



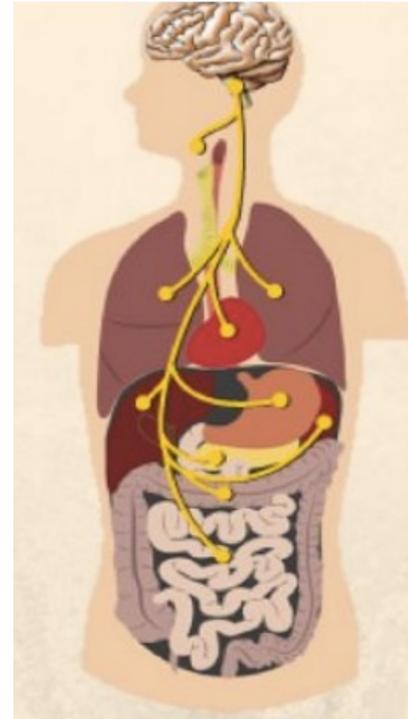
# Trauma in Youth: Stress and Resilience

**Victor G. Carrión, M.D.**, Director of the Early Life Stress and Resilience Program,  
Vice Chair, Department of Psychiatry and Behavioral Sciences  
Stanford University, School of Medicine

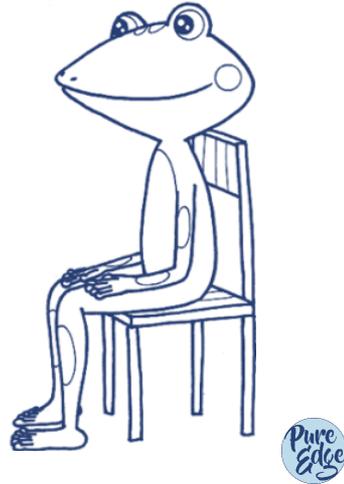
# Mindfulness

“Awareness that arises through paying attention, on purpose, in the present moment, non-judgmentally.” J Kabat-Zinn

- Self Care:
  - We need to work on our self-care to be able to care for others
- Calming down the autonomic nervous system:



# Mindfulness practice: Even in-Even out

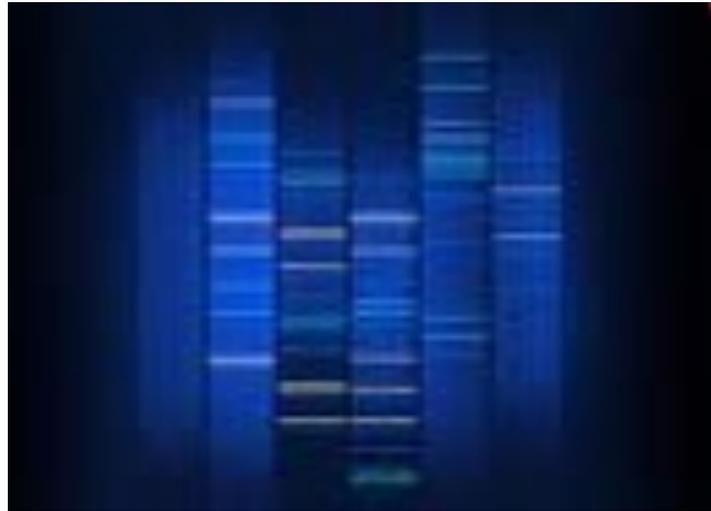


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# Outline

- Biological Markers of Stress and Trauma
  - Cortisol
  - Brain Structure and Function
  - Strengthening the Child: Strategies
  - Cue-Centered Treatment
  - The Pure Power Curriculum

