


TRAUMA, ADVERSITY, & YOUR BRAIN

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OBJECTIVES

- ❖ After discussing the different parts of the brain, participants will describe how trauma affects the brain by naming at least one adverse effect trauma has on the brain.
 - ❖ (PHG2.2; CKC1.1)
- ❖ After viewing information on the ACE study, participants will complete the ACEs questionnaire to identify their own ACE score.
 - ❖ (SE1.1; APL1.1; CKC1.11)
- ❖ After viewing strategies to regulate the brain, participants will identify at least two strategies to use in their classrooms, homes, etc.
 - ❖ (SE4.1; APL4.1; CKC1.2; CKC1.8)



“You cannot lead a child to a place of healing if you do not know the way yourself.”

- Dr. Karyn Purvis

BASIC DEFINITIONS

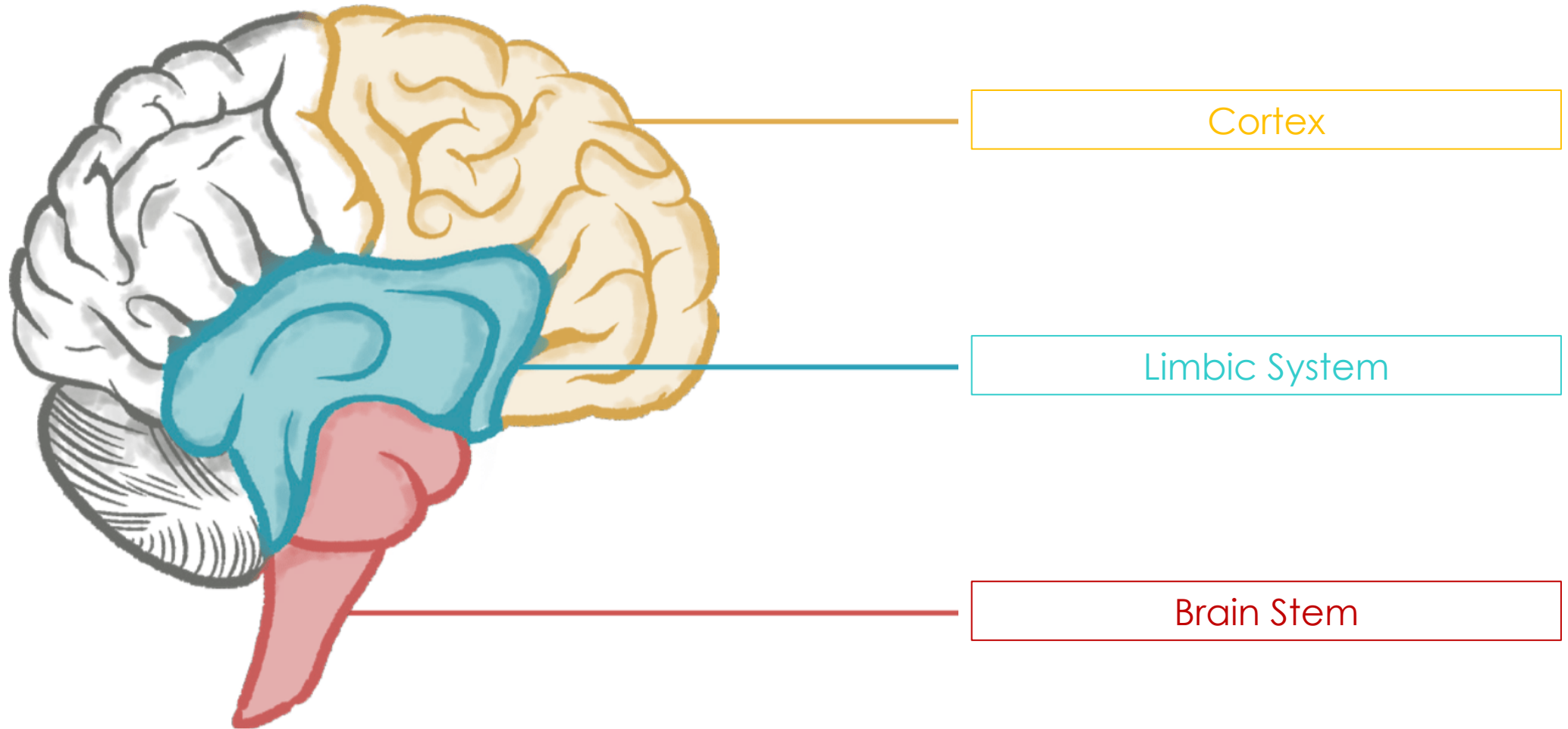
- Triune Brain: a model of the evolution of the vertebrate forebrain and behavior, proposed by the American physician and neuroscientist Paul D. MacLean
- Trauma:
 - A deeply distressing or disturbing experience
 - Emotional shock following a stressful event or a physical injury which may be associated with physical shock and sometimes leads to a long-term neurosis
 - Physical injury
- Adversity:
 - Difficulties
 - Misfortune



THE BRAIN

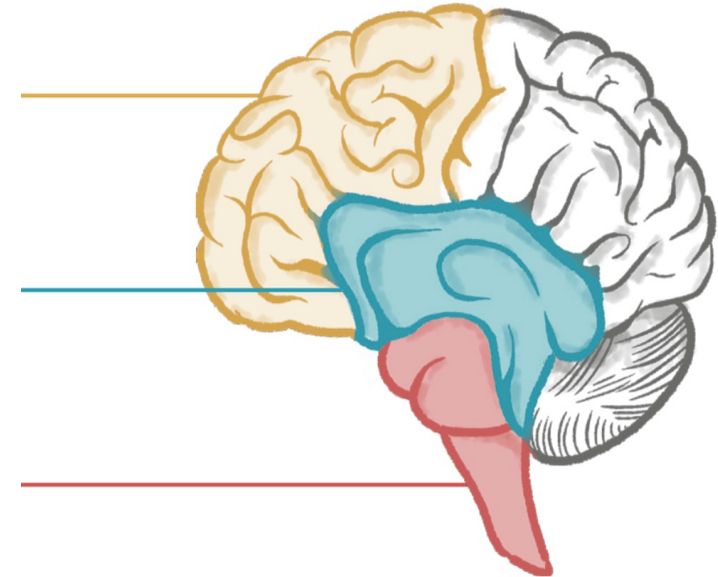
What parts of our brain are impacted?

