The Human Brain and Nervous System for Kids



A Practical Guide to help Children better understand how their body works

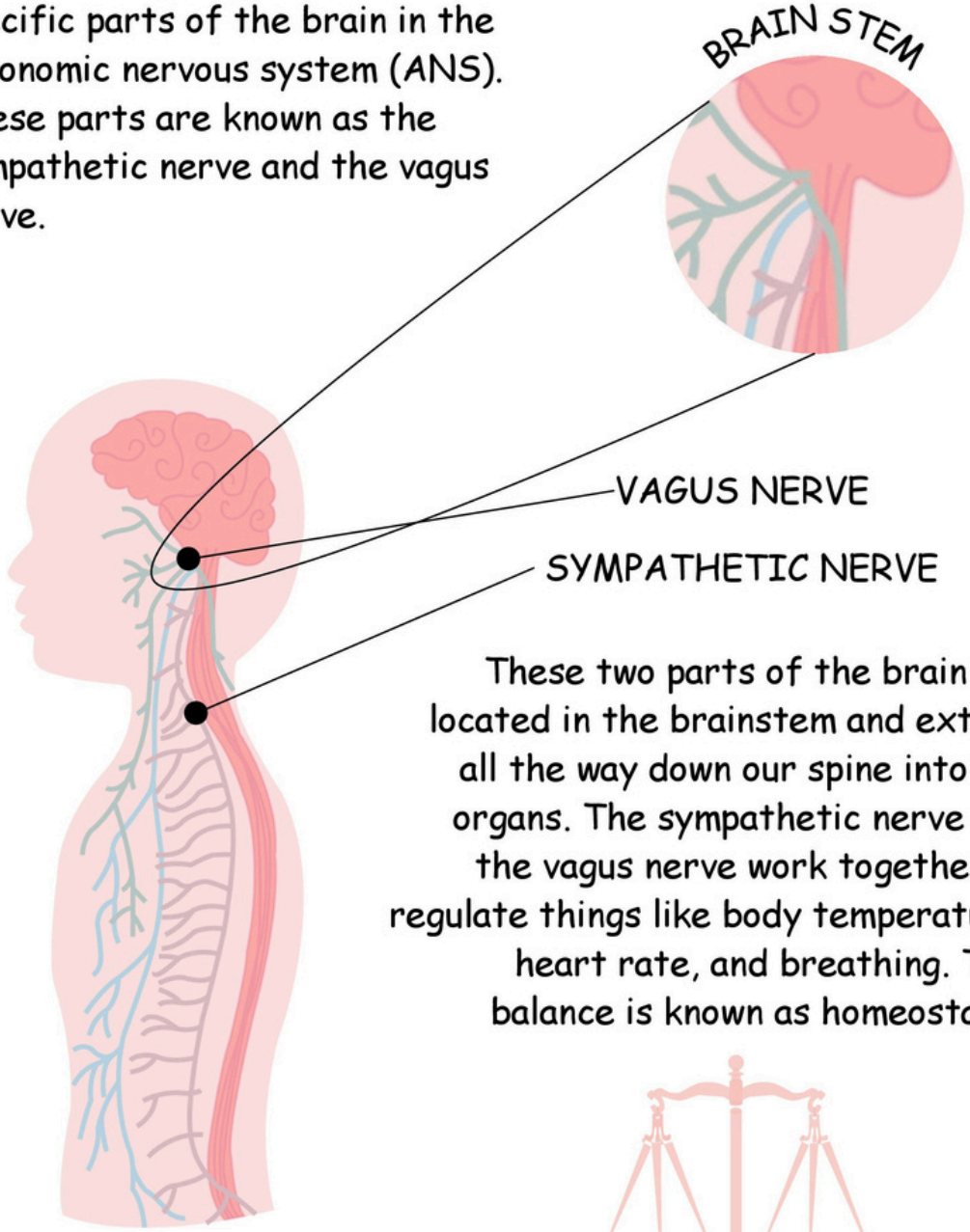


by Amanda Thomas Coaching

THE HUMAN NERVOUS SYSTEM

Our Beautiful Brain

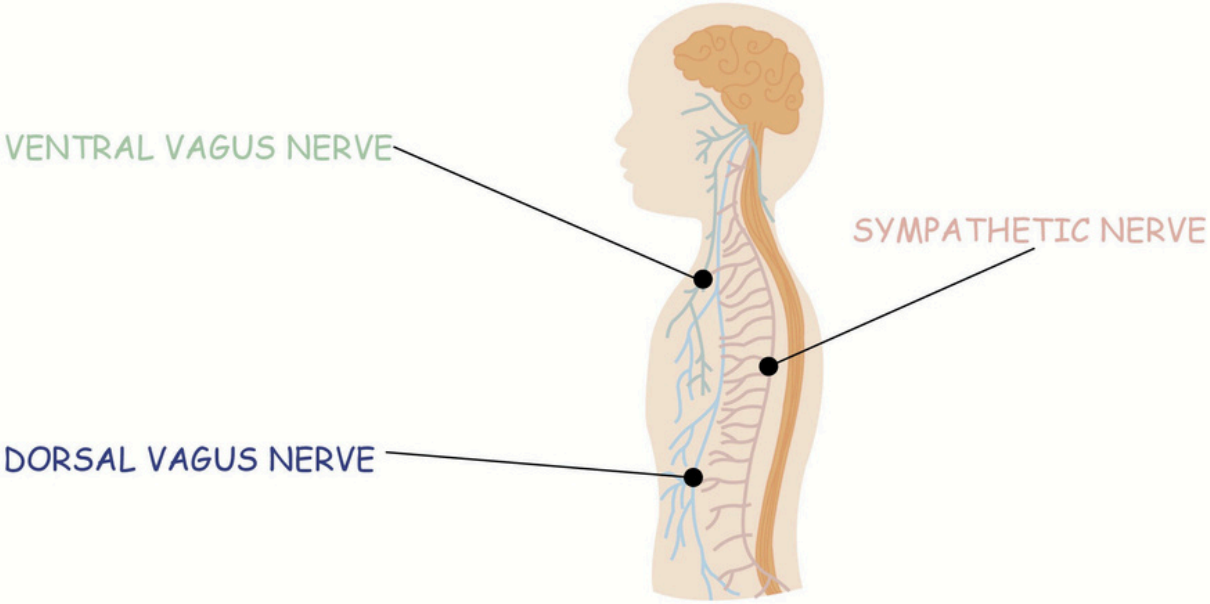
Today, we're going to talk about specific parts of the brain in the autonomic nervous system (ANS). These parts are known as the sympathetic nerve and the vagus nerve.



These two parts of the brain are located in the brainstem and extend all the way down our spine into our organs. The sympathetic nerve and the vagus nerve work together to regulate things like body temperature, heart rate, and breathing. This balance is known as homeostasis.

THE POLYVAGAL THEORY

In the 1990s, Dr. Stephen Porges discovered that the vagus nerve is crucial because it helps us feel safe in both our brains and bodies. He also found that the vagus nerve has two distinct branches: the dorsal vagus nerve and the ventral vagus nerve.



As you can see, these parts of the nervous system are located close together in our body and work closely with one another. The ventral vagal nerve collaborates with the sympathetic nerve and dorsal vagal nerve to help regulate our body and emotions. **The ventral vagal nerve is especially important because it helps us feel safe, centered, and connected to the world.**

By understanding what each of these parts of the brain does, we can learn how to help our bodies feel safe and stay connected to ourselves.

THE POLYVAGAL THEORY

OWL, TIGER, AND TURTLE BRAIN

Let's dive a little deeper into these different parts of the brain and what they do. Once we understand how each part works, we can see how they function together. To make things easier to understand, we can imagine these parts of the brain as animals.

CALM + CONNECTED

When our owl (ventral vagal) brain is active, we feel safe, connected, and centered. Like an owl, when we're in our owl brain, we feel wise, open, and relaxed.

OWL BRAIN



VENTRAL VAGAL NERVE

FIGHT OR FLIGHT

When our nervous system detects danger, our tiger (sympathetic) brain takes over. Like a tiger, our brain and body prepare to fight and defend ourselves quickly to protect us from danger. Our tiger brain boosts our energy.

TIGER BRAIN

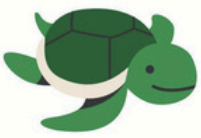


SYMPATHETIC NERVE

SHUTDOWN + PROTECT

Our turtle (dorsal vagal) brain takes over when our nervous system senses not just danger but a threat to our survival. Like a turtle, our nervous system shuts down completely. Our turtle brain lowers our energy.

