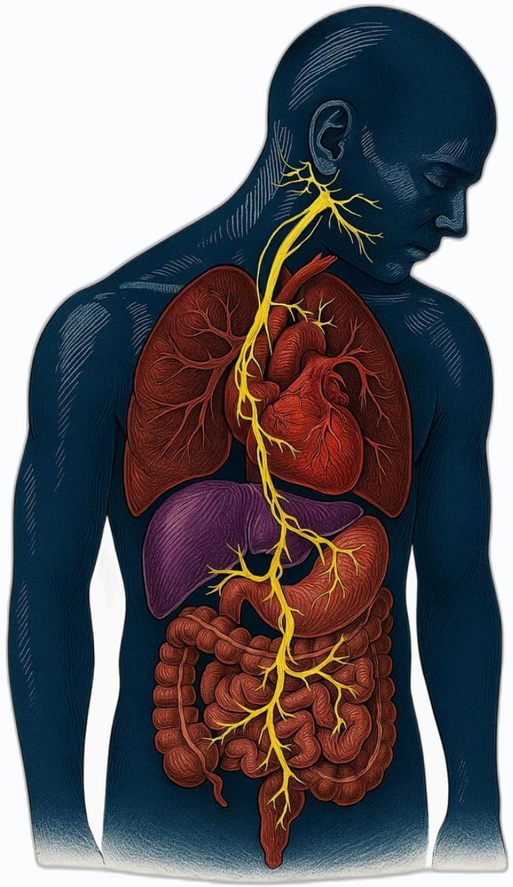
WHAT THE VAGUS REGULATES

One nerve, many systems

- Heart rate and blood pressure
- Digestion and gut motility
- Inflammation and immune response
- Mood and emotional regulation
- Sleep
- When it works well, it promotes a state of **relaxation and healing.** When impaired, a wide range of chronic problems follow.

VAGUS IS LATIN FOR WANDER

One nerve, from the brainstem to the gut



The vagus nerve **wanders** from the brainstem down through the heart, lungs, and gut. That single reach is why gentle work at the upper neck can ripple all the way into digestion, immunity, and calm.

THE RESEARCH

Brain-Gut before Gut-Brain

Recent advances in basic science

OPEN ACCESS

The vagal innervation of the gut and immune homeostasis

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Published Online First 29 September 2012

ABSTRACT
The central nervous system interacts dynamically with the immune system to modulate inflammation through humoral and neural pathways. Recently, in animal models of sepsis, the vagus nerve (VN) has been proposed to play a crucial role in the regulation of the immune response, also referred to as the cholinergic anti-inflammatory pathway. The VN, through release of acetylcholine, dampens immune cell activation by interacting with α-7 nicotinic acetylcholine receptors. Recent evidence suggests that the vagal innervation of the gastrointestinal tract also plays a major role controlling intestinal immune activation. Indeed, VN electrical stimulation potently reduces intestinal inflammation restoring intestinal homeostasis, whereas vagotomy has the reverse effect. In this review, we will discuss the current understanding concerning the mechanisms and effects involved in the cholinergic anti-inflammatory pathway in the gastrointestinal tract. Deeper investigation on this counter-regulatory neuroimmune mechanism will provide new insights in the cross-talk between the nervous and immune system leading to the identification of new therapeutic targets to treat intestinal immune disease.

INTRODUCTION
Accumulating evidence supports the idea that an intricate communication network exists between the nervous and immune systems, and that this crosstalk could play a crucial role in the regulation of the immune response.[1] The interplay between those diverse systems occurs through a complex set of neurotransmitters, cytokines and hormones that act as counter-regulatory mechanisms able to dampen inflammation and restore homeostasis.[1 2] On a systemic level, neuroendocrine mechanisms reduce inflammation by the hypothalamic-pituitary-adrenal (HPA) axis through the anti-inflammatory effect of glucocorticoids, by the hypothalamic-pituitary-gonadal axis through sex hormones, and by the hypothalamic-pituitary-thyroid hormone axis through thyroid hormones.[3 4] Although modulation of the immune system by the nervous system, in particular the adrenergic nervous system, has been introduced decades ago,[5] interest in the role of the autonomic nervous system as a key player in immune homeostasis has recently increased exponentially. In 2000, Tracey and coworkers demonstrated that vagus nerve (VN) stimulation potently suppresses cytokine production in a rodent model of sepsis.[6] This discovery has led to the introduction of the concept of the cholinergic anti-inflammatory pathway,[7] a hard-wired connection between the immune and nervous systems closely interacting to regulate inflammation. It is currently supposed that inflammatory mediators activate sensory nerves and send signals concerning the state of the inflammation to the central nervous system. The latter, through efferent nerves, releases neuromediators that influence immune cells and modulates local inflammation.[8] Consequently, it is now clear that the nervous system is able to regulate inflammation in peripheral tissues and to restore local immune homeostasis.

In the present review, the current knowledge and the clinical implication of the intestinal cholinergic anti-inflammatory pathway will be discussed. Readers interested in the sympathetic modulation of the immune response are referred to excellent reviews on this topic.[9–11]

THE CHOLINERGIC ANTI-INFLAMMATORY PATHWAY
While studying the anti-inflammatory effect of the inhibitor of p38 MAP kinase, CNI-1493, it became clear that this compound suppressed carrageenan-induced paw oedema at doses at least 6-logs lower when injected intracerebroventricular than required for a systemic effect.[12] This potent anti-inflammatory effect was abrogated after bilateral vagotomy. Conversely, recording of the efferent VN electrical activity revealed an increase in discharge rate after infusion of CNI-1493, suggesting anti-inflammatory properties of VN activation. Similarly, electrical stimulation of the transected peripheral VN for 20 min prevented the development of an acute inflammation in response to carrageenan injection in the paw and increased survival in a model of sepsis[6] by reducing cytokine (tumor necrosis factor (TNF)) production of splenic macrophages. This anti-inflammatory effect could be reproduced in vitro using isolated human macrophage cultures; the release of TNF, interleukin (IL)-1β, IL-6 and IL-18 in response to endotoxin was significantly reduced by acetylcholine (ACh) and nicotine. In a search to pharmacologically mimic the effect of VN stimulation, Wang *et al* identified the α7 subtype of the nicotinic acetylcholine receptor (α7nAChR) as the main receptor by which splenic macrophages are modulated.[13] The anti-inflammatory effect of VN stimulation is lost in α7nAChR knockout mice, can be blocked by specific antagonists α7nAChR, and is mimicked both in vivo and in vitro by α7nAChR agonists.[13] Based on these findings, the 'cholinergic anti-inflammatory pathway' was introduced, whereby the VN modulates the immune response in the spleen providing an additional protective mechanism to the host (figure 1). This mechanism protects against the lethal effects of cytokines by restraining the magnitude of a potentially fatal peripheral immune response.[6–8]