THE BRAIN



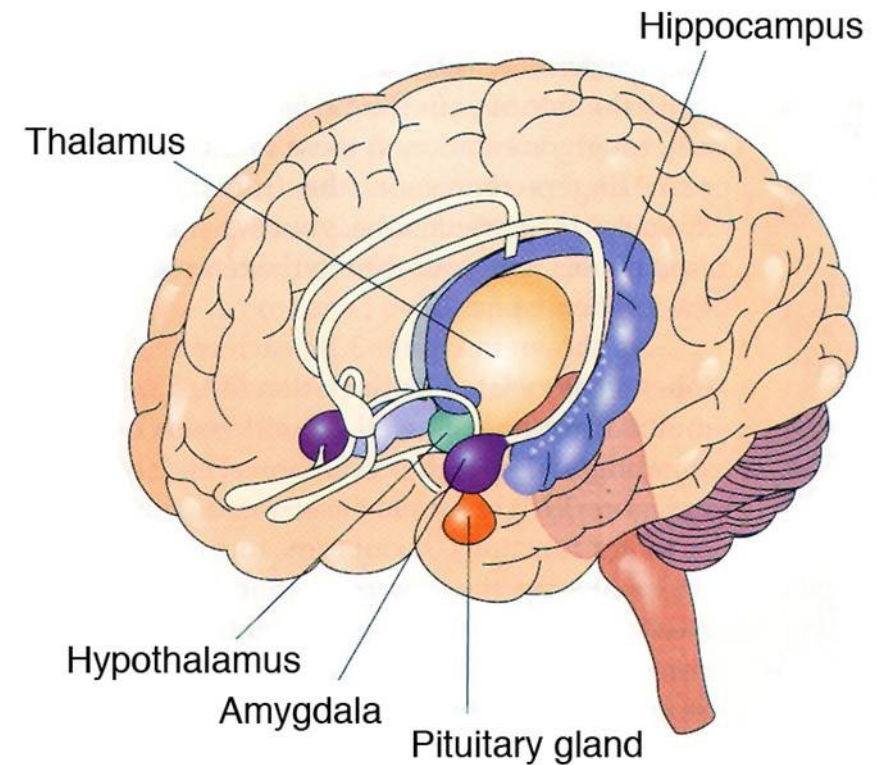
THE BRAIN STEM

- Controls
 - Vital functions
 - Breathing
 - Pulse
 - Heart rate
 - Balance
 - Involuntary Muscles
 - Internal Messaging Center
- The language of the brain stem is **sensation**



LIMBIC SYSTEM

- Emotional center of the brain
- The language of the limbic system is **feelings** or **emotions**.
- There many parts that make up the limbic system
 - Thalamus
 - Pituitary
 - Hypothalamus
 - Amygdala
 - Hippocampus



THE CORTEX

- Last to be developed
- Includes
 - Short- & long-term memory
 - Voluntary, learned movements
 - Executive functions (specifically located within the prefrontal cortex)
 - Working memory
 - Mental flexibility
 - Inhibitory control





PARTS OF THE BRAIN REVIEW

- Prefrontal Cortex – fully developed late 20s to 30s
- Thalamus - controls sleep & processes sensory information
- Hypothalamus – regulates; connects hormonal & nervous systems
- Amygdala – scanning the environment for threat
- Hippocampus – Memory center of our brains

TWO-HEMISPHERES

Left Hemisphere:

- Controls right side of your body
- Responsible for more logical thinking
- Balance
- Speech
- Math
- Logic

Right Hemisphere:

- Controls the left side of your body
- Responsible for more artistic thinking
- Music
- Colors
- Shapes

WARNING...The idea of being “left-brained” or “right-brained” is a myth!

DR. DAN SIEGEL (THE HAND MODEL)

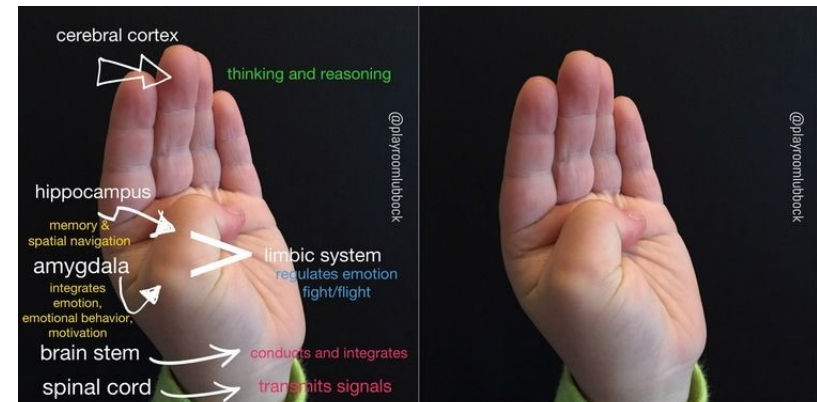


REGULATED OR DYSREGULATED?

- What is your brain state?
- When is that last time you flipped your lid?



Regulated – Calm, cool, collected, able to think through decisions to some extent