TURTLE BRAIN

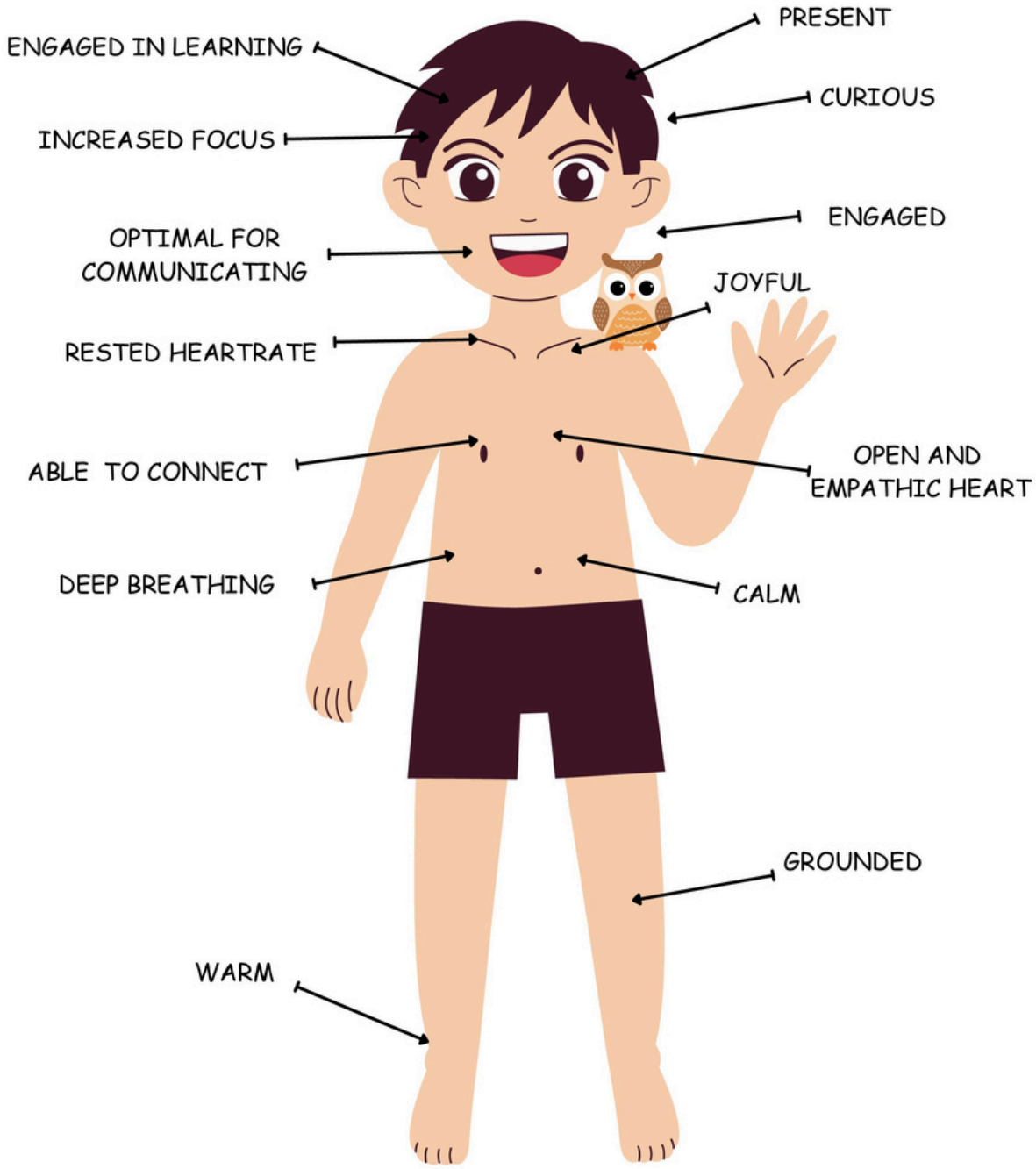


DORSAL VAGAL NERVE

VENTRAL VAGUS NERVE

OWL BRAIN

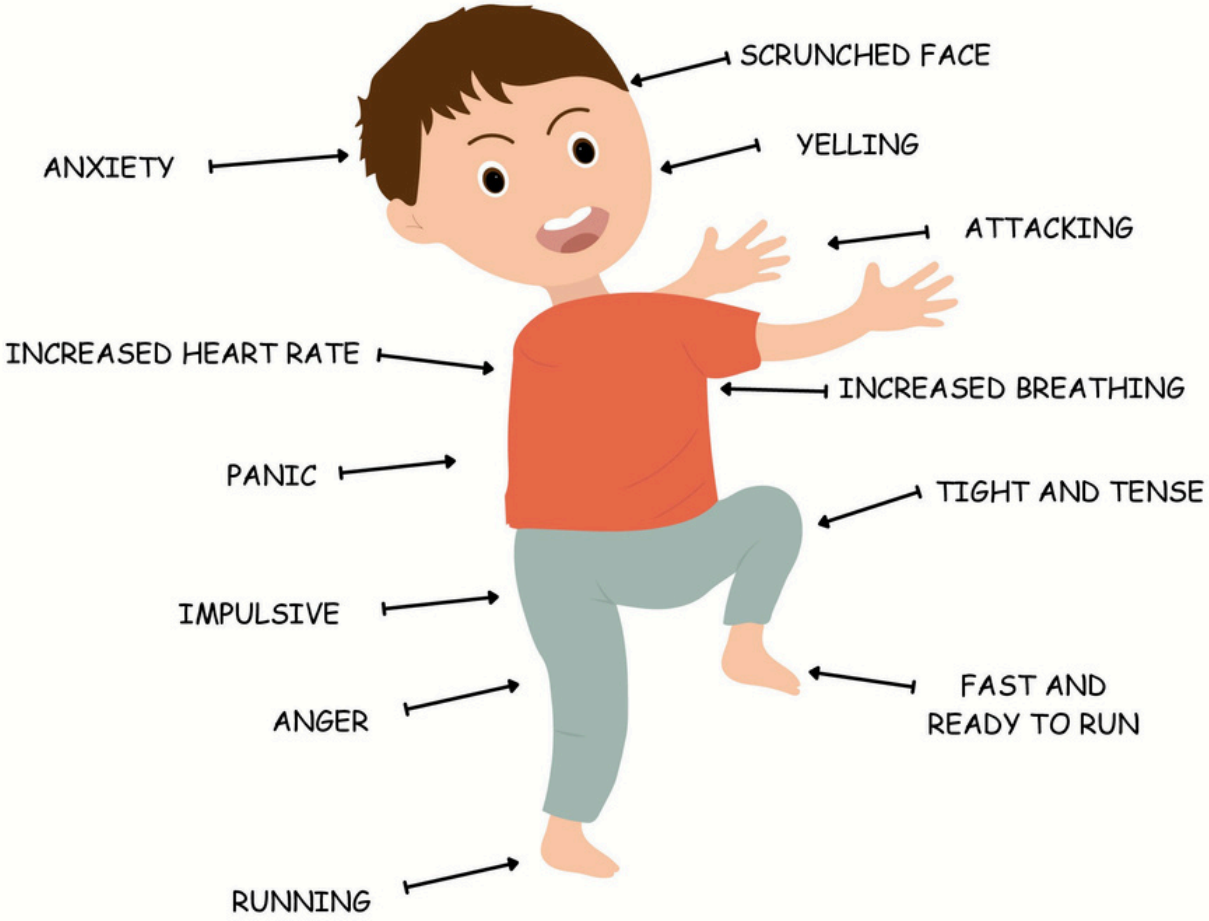
Below is a picture with descriptions of how we feel when we are in our owl brain.