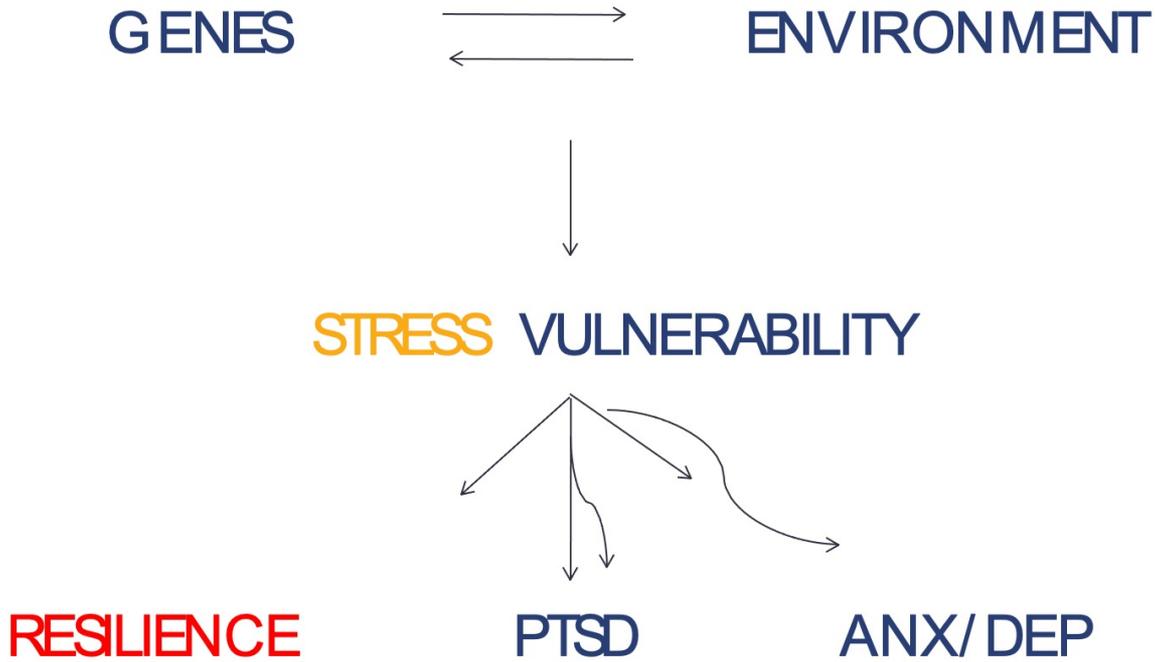
# Nature



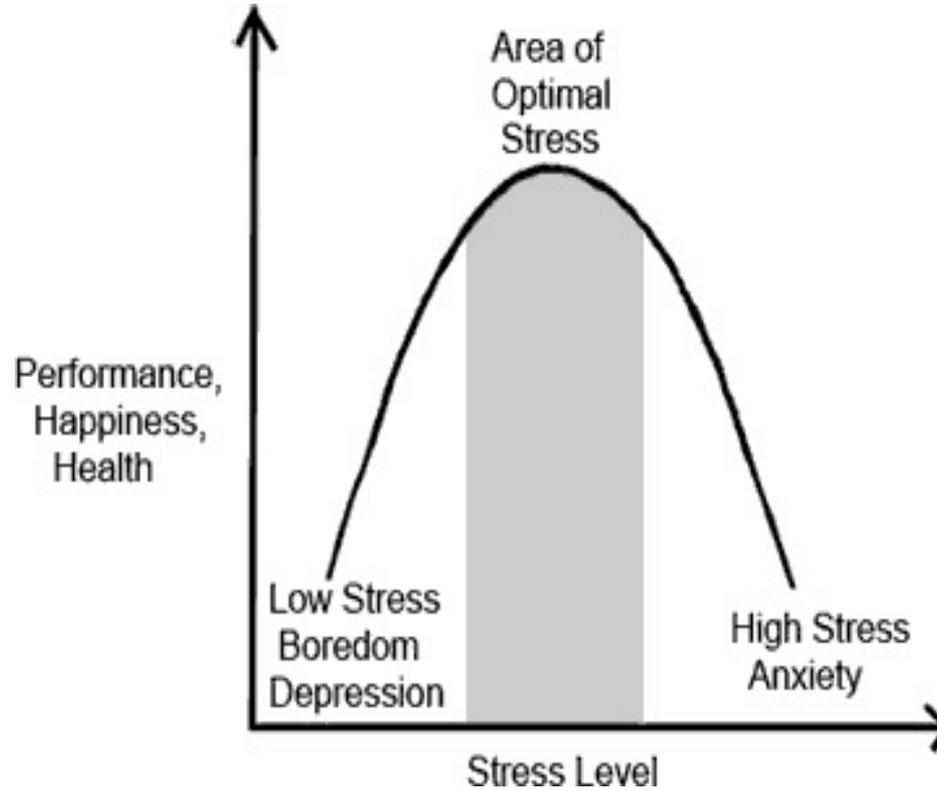
# Nurture



# Nature vs Nurture



# Stress



“Role of Employees Satisfaction and Stress Management in Banking Industry.” (2017).