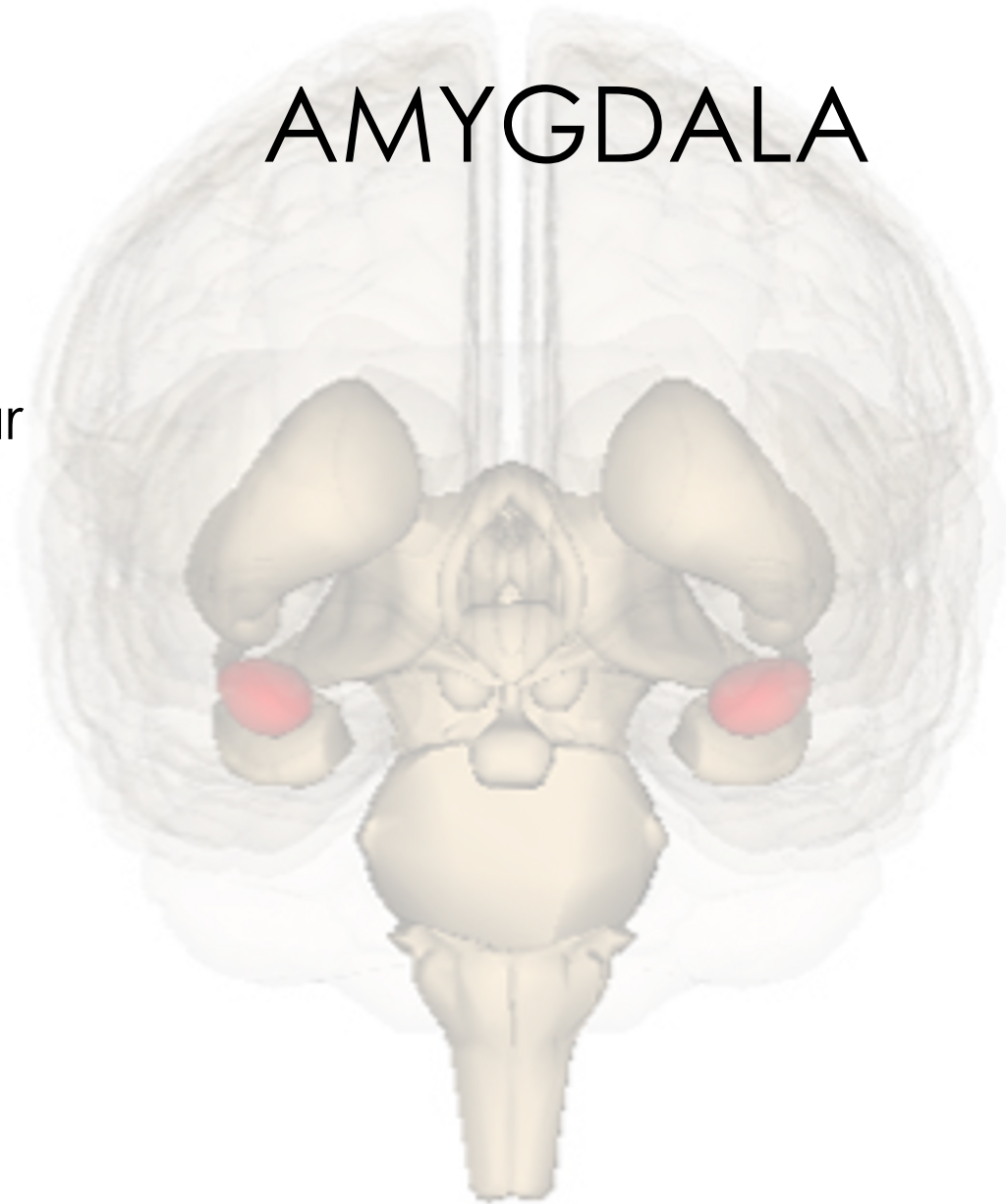
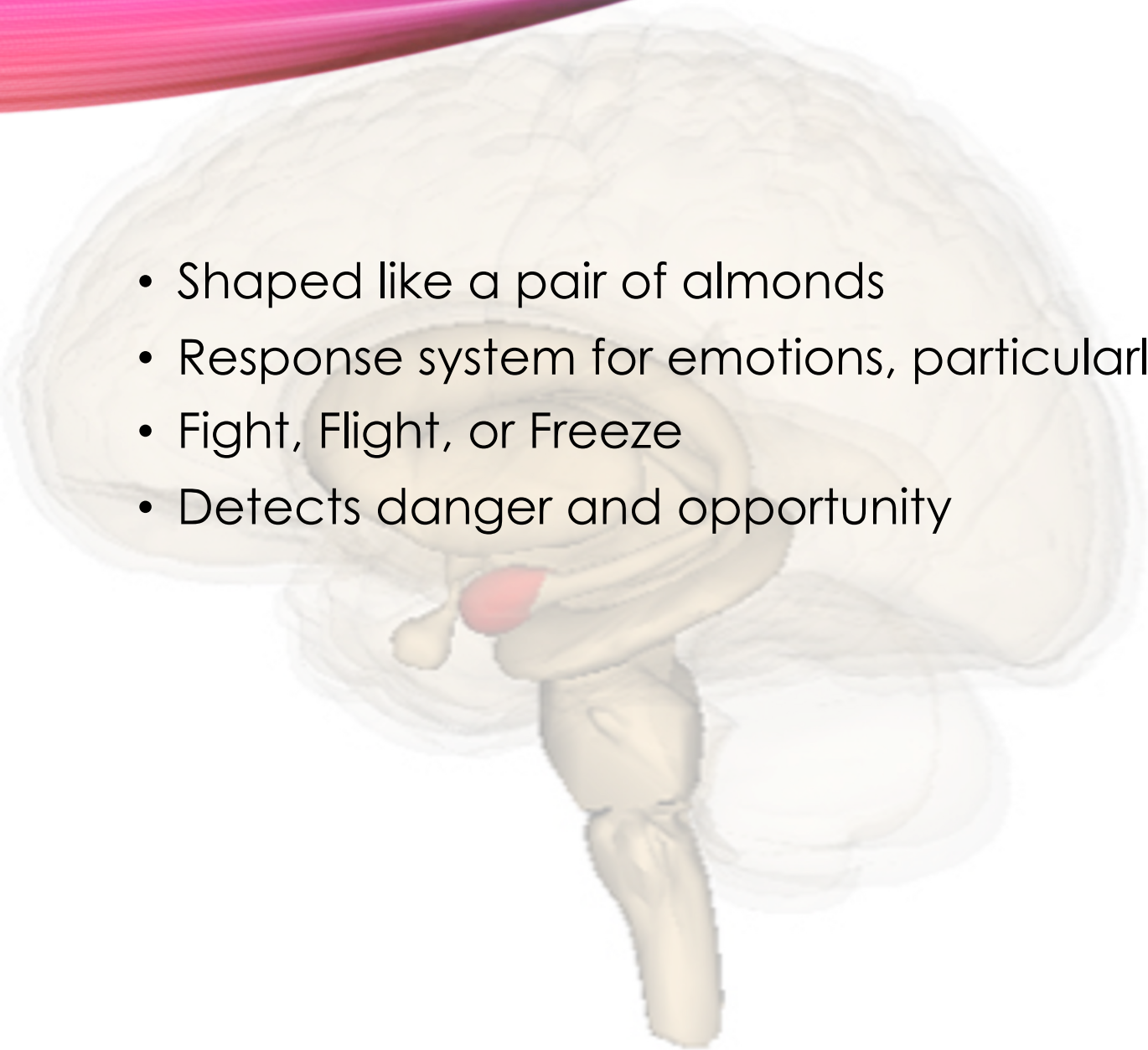
Dysregulated – lid has flipped; may be upset; unable to speak & hear