SYMPATHETIC NERVE

TIGER BRAIN

Below is a picture with descriptions of how we feel when we are in our tiger brain.

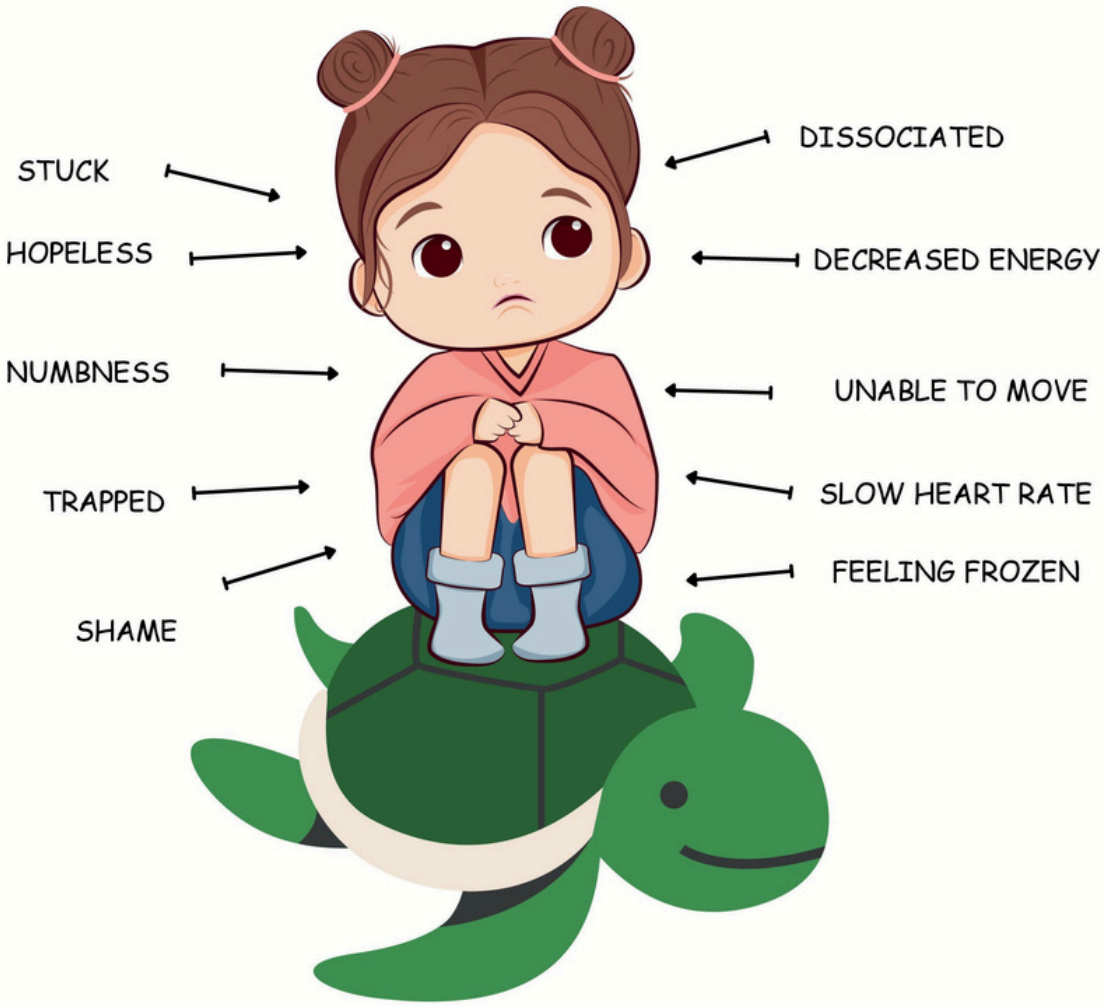




DORSAL VAGUS NERVE

TURLE BRAIN

Below is a picture with descriptions of how we feel when we are in our turtle brain.



THE POLYVAGAL THEORY

Owl, Tiger, and Turtle Brain

Now that we know all about the turtle, tiger, and owl brain, let's play a game. In the situations below, circle whether the person is in their tiger, turtle, or owl brain.

When a friend accidentally bumps into Charlie, he yells loudly and prepares to defend himself.




TIGER TURTLE

When Henry meets someone new, he feels really shy and wants to hide.




OWL TURTLE

Sonya is learning something new and feels confident and safe. She enjoys learning all the new things.




TIGER OWL

Jack is feeling overwhelmed by homework, so instead of doing it, he lays in bed under his blanket and feels frozen.




TIGER TURTLE

MY NERVOUS SYSTEM

Now it's time to learn about your nervous system. In the boxes below, first write what triggers each of your brains to come out. Then, reflect and write how you feel when you are in your owl, turtle, and tiger brains.

Owl Brain



CALM + CONNECTED

WHAT MAKES MY OWL BRAIN COME OUT?

WHAT DOES MY OWL BRAIN FEEL LIKE?