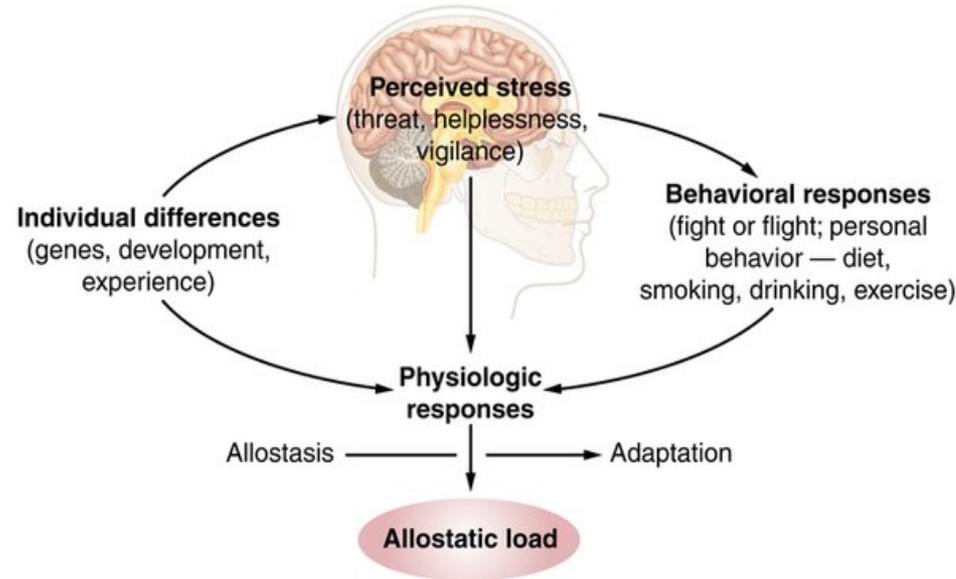
# Allostatic Load

McEwen, Clayton, and McCance

Environmental stressors  
(work, home, neighborhood)