FOCUS ON THE CAR



AMYGDALA

- Shaped like a pair of almonds
- Response system for emotions, particularly fear
- Fight, Flight, or Freeze
- Detects danger and opportunity



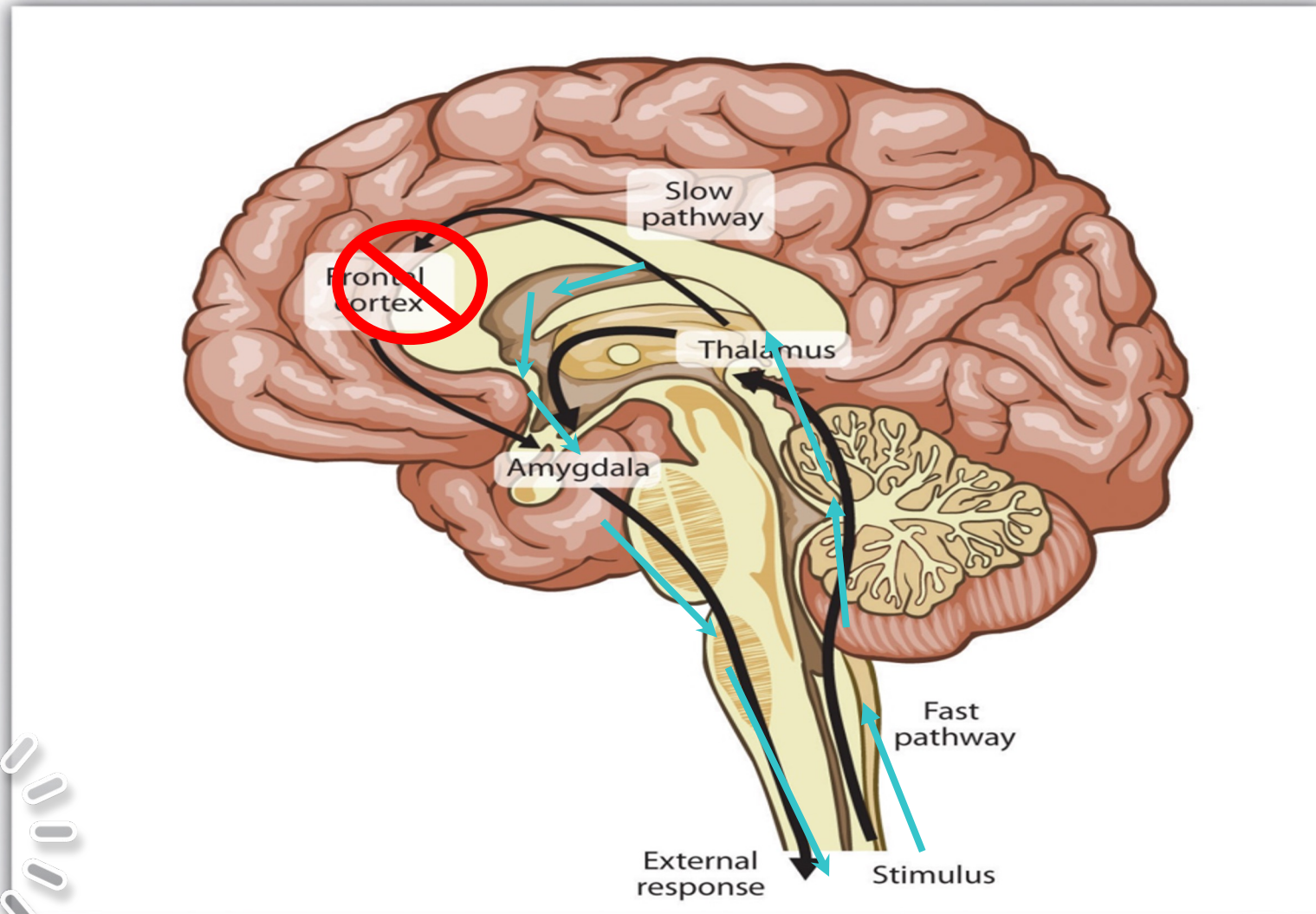


TRAUMA & ADVERSITY

How does trauma & adversity impact the developing
brain?



THE STRESS RESPONSE



TYPES OF STRESS



Positive

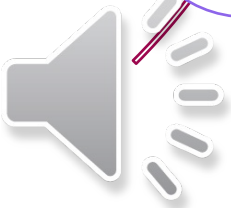
- Brief increases in heart rate, mild elevations in stress hormone levels

Tolerable

- Serious, temporary stress responses buffered by supportive relationships

Toxic

- Prolonged activation of stress response systems in the absence of protective relationships



WHICH TYPE OF STRESS IS THE MOST DAMAGING?