MY NERVOUS SYSTEM

Tiger Brain



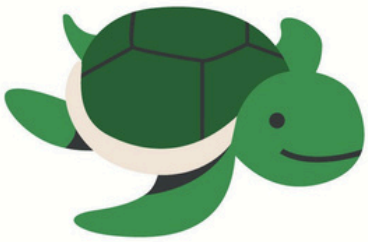
FIGHT OR FLIGHT

WHAT MAKES MY TIGER BRAIN COME OUT?

WHAT DOES MY TIGER BRAIN FEEL LIKE?

MY NERVOUS SYSTEM

Turtle Brain



SHUTDOWN + PROTECT

WHAT MAKES MY TURTLE BRAIN COME OUT?

WHAT DOES MY TURTLE BRAIN FEEL LIKE?

THE POLYVAGAL THEORY

How Owl, Tiger, and Turtle Brain Work Together

Each of our turtle, tiger, and owl brains serves a purpose. When we are in danger or perceive a threat, our tiger and turtle brains activate to protect us, while our owl brain takes a back seat. Take a look at the picture below to see how this process works.

WHEN TURTLE OR TIGER BRAIN IS WORKING ALONE



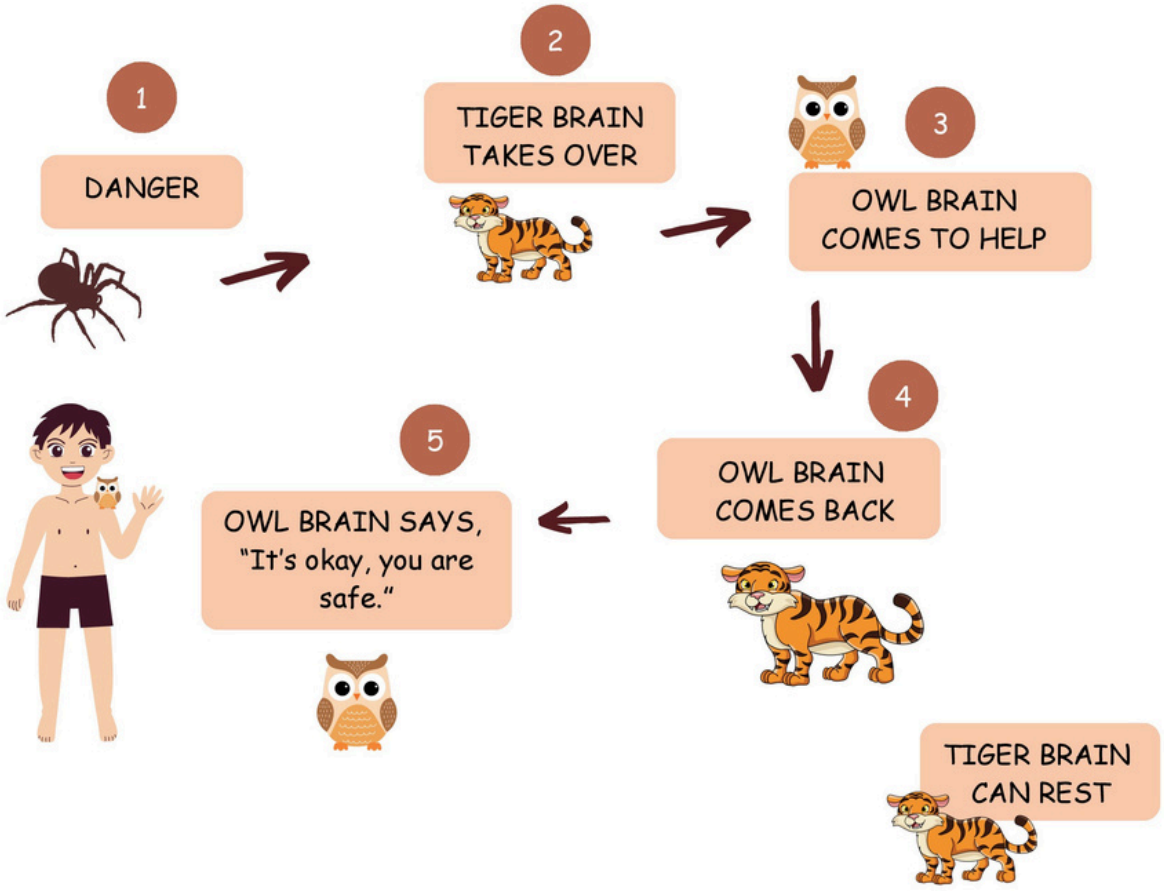
THE POLYVAGAL THEORY

How Owl, Tiger, and Turtle Brain Work Together

Our tiger and turtle brains play an important role in protecting us from danger. However, **most of the time, we aren't in as much danger as our tiger and turtle brains think we are.** That's why it's important to strengthen our owl brain to help us feel safer!

When we strengthen our owl brain, it helps us stay in our owl brain more often and work together with our tiger and turtle brains. The picture below shows what happens when our owl brain steps in to help.