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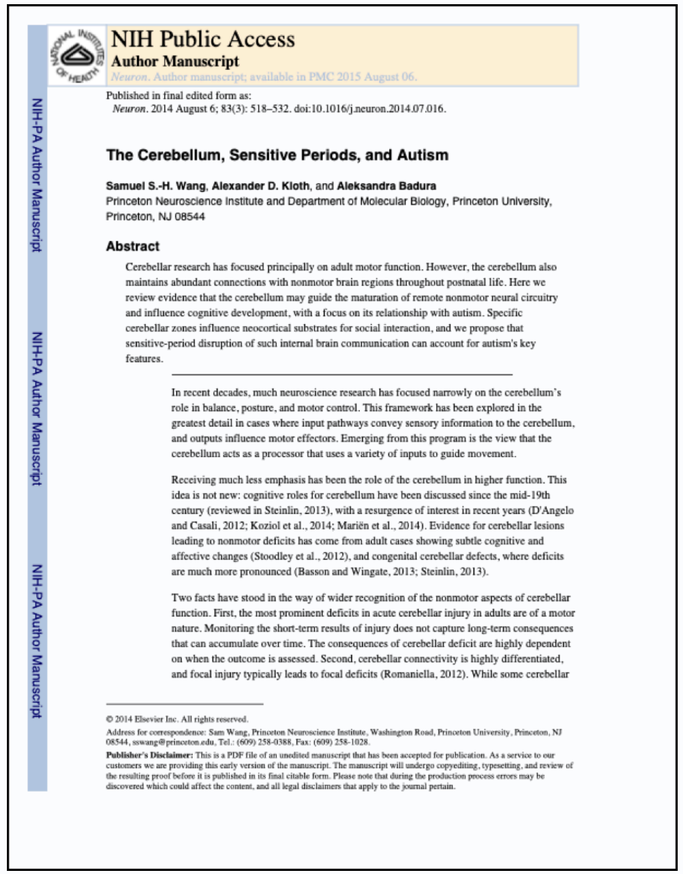
To cite: Matteoli G, Boeckxstaens GE. Gut 2013;62:1214–1222.

Vagal nerve stimulation **reduces intestinal inflammation.** The brain-gut direction comes first: the nervous system sets the conditions the gut then lives in.

DEVELOPMENTAL DIASCHISIS

One area, distant effects



NIH Public Access
Author Manuscript
Neuron. Author manuscript; available in PMC 2015 August 06.

Published in final edited form as:
Neuron. 2014 August 6; 83(3): 518–532. doi:10.1016/j.neuron.2014.07.016.

The Cerebellum, Sensitive Periods, and Autism

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Abstract

Cerebellar research has focused principally on adult motor function. However, the cerebellum also maintains abundant connections with nonmotor brain regions throughout postnatal life. Here we review evidence that the cerebellum may guide the maturation of remote nonmotor neural circuitry and influence cognitive development, with a focus on its relationship with autism. Specific cerebellar zones influence neocortical substrates for social interaction, and we propose that sensitive-period disruption of such internal brain communication can account for autism's key features.

In recent decades, much neuroscience research has focused narrowly on the cerebellum's role in balance, posture, and motor control. This framework has been explored in the greatest detail in cases where input pathways convey sensory information to the cerebellum, and outputs influence motor effectors. Emerging from this program is the view that the cerebellum acts as a processor that uses a variety of inputs to guide movement.

Receiving much less emphasis has been the role of the cerebellum in higher function. This idea is not new: cognitive roles for cerebellum have been discussed since the mid-19th century (reviewed in Steinlin, 2013), with a resurgence of interest in recent years (D'Angelo and Casali, 2012; Koziol et al., 2014; Mariën et al., 2014). Evidence for cerebellar lesions leading to nonmotor deficits has come from adult cases showing subtle cognitive and affective changes (Stoodley et al., 2012), and congenital cerebellar defects, where deficits are much more pronounced (Basson and Wingate, 2013; Steinlin, 2013).

Two facts have stood in the way of wider recognition of the nonmotor aspects of cerebellar function. First, the most prominent deficits in acute cerebellar injury in adults are of a motor nature. Monitoring the short-term results of injury does not capture long-term consequences that can accumulate over time. The consequences of cerebellar deficit are highly dependent on when the outcome is assessed. Second, cerebellar connectivity is highly differentiated, and focal injury typically leads to focal deficits (Romaniella, 2012). While some cerebellar

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Cerebellar dysfunction in a critical period can produce effects far from the original site. (Wang et al., Princeton.)

“

Diaschisis (from the Greek for *"shocked throughout"*) is a sudden change of function in a part of the brain connected to a distant, injured area.

Definition

DEVELOPMENTAL DIASCHISIS

Distortion of the developing map.

Early stress in one place can throw off development somewhere else entirely.

THE PROBLEM, IN THREE WORDS

Subluxation = Disconnection.

Interference in the communication between brain and body.

THE WORK, IN THREE WORDS

Chiropractic = Restoration of connection.

We remove the interference so the brain and body can communicate again.

PXDOCS

4

THE PATH OUT

Fix the body first, in the right order

You cannot fix the brain until you support the body. Foundation, then plumbing, then electrical.

THE CORE FOUR

The first systems to go offline

01

Sleep · Gut

When the storm hits, sleep and digestion are often the first to break down.