- Toxic stress
- Our brains CANNOT take
 - Unpredictable, chronic adversity without protective factors
 - Isolation
 - Restraint
- The brain's way of protecting itself is by shutting down the pre-frontal cortex which has to "deal with our trauma"

THE ACE STUDY: ADVERSE CHILDHOOD EXPERIENCES



Adverse Childhood Experience (ACE) Questionnaire

Finding your ACE Score ra hbr 10 24 06

ACE SURVEY

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often** ...
Swear at you, insult you, put you down, or humiliate you?
or
Act in a way that made you afraid that you might be physically hurt?
Yes No If yes enter 1 _____
2. Did a parent or other adult in the household **often** ...
Push, grab, slap, or throw something at you?
or
Ever hit you so hard that you had marks or were injured?
Yes No If yes enter 1 _____
3. Did an adult or person at least 5 years older than you **ever**...
Touch or fondle you or have you touch their body in a sexual way?
or
Try to or actually have oral, anal, or vaginal sex with you?
Yes No If yes enter 1 _____
4. Did you **often** feel that ...
No one in your family loved you or thought you were important or special?
or
Your family didn't look out for each other, feel close to each other, or support each other?
Yes No If yes enter 1 _____
5. Did you **often** feel that ...
You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
or
Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
Yes No If yes enter 1 _____



ACE SURVEY CONTINUED

6. Were your parents **ever** separated or divorced?

Yes No

If yes enter 1 _____

7. Was your mother or stepmother:

Often pushed, grabbed, slapped, or had something thrown at her?

or

Sometimes or often kicked, bitten, hit with a fist, or hit with something hard?

or

Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?

Yes No

If yes enter 1 _____

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

Yes No

If yes enter 1 _____

9. Was a household member depressed or mentally ill or did a household member attempt suicide?

Yes No

If yes enter 1 _____

10. Did a household member go to prison?

Yes No

If yes enter 1 _____

Now add up your “Yes” answers: _____ This is your ACE Score

WHAT IMPACT DO ACEs HAVE?

As the number of ACEs increases, so does the risk for negative health outcomes



Possible Risk Outcomes:

BEHAVIOR

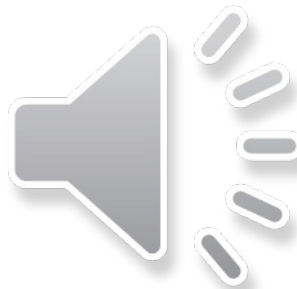


PHYSICAL & MENTAL HEALTH



WHY IS THIS IMPORTANT??









- More likely to develop:
 - Depression
 - Bipolar disorder
 - Eating disorders
 - Anxiety disorders
 - Poor executive function & decision-making
 - Can lead to substance abuse
- Children who experience severe trauma before age 16 are 3xs more likely to develop schizophrenia later in life
- Nearly 50% of people with 4 or more ACEs develop chronic depression



Childhood Trauma

An event that a child finds overwhelmingly distressing or emotionally painful, often resulting in lasting mental and physical effects.

LONG-TERM IMPACTS:

- Affects perception of reality 
- Takes away sense of safety 
- Wires brain to expect danger 
- Increases stress hormones flowing through the body 
- Triggers fight, fright or freeze response 
- Creates a sense of helplessness 
- Creates relationship problems 
- Results in serious behaviour problems 











“The initial trauma of a young child may go underground but it will return to haunt us”
James Garbarino

CHILDHOOD TRAUMA HAS A LASTING IMPACT

2x
more likely to develop
DEPRESSION

3x
more likely to develop
ANXIETY DISORDERS

Common causes:

- Child abuse (physical, emotional, sexual) 
- Grief 
- Witness/victim of violence 
- War/Terrorism 
- Neglect 
- Medical trauma 
- Substance misuse 
- Mental illness 
- Bullying in school 
- Separation from loved ones 

PREFRONTAL CORTEX (PFC)
"Thinking Centre"
Underactivated
Difficulties concentrating & learning.

A traumatised brain is "bottom heavy"

ANTERIOR CINGULATE CORTEX (ACC)
"Emotion Regulation Centre"
Underactivated
Difficulties with managing emotions.

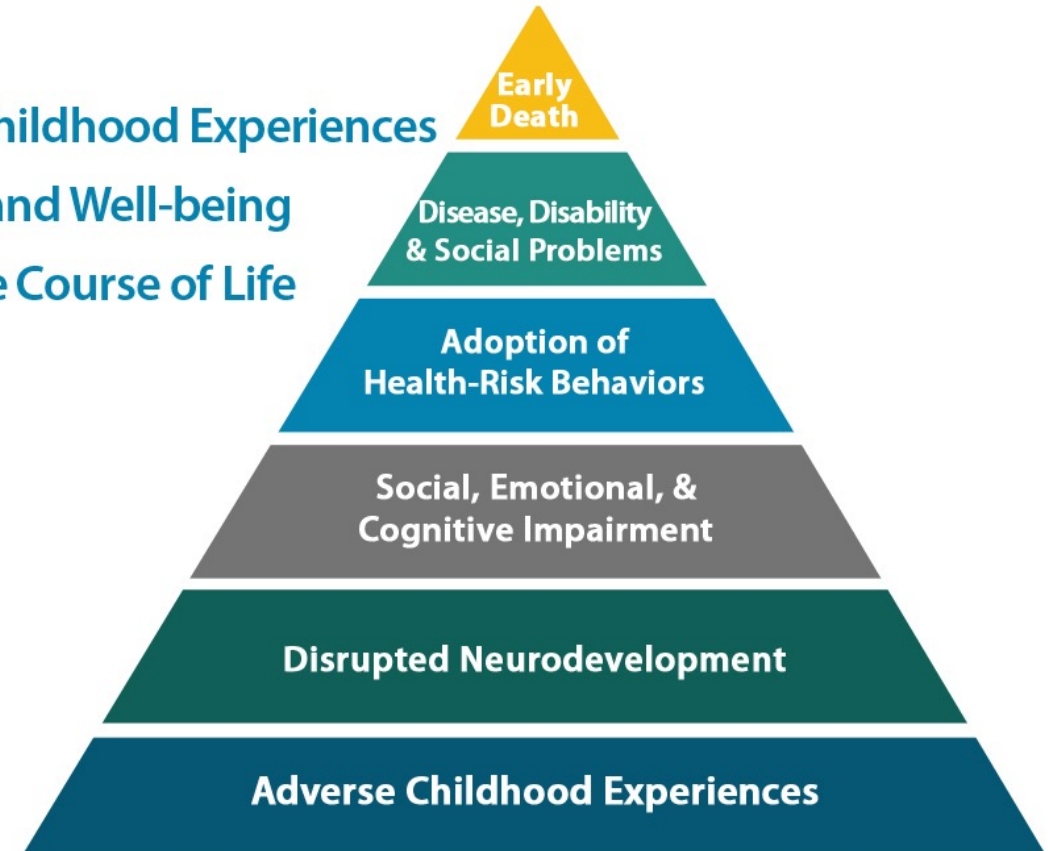
AMYGDALA
"Fear Centre"
Overactivated
Difficulty feeling safe, calming down, sleeping

Complex Trauma: a result of repetitive, prolonged trauma

ADVERSE CHILDHOOD EXPERIENCES – ACES

LASTING IMPACTS
CONTINUED....