Major life events

Trauma, abuse



<https://basicmedicalkey.com/stress-and-disease/>

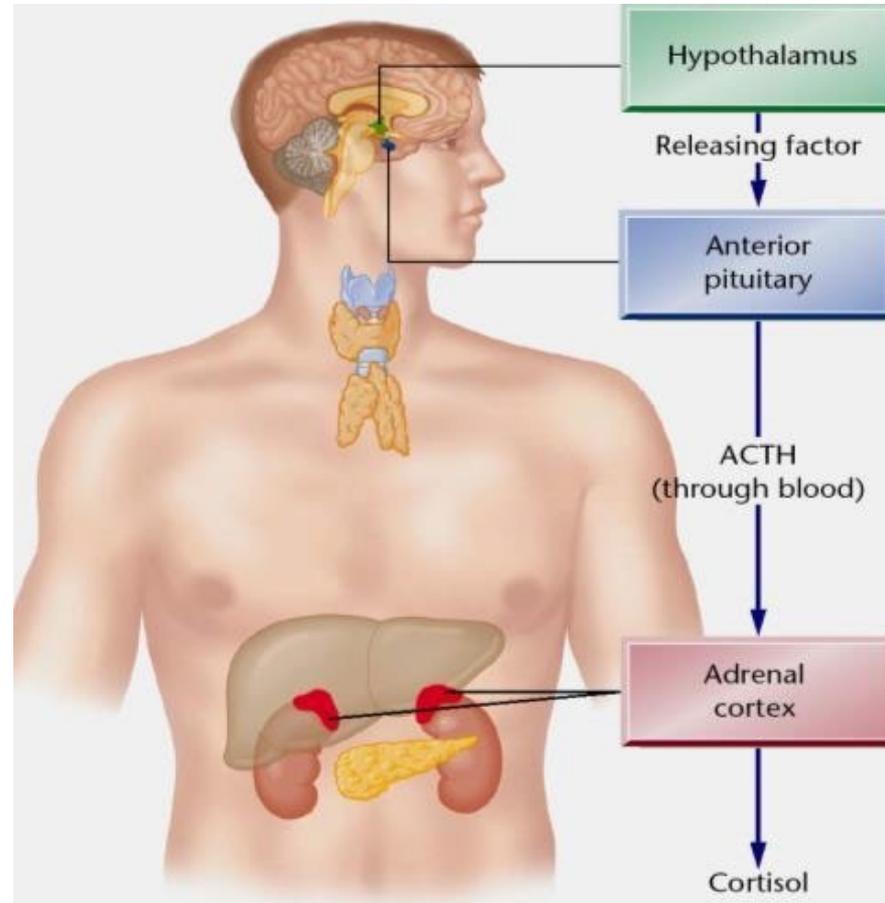


# 100 Billion Neurons/Trillions of Synapses/Pruning and Myelination

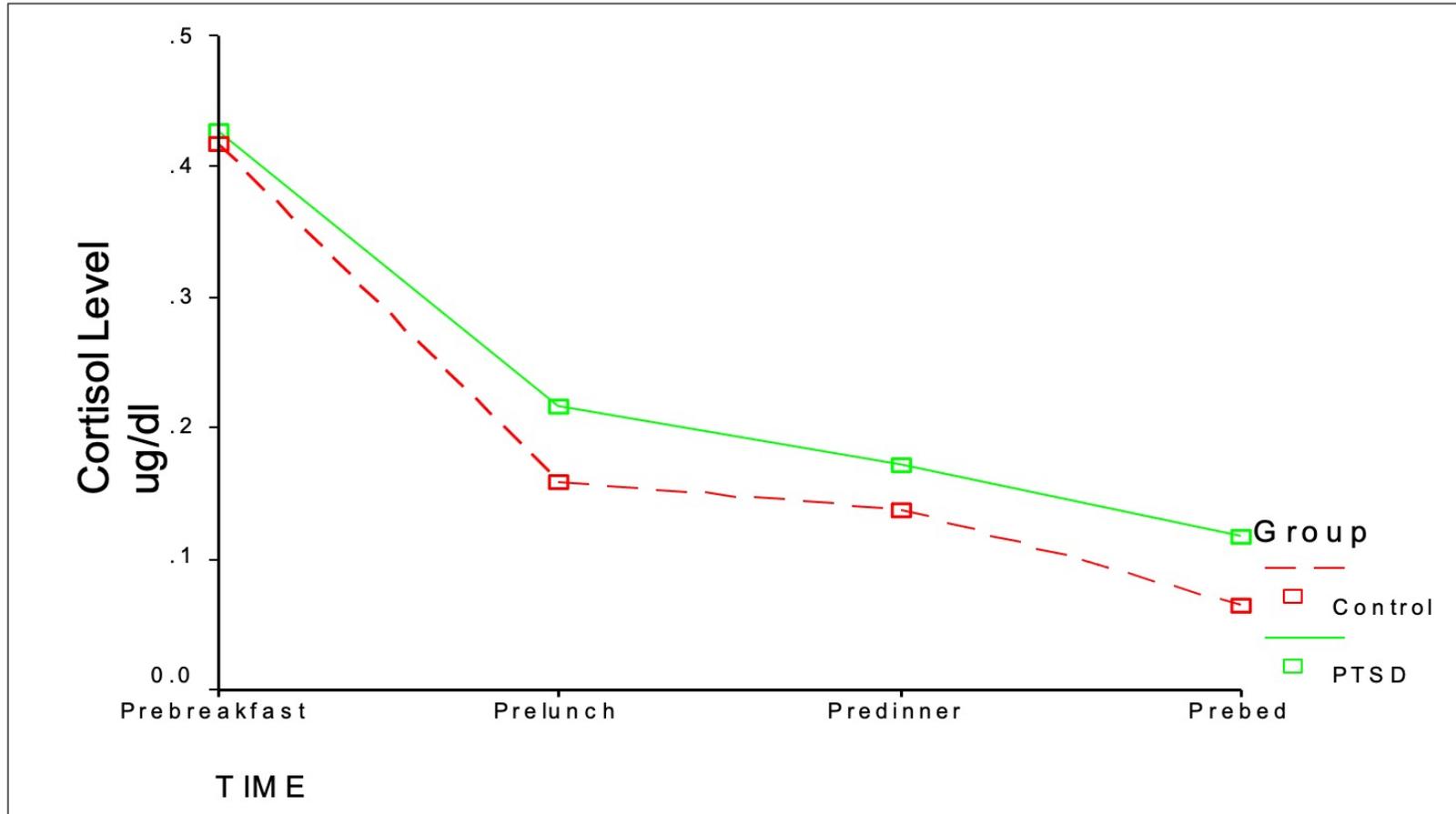