FOUNDATION

02

Immune

Always getting sick, slow to recover. The immune system is run by the nervous system.

FOUNDATION

03

Motor

Tone and milestones. Missed motor milestones point toward sensory, ADHD, and learning challenges.

FOUNDATION

WHY ORDER MATTERS

Restore the basics first

The core four (sleep, gut, immune, motor) are the foundation of neurodevelopment. **Missed motor milestones point toward sensory, ADHD, and learning challenges.** So we restore the basics first. Expecting the brain to heal while the body is still in survival mode is asking for the roof before the foundation.

ROOT CAUSE, RIGHT ORDER

Foundation, then plumbing, then electrical.

We support the root cause in a specific, sequential order.

WHAT IMPROVES FIRST

Quality of life leads

Quality of life improves first: **sleep, eating, the bathroom, haircuts, fewer meltdowns.** Then the brain has room to heal. Parents feel the daily struggles ease before they ever see the bigger changes, and that is exactly the order we expect.

ANALOGY · THE BREAKER BOX

“

If every light in the house goes out, you do not run around replacing every bulb. You go to the *breaker box* and fix the breaker.

And if the breaker keeps flipping, the answer is not to keep flipping the switch, it is to fix the overload.

ANALOGY · THE FEVER

“

A fever is not the enemy. It is the body turning up the heat on purpose, the same way you boil water on purpose.

We support the body's ability to adapt. We do not just silence the signal.

THE SOLUTION

Neurologically-Focused Care at Van Every

Gentle, light-touch care that supports the nervous system from the inside out.

WHY FAMILIES COME TO VAN EVERY

The challenges parents bring us

- The focus struggles and constant motion of **ADHD**, and the meltdowns and overload of **sensory processing.**
- The worry, racing heart, and sleepless nights of **anxiety and chronic stress.**
- The inconsolable crying, gas, and reflux of **colic and infant digestive distress.**
- **Bedwetting**, **eczema**, and **growing pains** that never seemed to have a clear answer.
- Support for kids with complex needs, including **children with Down syndrome.**
- One thread runs through all of it: a nervous system stuck in stress. We support that root cause, never a cure.

WHERE THIS FITS

Inside-out, not outside-in

Most approaches work from the outside in: the diet, the therapy, the supplement, the medication, all good and all downstream. This works from the **inside out**, starting at the nervous system itself, the source. We are not asking you to stop the outside-in work, we are giving it a foundation to land on.

HOW WE ADJUST

Gentle and specific: no cracking, popping, or twisting

01

Gentle Tonal Adjusting

A gentle, tonal, nervous-system-focused approach to the adjustment.

LIGHT TOUCH

02

Koren Specific (KST)

Precise, low-force adjusting that is safe and comfortable for children of all ages, including infants.

SPECIFIC

03

Ultra-Gentle for Little Ones

For babies, about the same pressure as checking a ripe tomato. No cracking or popping; many sleep right through.

RIPE-TOMATO GENTLE

THE BEST LINE FOR A NERVOUS PARENT

“

We are not putting something into the child. We are helping the body *release* something it has been holding. The adjustment is neurologically pleasing, not invasive.

Gentle and specific. Safe for newborns through grandparents.

WE DON'T GUESS, WE TEST

INSiGHT scans show it objectively

01

Neurothermal

Shows interference and inflammation along the spine, where the nervous system is working too hard.

INTERFERENCE

02

Surface EMG

Reads motor and neuro tone, how much energy the muscles and nerves are burning.

TONE

03

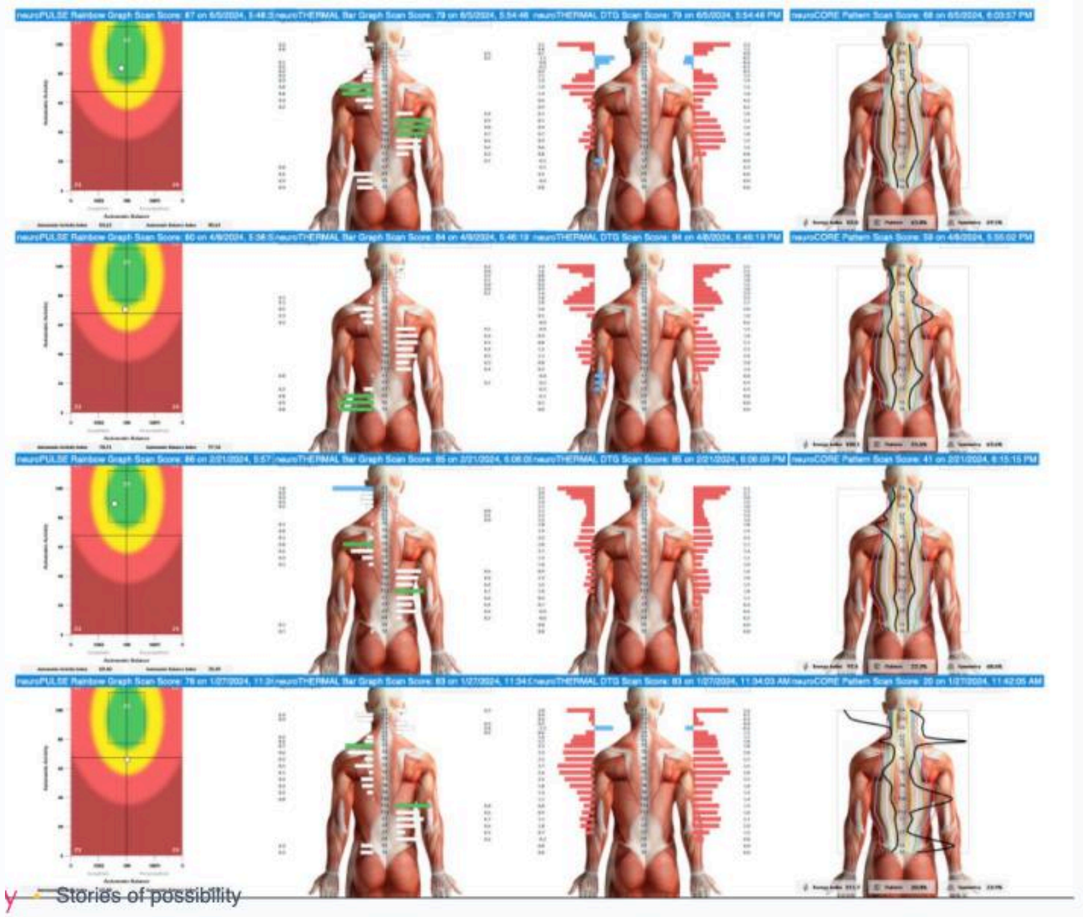
HRV

Heart-rate variability: the balance between the vagal calm side and the sympathetic gas side.