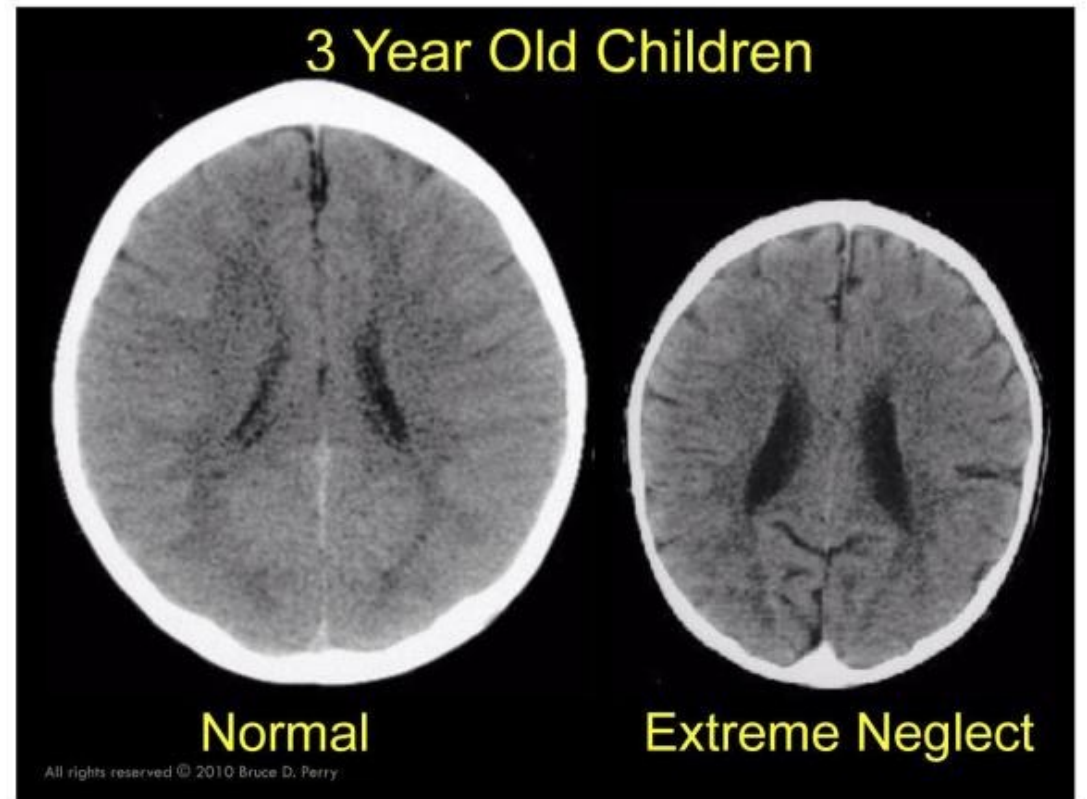
How Adverse Childhood Experiences
Impact Health and Well-being
Throughout the Course of Life



What happens to kids during childhood shapes who they become as adults

SO WHAT HAPPENS WHEN A CHILD HAS A HIGH ACE SCORE OR EXPERIENCES TOXIC STRESS?

- Changes the shape and function of our brains
- Less time to pause
- Constant state of survival
- Traditional methods do not work
- Attachment may be difficult
- Anger is fear's bodyguard





WHAT CAN WE DO?

“

A CHILD WHO IS OUT OF CONTROL NEEDS THE
CALM REASSURANCE OF SOMEONE WHO IS IN
CONTROL.

”

-Carol Kranowitz



FOCUS ATTENTION PRACTICES

“Your breath is the best calming treatment known”

Nakazawa, 2015, PP. 162-163.

“These are scientifically supported and relatively simple steps that you can take to reboot the brain, create new pathways that promote healing, and come back to who it is you were meant to be.”

Donna Jackson Nakazawa

“When you control breathing, the vagus nerve links to everything else! [...] You have sensors in your lungs that when you slow your breathing, it slows your heart! When you speed your breathing, it speeds your heart! All of these organs are connected.”