<https://www.gettyimages.com/illustrations/neurons-firing>

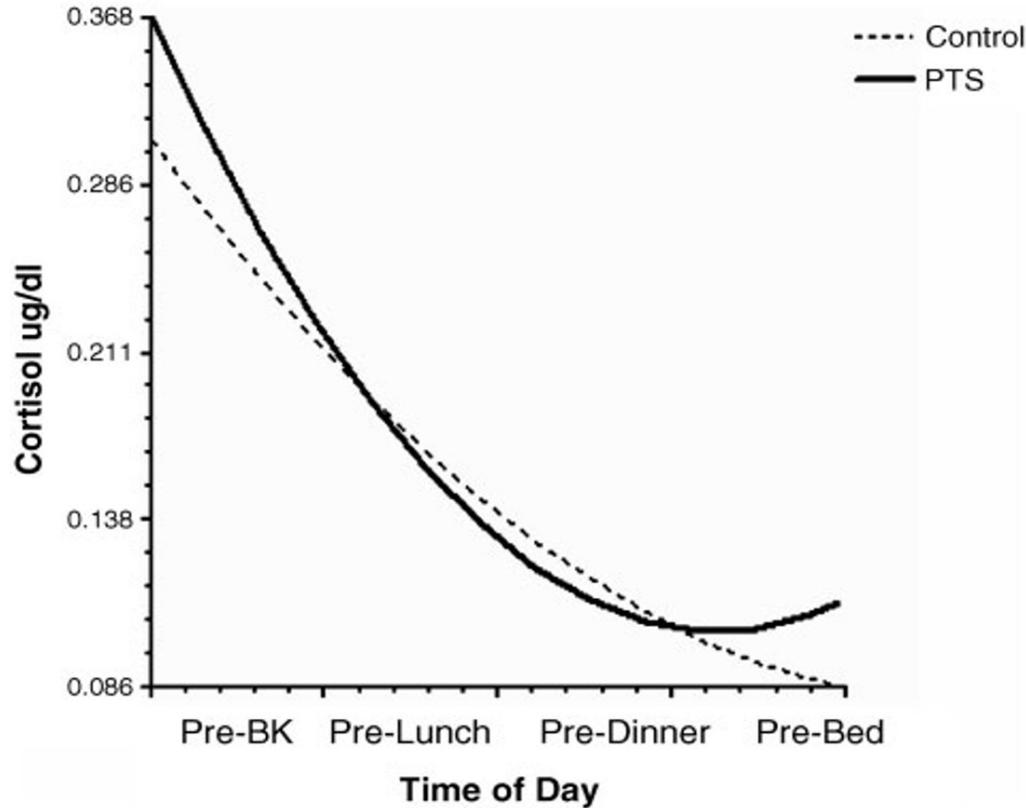
# HPA Axis → Cortisol



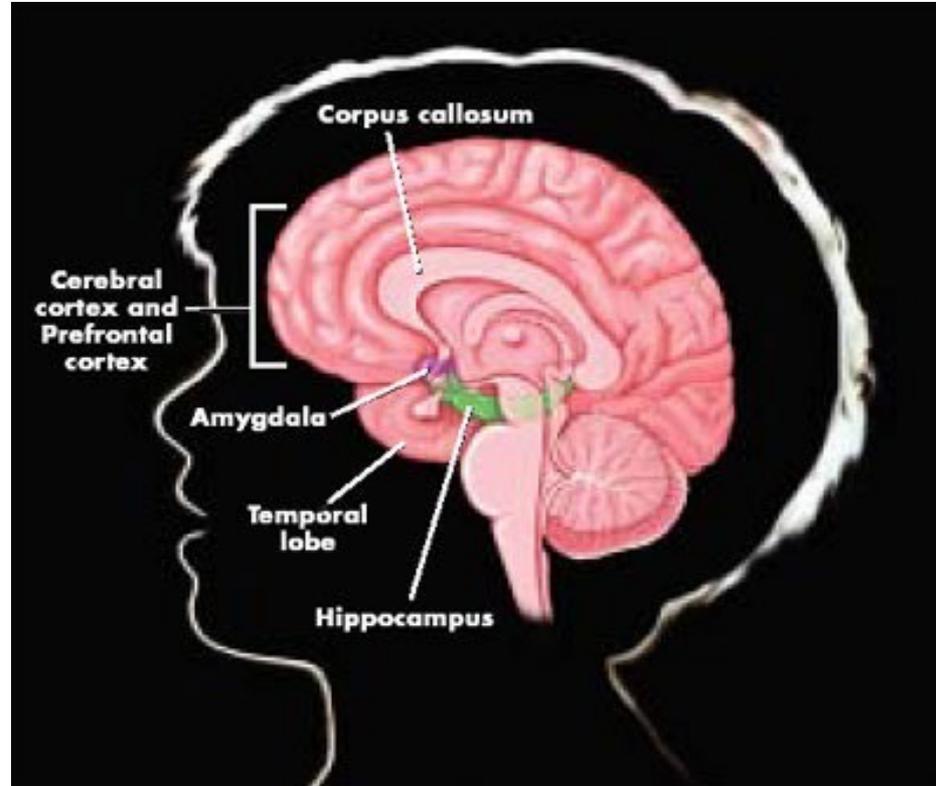