BALANCE

WE DON'T GUESS, WE TEST

What the scans actually look like



The colors map where the nervous system is working too hard, and the same scans, repeated over time, show the pattern moving. **We don't guess, we test.**

INSIGHT SCANS · A PATTERN PARENTS REMEMBER

Three patterns on the scan

Raging Bull

GAS FLOORED · TANK FULL

High-energy, classic hard-charging presentation. Plenty still in the tank, the system is running hot.

GAS ▲ BRAKE ▽

Drunken Bull

GAS ON SO LONG · TANK LOW

Things go quiet and flat: low tone, poor focus and memory. Stuck on so long it ran low.

GAS ▼ BRAKE ▽

Raging + Drunken

GAS + BRAKE AT ONCE

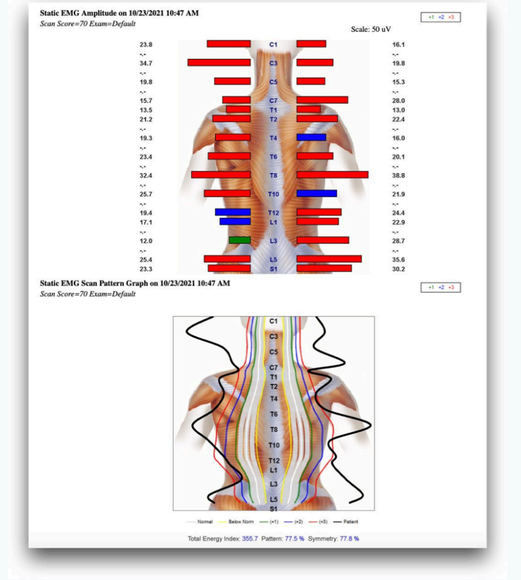
Chaos throughout the system, gas and brake pressed together. The scattered, mixed presentation.

GAS ▲ BRAKE ▲

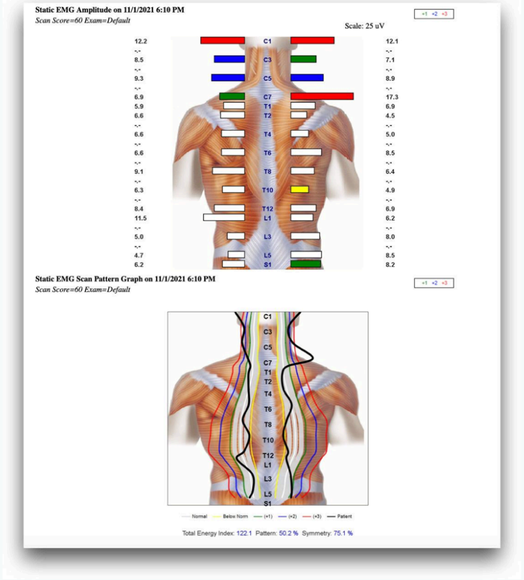
WE DON'T GUESS, WE TEST

The three patterns, on a real scan

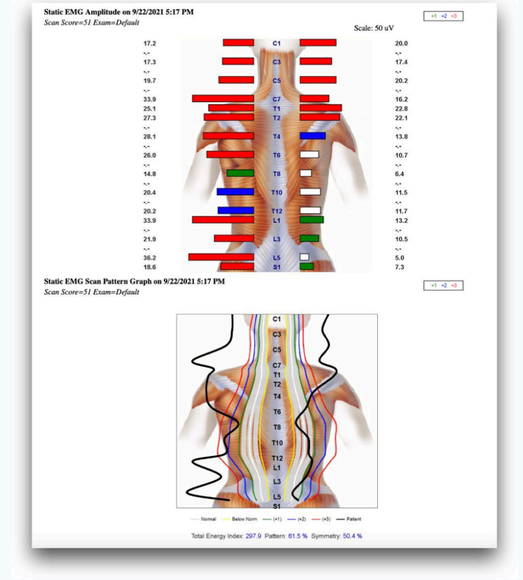
Raging Bull



Drunken Bull



Raging + Drunken

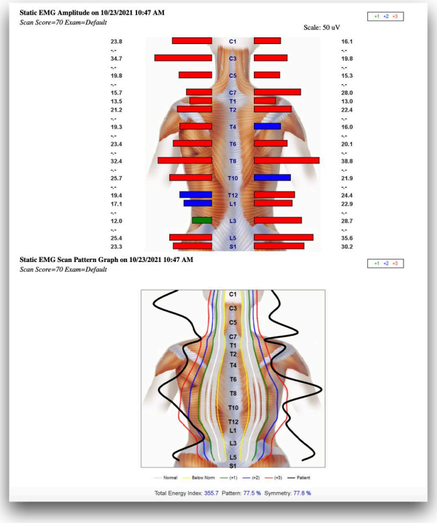


Three real surface-EMG scans, side by side. **Drunken Bull** has run the tank low, **Raging Bull** runs hot, and **Raging + Drunken** shows both at once. Parents recognize their child instantly.

PATTERN 1 · RAGING BULL

Gas floored, tank still full

The classic high-energy, hard-charging presentation. The sympathetic gas pedal is floored and there is plenty still in the tank. These are often the kids who seem to never stop, big reactions, hard to settle, running hot.