WHEN OWL BRAIN IS WORKING WITH TIGER OR TURTLE BRAIN

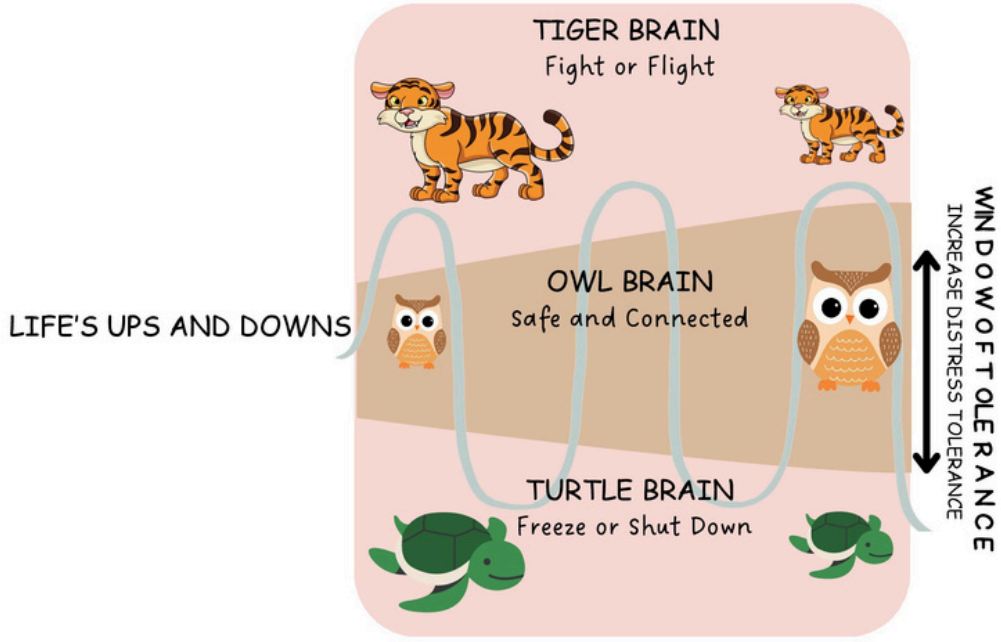


WINDOW OF TOLERANCE

Strengthening Our Owl Brain

Our goal isn't to make our tiger and turtle brains go away. **Instead, we aim to strengthen our owl brain so we can feel safer and more connected to the world.**

Dr. Porges describes the strength of our owl brain as our "window of tolerance." When we are within this window, we are in our owl brain. We feel safe, connected, and able to adapt to the ups and downs of life. This is our "comfort zone" for managing life's challenges.



As shown in the picture above, when our owl brain is strong, we have a larger window of tolerance. When our owl brain is weak, our window of tolerance is smaller, making it more likely for us to quickly shift into our tiger or turtle brains. By strengthening our owl brain and increasing our window of tolerance, we can adapt to life's challenges more easily.

THE POLYVAGAL THEORY

Window of Tolerance

tense muscles restless

increased heartrate

panicked on edge

frustrated

anxious irritated

TIGER BRAIN

ALERT AND TAKE ACTION

Sympathetic State



FIGHT OR FLIGHT

INCREASED ENERGY

DYSREGULATION

BALANCER ENERGY

WINDOW OF TOLERANCE

INCREASE DISTRESS TOLERANCE

connected

Safe Kindness

joy calm wise

love patient

compassionate

OWL BRAIN

CALM AND CONNECTED

Ventral Vagal state



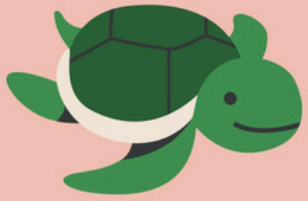
SAFE

WINDOW OF TOLERANCE

INCREASE DISTRESS TOLERANCE

DYSREGULATION

DECREASED ENEROY



FREEZE OR SHUT DOWN

TURTLE BRAIN

SHUT DOWN AND PROTECT

Dorsal Vagal State

Shameful Sad

helpless frozen

trapped numb

not Speaking

disconnected

STRENGTHENING THE OWL BRAIN

CO-REGULATION + SELF-REGULATION

Regulation is the process of bringing our owl brain back to support our turtle and tiger brains. It's a skill, and like any new skill, it takes practice. Practicing regulation strengthens our owl brain and helps us feel more secure in the world.

There are two different ways we can practice regulation: co-regulation and self-regulation. Let's take a look at the pictures below to learn more.

CO-REGULATION

Co-regulation happens when your brain borrows the owl brain of someone who feels safe and trustworthy.



When someone who feels safe is in their owl brain, you can access your owl brain, too.

SELF-REGULATION

Self-regulation happens when you become aware that you're not in your owl brain, and you use a skill to help bring your owl brain back.



CO-REGULATION

A Safe Person

When we talk about co-regulation, the first step is identifying who is a safe person.