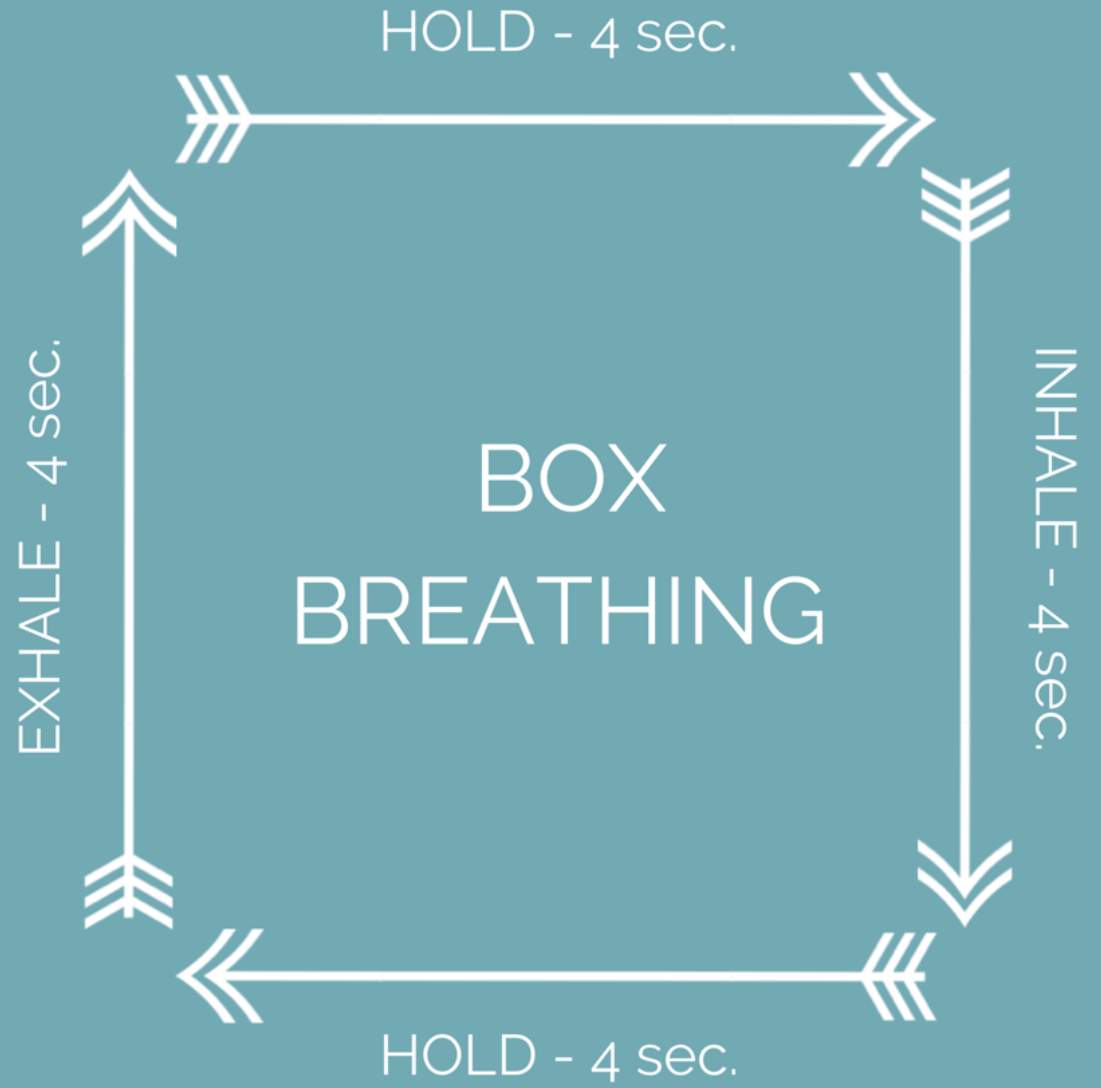
BELLY BREATHING

Lie down on your back or sit straight up with your hands on your belly. As you take deep breaths in through your nose and out through your mouth, feel your belly rise and fall.



BOX BREATHING

Breathe in through your nose for 4 seconds, hold for 4 seconds, breath out for 4 seconds, and then hold for 4 seconds. Repeat while tracing a box in the air for each breath as shown.



HOBERMAN SPHERE BREATHING

Expand the Hoberman Sphere simultaneously as you inhale deeply. Close the Hoberman Sphere as you exhale slowly.



HANG TEN BREATHING

Make the Hang Ten sign with one hand. Cover your left nostril with your pinky finger and breathe in. Then switch and cover your right nostril with your thumb and breathe out. Repeat starting with inhale through your left nostril.





SIX SECOND BREATHING

Take a deep, six second inhale while reaching your arms overhead. Exhale while counting backwards from six and slowly bring your arms back down.



OBJECT BREATHING

Place a light object such as a cotton ball on your desk or in the palm of your hand. Inhale through your nose and exhale out of your mouth. As you breathe out, you need to control your breath enough to move the object. You can make this more challenging by creating a path in which you need to move the object on or creating a finish line that the object must go past.



PAPER FOOTBALL BREATHING

Make a paper football. Use your breath to move the football down the field. You can play against each other or do it alone at your desk. You can also keep score.



COLOR BREATHING

Breathe in your favorite color.

Breathe out a worry.

DEEP RELAXATION **BRAIN WAVE FREQUENCY, CYCLES PER SECOND** VISUALIZING THE COLORS. CHI ENERGY STRENGTHENING, CIRCULATION CAN BE PRACTICED WITH ABDOMINAL BREATHING AND COLOR ENERGY VISUALIZATION. SEE PAGE---

ALPHA 7		7 - 13 CPS	RELAX - BREATHE SLOWLY AND IMAGINE SPARKLING LIGHT PURPLE LIGHT
			BREATHE OUT AND IMAGINE SPARKLING WHITE LIGHT
6			RELAX - BREATHE SLOWLY AND IMAGINE SPARKLING PURPLE LIGHT
			BREATHE OUT AND IMAGINE SPARKLING WHITE LIGHT
5			RELAX - BREATHE SLOWLY AND IMAGINE SPARKLING BLUE LIGHT
			BREATHE OUT AND IMAGINE SPARKLING WHITE LIGHT
4			RELAX - BREATHE SLOWLY AND IMAGINE SPARKLING GREEN LIGHT
			BREATHE OUT AND IMAGINE SPARKLING WHITE LIGHT
3			RELAX - BREATHE SLOWLY AND IMAGINE SPARKLING YELLOW LIGHT
			BREATHE OUT AND IMAGINE SPARKLING WHITE LIGHT
2			RELAX - BREATHE SLOWLY AND IMAGINE SPARKLING ORANGE LIGHT
			BREATHE OUT AND IMAGINE SPARKLING WHITE LIGHT
1			RELAX - BREATHE SLOWLY AND IMAGINE SPARKLING RED LIGHT
BETA	ACTION, MENTAL AND PHYSICAL ACTIVITY. MIND/BODY ARE RELAXED WHILE ACTIVE; "DYNAMIC RELAXATION" BETA IS A HEALTHY STATE WHEN THE MIND, THOUGHTS ARE POSITIVE, HAPPY, CONSTRUCTIVE.	14+ CPS	<p>START HERE - RELAX, BREATHE ABDOMINALLY, SLOW, COMFORTABLY DEEP. IMAGINE THAT YOU SEE AND FEEL SPARKLING WHITE LIGHT ENERGY IN THE ENTIRE BODY; EYES, BRAIN, BODY AND OUTSIDE, AROUND, SURROUNDING THE BODY.</p> <p>THEN RELAX, BREATHE AND IMAGINE, FEEL EACH COLOR ON THE CHART, ONE COLOR AT A TIME, RED, ORANGE, YELLOW, GREEN, BLUE, PURPLE, LIGHT PURPLE. SEE, REMEMBER, IMAGINE, FEEL EACH COLOR AS SPARKLING, HEALTHY, PROTECTIVE, COLORED, LIGHT ENERGY IN AND AROUND THE BODY. BREATHE IN AND OUT SLOWLY A FEW TIMES WHILE IMAGINING A COLOR. THEN, BREATHE OUT, IMAGINE WHITE LIGHT ENERGY, RELAX MORE AND MOVE TO THE NEXT COLOR.</p> <p>LOOK AT THE COLORS ON THE CHART TO HELP THE MIND REMEMBER, IMAGINE A COLOR, THEN PRACTICE WITH THE EYES CLOSED,</p>



BUBBLE BLOWING

Pay close attention to your breath while blowing bubbles. You could also pop bubbles while taking deep breaths.