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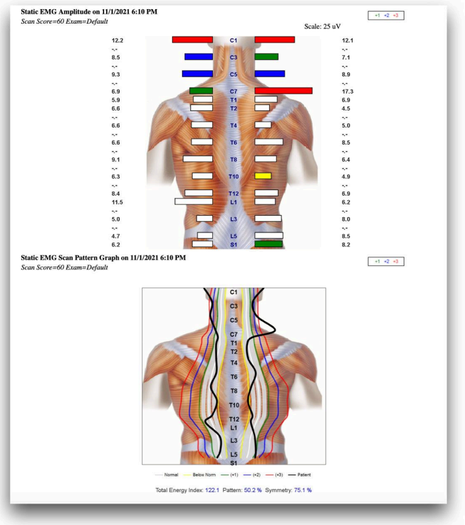
PATTERN 2 · DRUNKEN BULL

The tank ran low

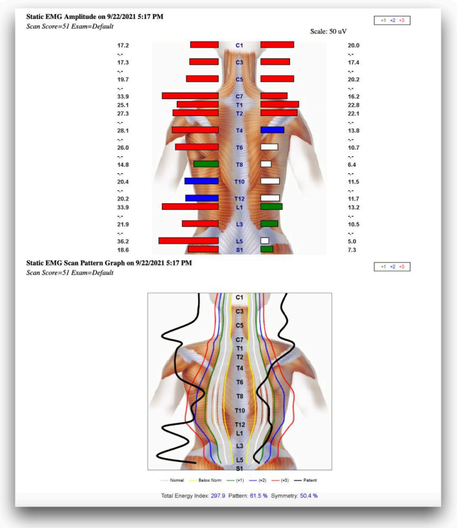
The gas has been on so long that the tank ran low, so things go quiet and flat: low tone, poor focus and memory, low engagement. These kids can be mislabeled as lazy or checked-out, when really the system is **exhausted.**



PATTERN 3 · RAGING + DRUNKEN BULL

Gas and brake at once

The scattered presentation: gas and brake pressed at the same time, chaos throughout the system. High reactivity in one moment, shutdown the next. A picture parents instantly recognize in their own child.



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IN THEIR OWN WORDS

What parents and patients often report

- Calmer, more settled kids, with an easier time shifting out of stress.
- Better sleep: falling asleep more easily and staying asleep.
- Smoother digestion and fewer everyday tummy troubles.
- A greater ability to handle hard moments without melting down.
- An overall sense of more room to grow, learn, and connect.

PXDOCS

STORIES OF HOPE

What is possible

Real change, told honestly. Some are our patients; others are stories from the broader training world, shared as what is possible.

Van Every • Royal Oak, MI

TRUST YOUR GUT

The sensory little boy

So touch-sensitive that a light brush felt like a punch, so he punched back. Labeled, picking fights, not invited to a single birthday party that year. His mom's gut said sensory, not autism, and she trusted it and stayed consistent with care. A neighbor who had not seen him in a year, knowing none of the story, said within seconds **"he is a different kid,"** noticing the eye contact and the clear speech. Now top of his class, and he has friends.

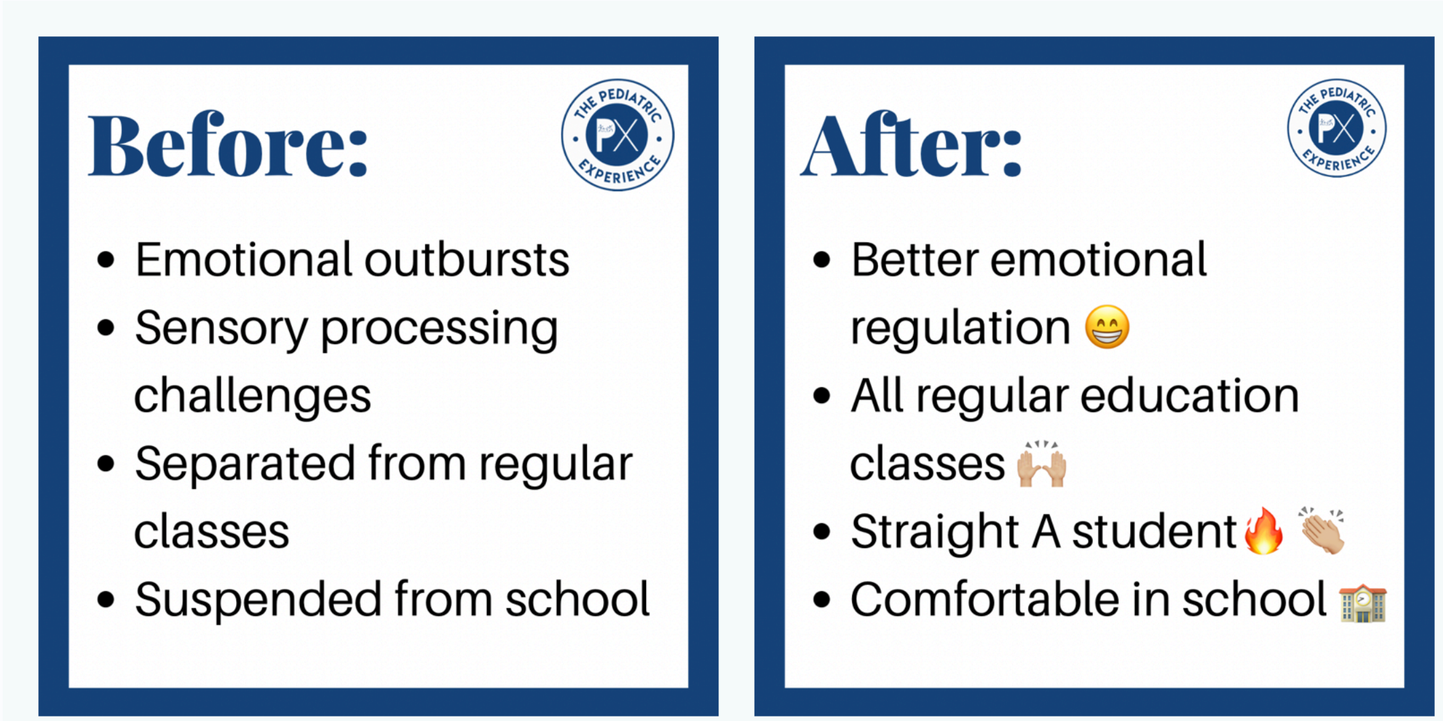
GENETICS VERSUS BIRTH TRAUMA

Weston, six weeks old

Induced a week early "because he was going to be big," then born under eight pounds. Bruised face, fast delivery, colicky and screaming from day one. After one gentle adjustment, his mom described a different baby, finally sleeping. The kicker: her oldest had an extreme birth and now has ADHD and anxiety, while the two middle kids with normal births are fine. **"Okay, why one and not the two middle?"**