LISTENS WITH EMPATHY



DOESN'T TRY TO CHANGE THE WAY YOU FEEL



HELPS YOU GROW



APOLOGIZES WHEN THEY HURT YOU



LOVES YOU AS YOU ARE

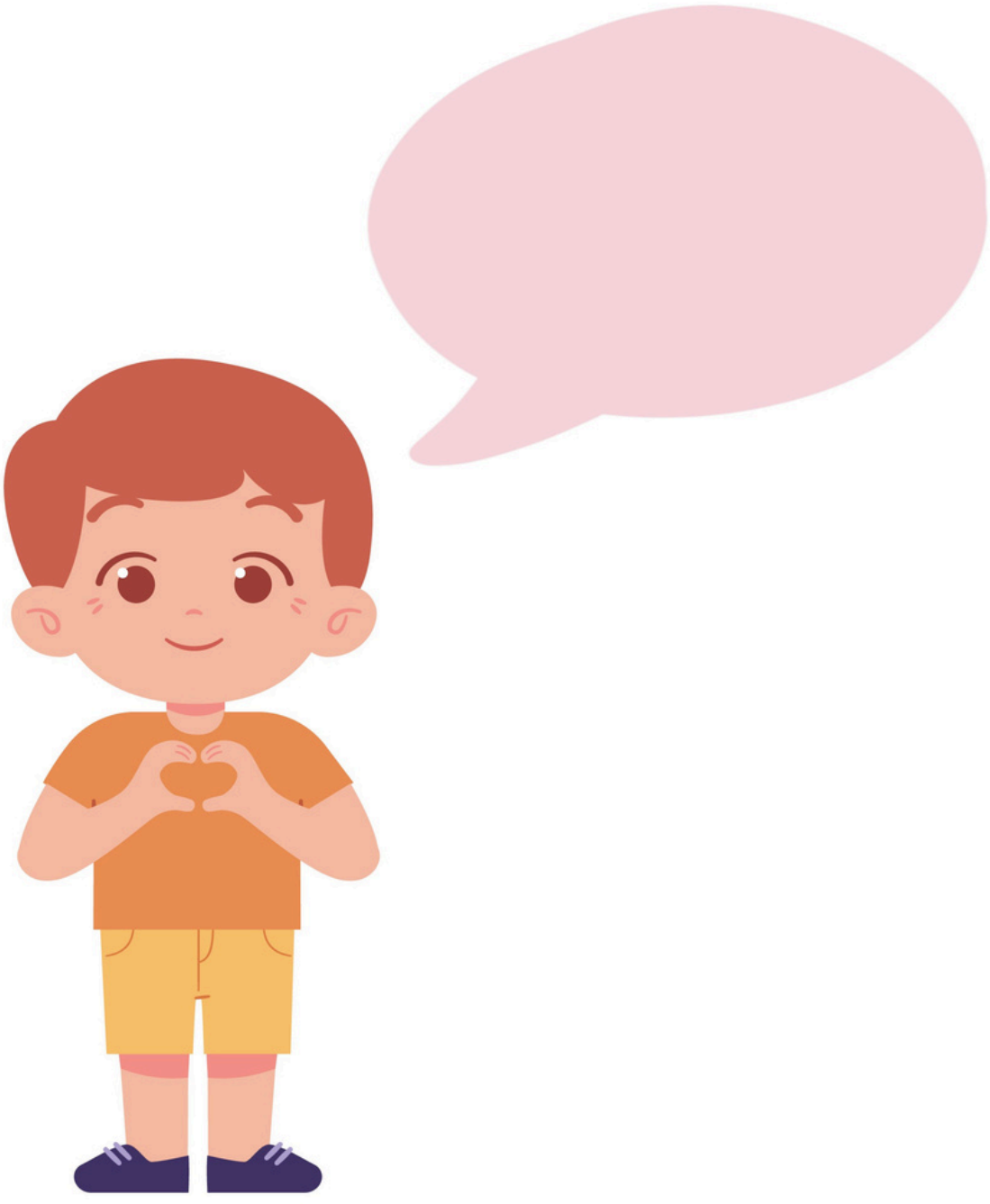


PATIENT AND KIND

CO-REGULATION

A Safe Person

Now it's your turn. In the bubble below, write or draw words that describe what a safe person feels like to you.



CO-REGULATION

A Safe Person

In the boxes below, write the names and draw a picture of four people who you feel can keep your feelings safe.

SAFE PEOPLE IN MY LIFE

STRATEGIES FOR REGULATION

There are many ways we can learn to strengthen our owl brain through regulation. Take a look at the exercises on the next few pages for some ways to try strengthening your owl brain. **All of these activities can be practiced with a safe person for co-regulation.**

On the next page, you'll find six different categories of activities that can help strengthen your owl brain and regulate your nervous system. Here's a look at the six categories:



BODY MOVEMENT

Body movement helps us feel strong and steady by releasing stuck emotions and energy.



SOMATIC SOUNDS

Certain sounds have a naturally calming effect on the nervous system. Practicing these sounds helps us feel safe and centered.



TRAUMA RELEASE

Trauma release practices help us feel safe and comforted in our bodies.



BI-LATERAL INTEGRATION

Bilateral integration helps our bodies feel strong by connecting the right and left sides of the brain.



GROUNDING

Grounding exercises help us feel centered and safe in our bodies by bringing us into the present moment.



BREATHING

Breath is the natural life force of our nervous system. Practicing breathing helps our bodies feel safe, strong, and calm.

BODY MOVEMENT



SIDE STRETCH

Stretch your hands up and bring your fingers together. Now, stretch to one side of your body. Repeat on the opposite side.

BODY MOVEMENT



HEAVY WORK

Find something heavy to push, like a clothes basket, a bucket of toys, or a small piece of furniture. This helps your body feel strong and centered.

BODY MOVEMENT



WALL PUSH-UPS

Find a flat wall and do ten push-ups. Take a break and come back to it whenever you'd like. This helps you feel strong and safe.

BODY MOVEMENT



SCRIBBLE DRAWINGS

Find a piece of paper and two markers. Hold one marker in each hand and start creating. You can make scribbles or a full drawing—let your creativity flow!