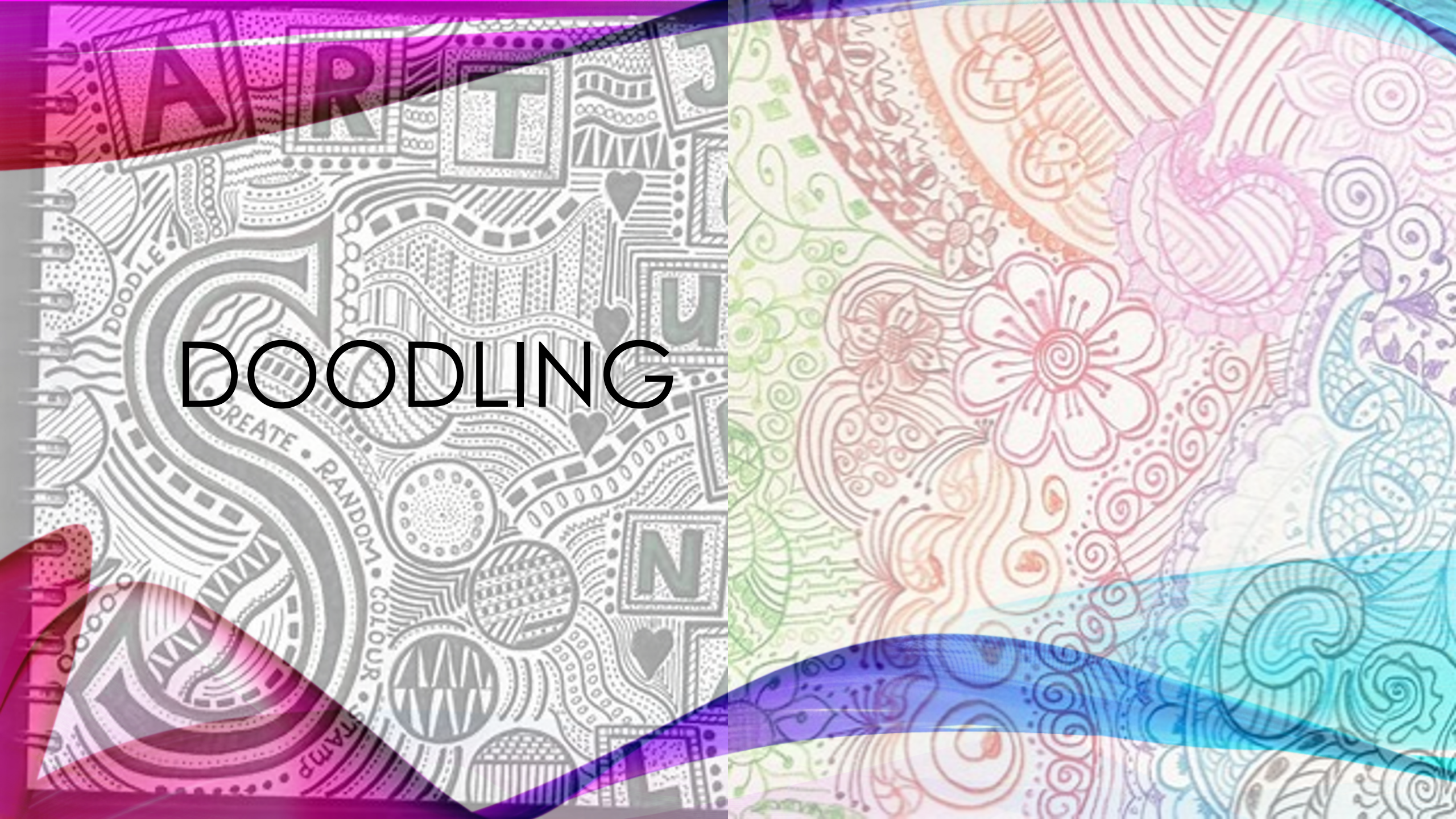


INFINITY

Hold your thumb about 10 inches from your face. Create an infinity sign in the air with your thumb slowly. Follow your thumb with your eyes while taking deep breaths.



DOODLING



OTHER BRAIN REGULATION STRATEGIES

- Use a fidget
- Listen to music
- Breathing exercises
- Go for a walk
- Read a book
- Yoga
- Drink water
- Hum or sing
- Do a craft
- Ask for a break
- Journal
- Push against a wall
- Ask for a hug
- Write in your planner
- Knit or sew
- Dance
- Go to a friend's house
- Watch a movie or TV show
- Do a puzzle
- Play a game
- Bake or cook
- Take a shower or bath
- Talk to someone
- Diffuse essential oils
- Meditate
- Look at the sky
- Paint your nails

RESOURCES

- Nakazawa, D. J. (2016). *Childhood Disrupted: How Your Biography Becomes Your Biology, and How You Can Heal*. New York: Atria Paperback.
- Seita, J. (2014). Reclaiming Disconnected Kids: *reclaiming children and youth* 23 (1). 28-32.
- Van Der Kolk, B. (2015). *The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma*
- Adversity & the Brain PowerPoint by Dr. Lori
- The Brain! PowerPoint by Courtney Boyle
- Connections over Compliance by Dr. Lori
- The Resilient Brain by Larry K Brendtro & James E. Longhurst