A PARENT'S OWN WORDS

Before, and after



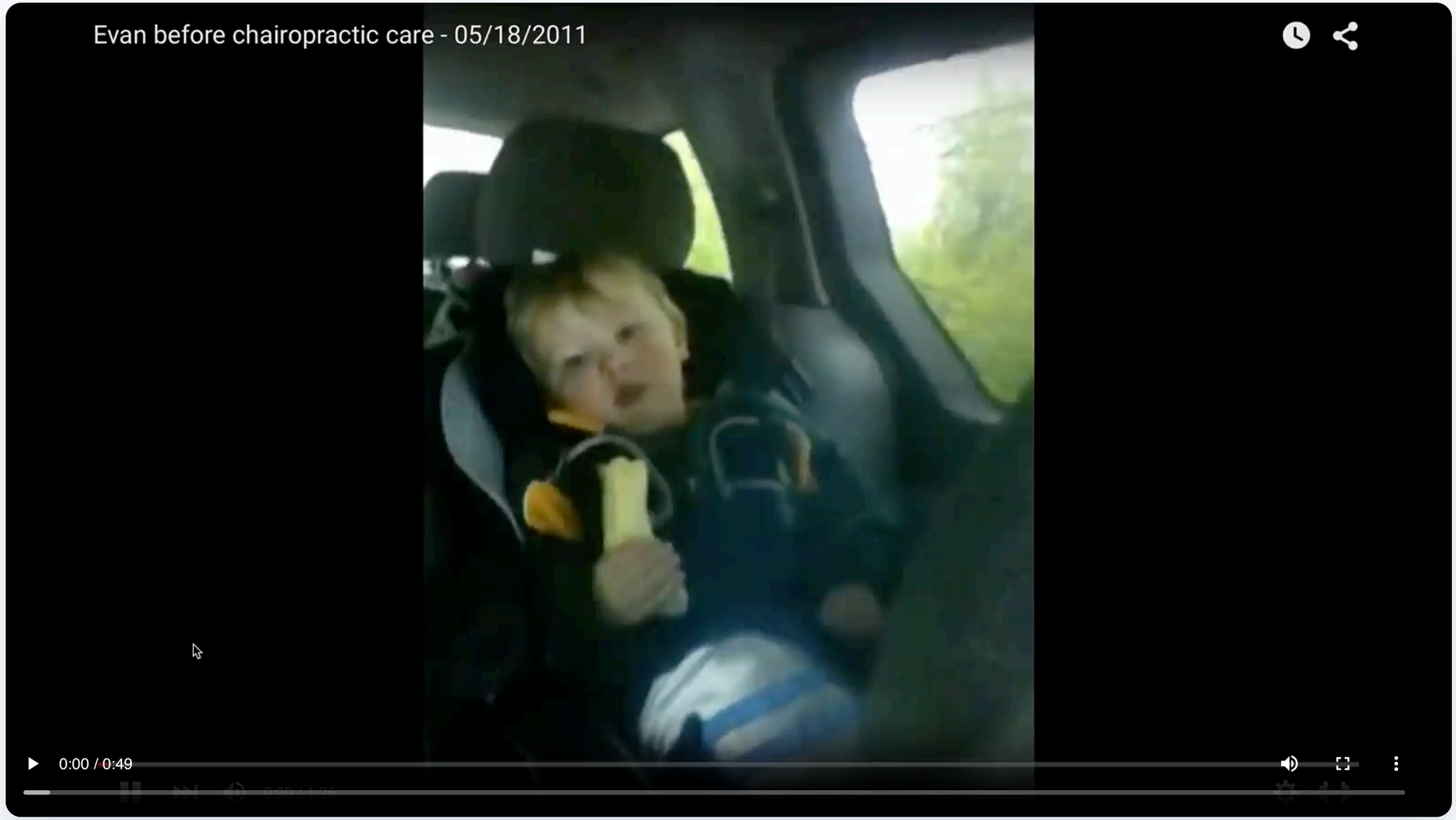
One family's own before-and-after: from emotional outbursts, sensory struggles, and separation from regular classes, to better regulation, full inclusion, and comfort in school. Shared with permission, told honestly.

Van Every • A parent's testimonial

WHAT IS POSSIBLE

Evan: before, and two months into care.

Diagnosed at three and head-banging early on, Evan showed real change in eye contact, coordination, and speech.