BODY MOVEMENT



ANIMAL POSES

Pretend to be your favorite animals. Stomp like an elephant or roar like a lion. This helps you feel strong.

SOMATIC SOUNDS



HUMMING OR SINGING

Hum or sing your favorite song. Then, change the tune and sing or hum another. This helps you feel centered and calm.

SOMATIC SOUNDS



SILLY STORIES

Read your favorite story and give each character a silly voice as you go. This will help you feel connected and calm.

SOMATIC SOUNDS



DRUMMING

Find your favorite items to drum with and create a rhythm. Rhythms help your body feel calm and less stressed.

SOMATIC SOUNDS



HOOT LIKE AN OWL

Pretend to be an owl. Spread your wings wide and take a deep breath. As you exhale, let out a big hoot and soar through the air.

TRAUMA RELEASE



BUTTERFLY HUG

Pick a calm and quiet spot. Place your hands just below your collarbone and gently tap right, then left, creating a "flapping" motion like a butterfly. This flapping motion helps your body feel safe, calm, and cozy.

TRAUMA RELEASE



TREE SHAKING

Stand up and lift your arms above your head. Start shaking your body with rhythm, like a tree swaying in the wind. Shake out all the stress and tension from your body.

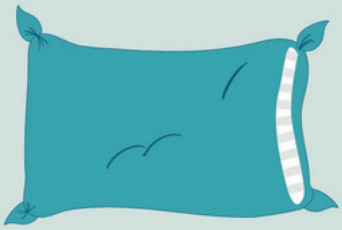
TRAUMA RELEASE



EXPANDING AND CONTRACTING

Stretch all parts of your body, then curl yourself into a small ball. Repeat this as many times as needed to help your body feel safe.

TRAUMA RELEASE



SQUEEZE A PILLOW

Hug a pillow as tight as you can. Hold it until you can't anymore, then release and let go. This helps your muscles feel strong and then relaxed. Your body will feel like it just took a big breath of fresh air!

BI-LATERAL INTEGRATION



STOMP AND ROAR

Pretend you are a giant monster or dinosaur and stomp and roar. Stomp your right foot, then your left, in a rhythm. This will help your body feel safe and calm.

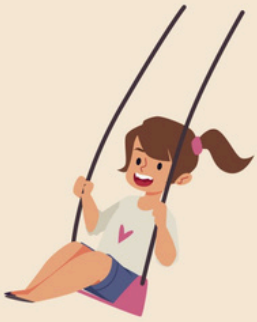
BI-LATERAL INTEGRATION



CLAP AND TAP

Clap, then tap your right and left hand on your legs. As you tap, create a rhythm with your motions to help your body feel safe and centered.

BI-LATERAL INTEGRATION



SWINGING

Find your favorite swing and swing as high as you can. Swinging helps your body and brain feel calm and connected.

BI-LATERAL INTEGRATION



ROCKING

Find your favorite rocking chair, rocking horse, or see-saw to rock on. Rocking naturally helps us feel safe, calm, and connected to ourselves.

GROUNDING



HEART HUG

Wrap your arms around yourself and squeeze as tight as you can, then release and let go. Hugging yourself helps you feel safe and comforted.

GROUNDING



HAND ON HEART BREATHING

Sit or stand comfortably. Place both hands over your heart and take a deep breath into your belly. As you exhale, fill your chest with the love from your own heart.

GROUNDING



5 THINGS, 5 SENSES

Look around the room you're in. Find 5 things you can see, 4 things you can touch, 3 things you can hear, 2 things you can smell, and 1 thing you can taste. This helps bring your body into the present moment.

GROUNDING



LEGS IN THE AIR

Lie down with a solid surface in front of you. Lift your legs and rest them above your head. Stay in this position for as long as you need to feel safe and calm.

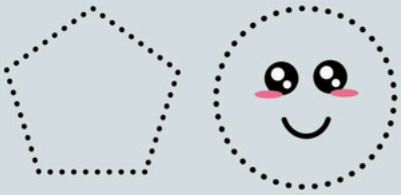
BREATHING



BLOW OUT CANDLES

Take a big, deep breath as if you're about to blow out the candles on your birthday cake. On the exhale, blow as long and fast as you can, like a big sigh of relief.

BREATHING



SHAPES BREATHING

Pick your favorite shapes and draw them. Trace the shapes with your fingers. As you move up and down the shapes, breathe in and breathe out.

BREATHING

BUBBLE BREATHS

Pretend to blow a big bubble. Breathe in, and as you breathe out, exhale slowly so you don't pop the big bubble too quickly!

MY TIGER BRAIN

Now it's time to put it all together. In the bubbles below, write or draw about your tiger brain and how to bring your owl brain back.

MY TIGER BRAIN TRIGGERS

What makes your tiger brain come out?



HOW MY TIGER BRAIN FEELS

Draw or color how your tiger brain feels in your body.



HOW I BRING OWL BRAIN BACK

Draw or write how you regulate to bring your owl brain back.



MY TURTLE BRAIN

In the bubbles below, write or draw about your turtle brain and how to bring your owl brain back.

MY TURTLE BRAIN TRIGGERS

What makes your turtle brain come out?



HOW MY TURTLE BRAIN FEELS

Draw or color how your turtle brain feels in your body.

HOW I BRING OWL BRAIN BACK

Draw or write how you regulate to bring your owl brain back.