Evan before chairopractic care - 05/18/2011
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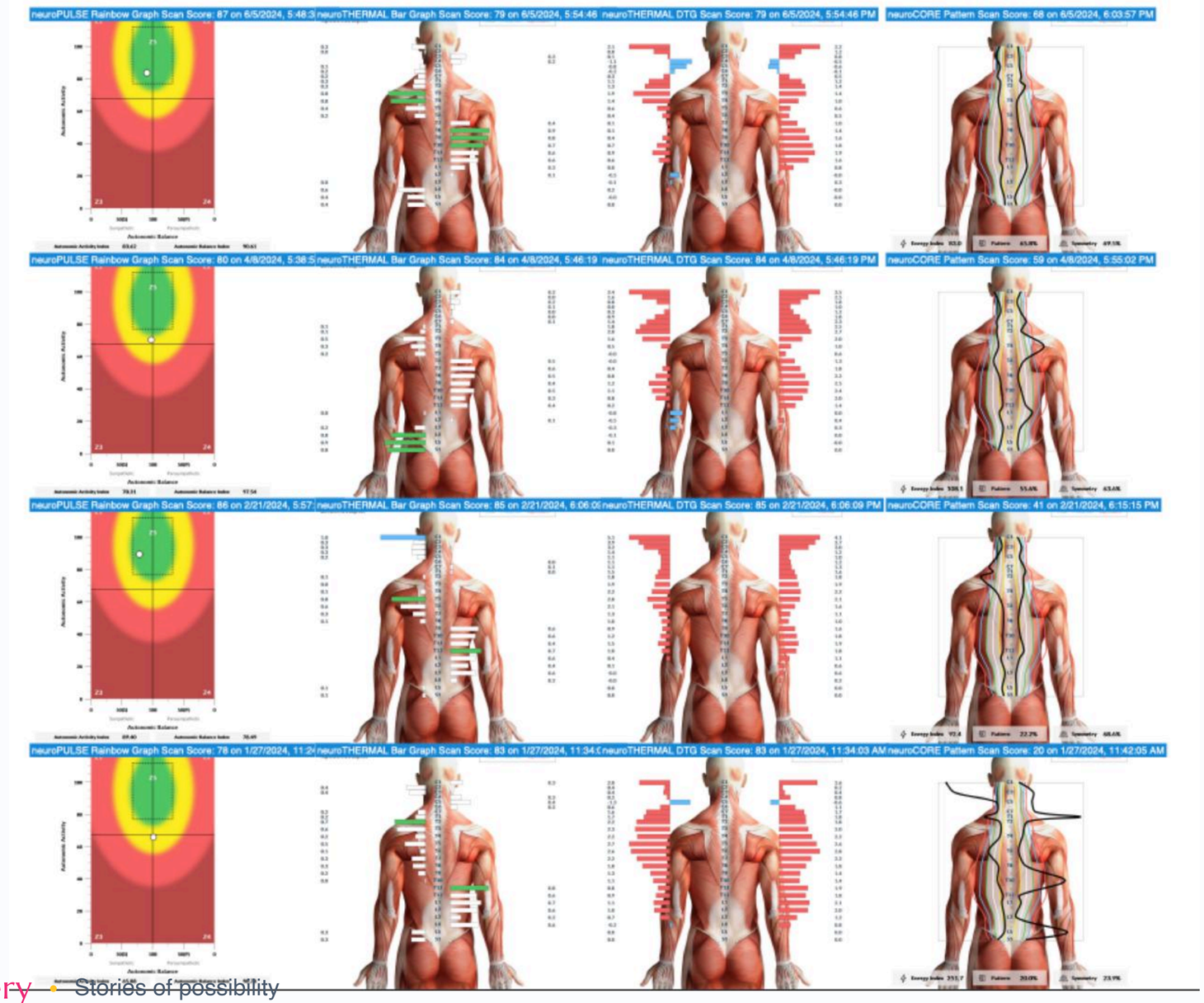
Van Every • Evan, about two months in

A case example



WHAT IS POSSIBLE

Guru's story

Guru came in nonverbal and seizing, and saw dramatic change over a run of care. Told as a story of what is possible, never a promise. Every child and every nervous system is different.

THE NEURO-BEFORE-CHEMICAL REFRAME

Neuro before chemical

A bright teen, hard birth, colicky and sleepless as a baby, ended up on several psychotropic medications. A scan showed significant neurological imbalance. Under neurologically-focused care, the neurological picture changed and he was able to reduce his medications over time. The teaching point is neuro-before-chemical: address the neurology and the chemistry tends to settle.

IN A PARENT'S WORDS

Not a chemical imbalance, a neurological one

The bright teen, four interventions at birth and once on six psychotropic medications, came off all of them as his neurological picture changed. The reframe that family holds onto: it was never just a **chemical** imbalance, it was a **neurological** one. Shared with permission.

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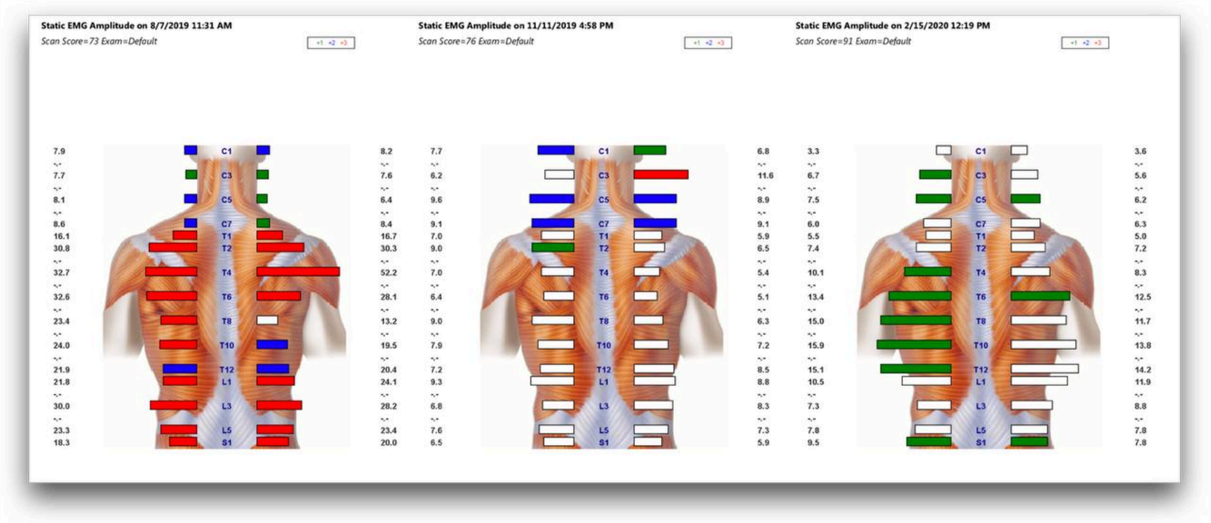
TESTIMONIAL


2/3
Since seeing Dr. Zach, my children have made significant gains: they are both more regulated, happier, have stopped bedwetting, gained new words in their speech, and improved in overall communication.
Dr. Zach uses a gentle yet effective approach that myself and my sons are comfortable with. It's easy to see the passion he has for his craft.
Dr. Zach is extremely knowledgeable, and easy to talk to. I would recommend him to anyone that wants to truly heal and live life to their full potential.
- Laura K

GRADE SCHOOL

From the storm to thriving in school



The same child, years on. What looked like emotional outbursts and a kid separated from regular classes can become a **thriving, included, straight-A student.**

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ACTION STEPS

Your next two steps

01

1 · Keep seeking

Hope, Answers, Help! You are the hero in your child's story, and you are not out of options.

STEP 1

02

2 · Schedule

Book your child's Consult, Scans, and Report of Findings for an objective look at the nervous system.

STEP 2

03

Reach us

Call or text 248.616.0900. Book online any time at vaneverychiropractic.com.

248.616.0900

ACTION STEPS

An objective look at the nervous system

A consult, INSiGHT scans, and a Report of Findings give you a clear picture of where your child's nervous system is carrying stress, and a plan in the right order. **Call or text 248.616.0900** or book online.

OUR 3-STEP CLINICAL PROCESS

How we start with every family

01

1 · We listen

We listen and dive deep into your child's case history. The story almost always holds the pattern.

HISTORY

02

2 · Neuro-Sensory Scans

Neuro-Sensory Stress Scans with INSiGHT. We don't guess, we test.

INSIGHT SCANS

03

3 · Report + Plan

A Report of Findings and a personalized Care Plan, root cause, in the right order.

PLAN

OUR 3-STEP CLINICAL PROCESS

Listen, scan, then plan

Every family starts the same way: **we listen** and take a deep case history, **we scan** with INSiGHT Neuro-Sensory Stress Scans, then **we plan** with a Report of Findings and a personalized Care Plan.

GENTLE AND CHILD-FRIENDLY

The scan itself is easy

The INSiGHT scans are non-invasive and quick, no radiation, no needles, nothing the child has to do. Most kids find it easy, even fun. It simply listens to what the nervous system is already telling us.

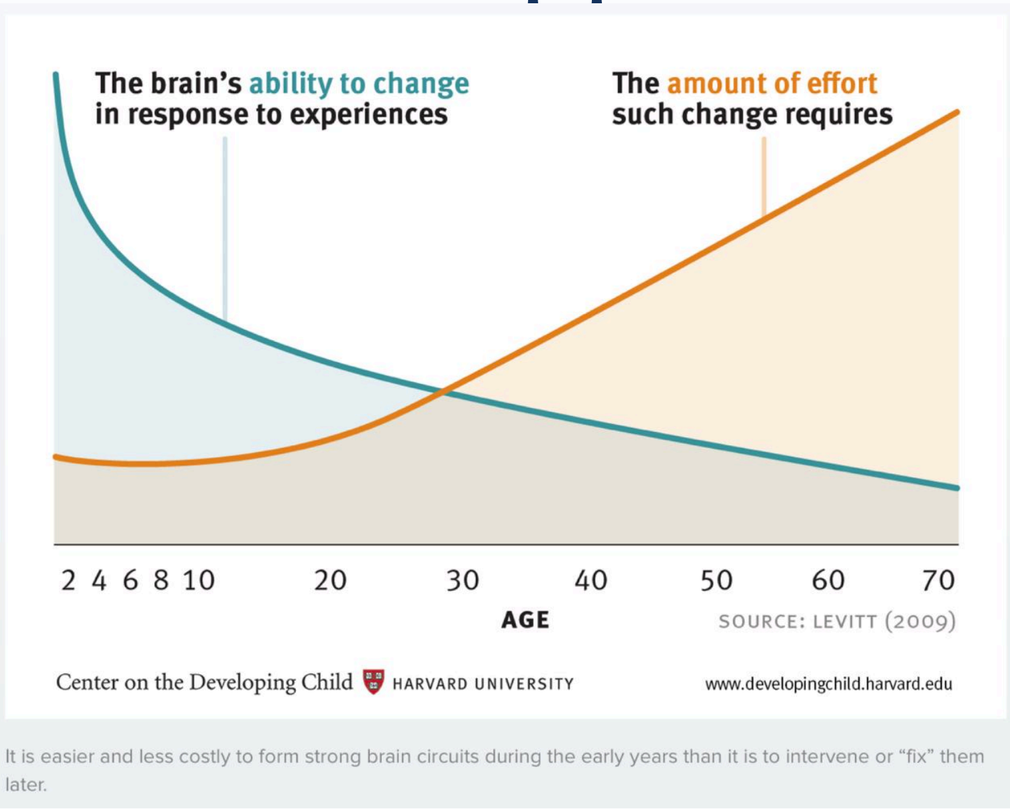
FREQUENTLY ASKED

Two questions parents always ask

- **How long does it take?** It depends on how much stress and how long it has been there (the algorithm). The scans guide the timeline, and quality of life usually improves first.
- **How will you ever get my sensory / spectrum kid to sit still?** We do not need them to. The care is gentle, light-touch, and meets the child where they are, on the floor, in your arms, however they are comfortable.

FAQ · HOW LONG DOES IT TAKE?

The earlier we support it, the easier it changes



It is easier and less costly to form strong brain circuits during the early years than it is to intervene or "fix" them later.

A nervous system is most adaptable early, and change takes more time and effort the longer a pattern has been stuck on. That is why timelines vary, and why **it is never too late to start.**

Van Every • Royal Oak, since 1998

FAQ · MEETING YOUR CHILD WHERE THEY ARE

We do not need them to sit still

The care is gentle and light-touch, and it meets your child where they are, on the floor, in your arms, however they are comfortable. **No cracking, no force, no fight.**

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PXDOCS

VAN EVERY
FAMILY CHIROPRACTIC CENTER

HOPE INTO ACTION

You are the *hero* in your child's story

Every kid can heal when we do things root cause, in the right order. Get a nervous-system-focused chiropractor on your team.

Van Every Family Chiropractic Center · Royal Oak
Call **248.616.0900** · book online
We support the root cause.