# Cortisol Circadian Rhythmicity



# Trends in Cortisol Levels Across Time of Day: HLM Analysis



# Processing a Traumatic Event

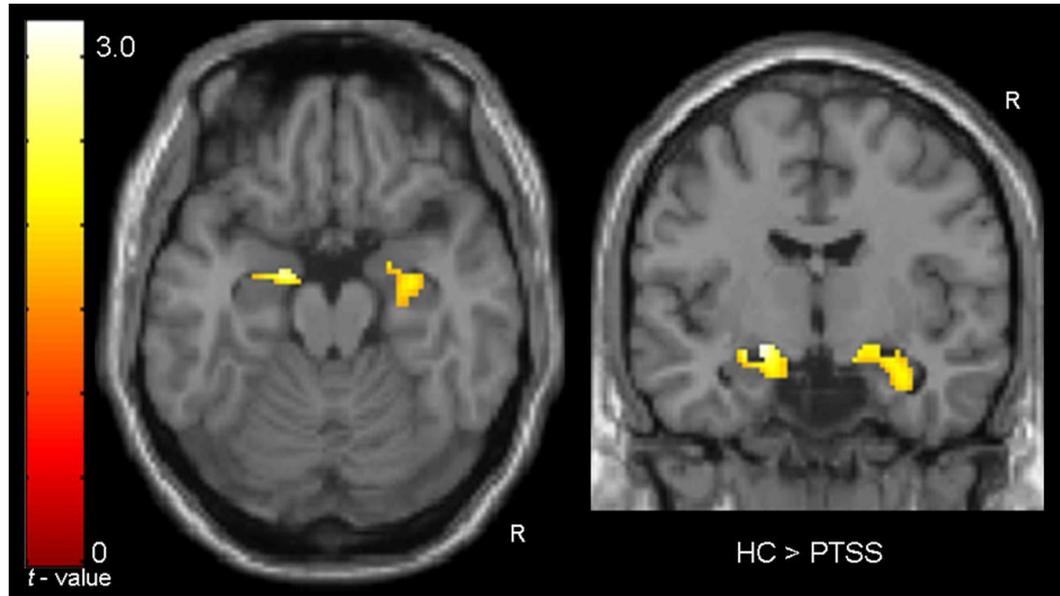


<http://neuroscience.mssm.edu/nestler/brainRewardpathways.html>

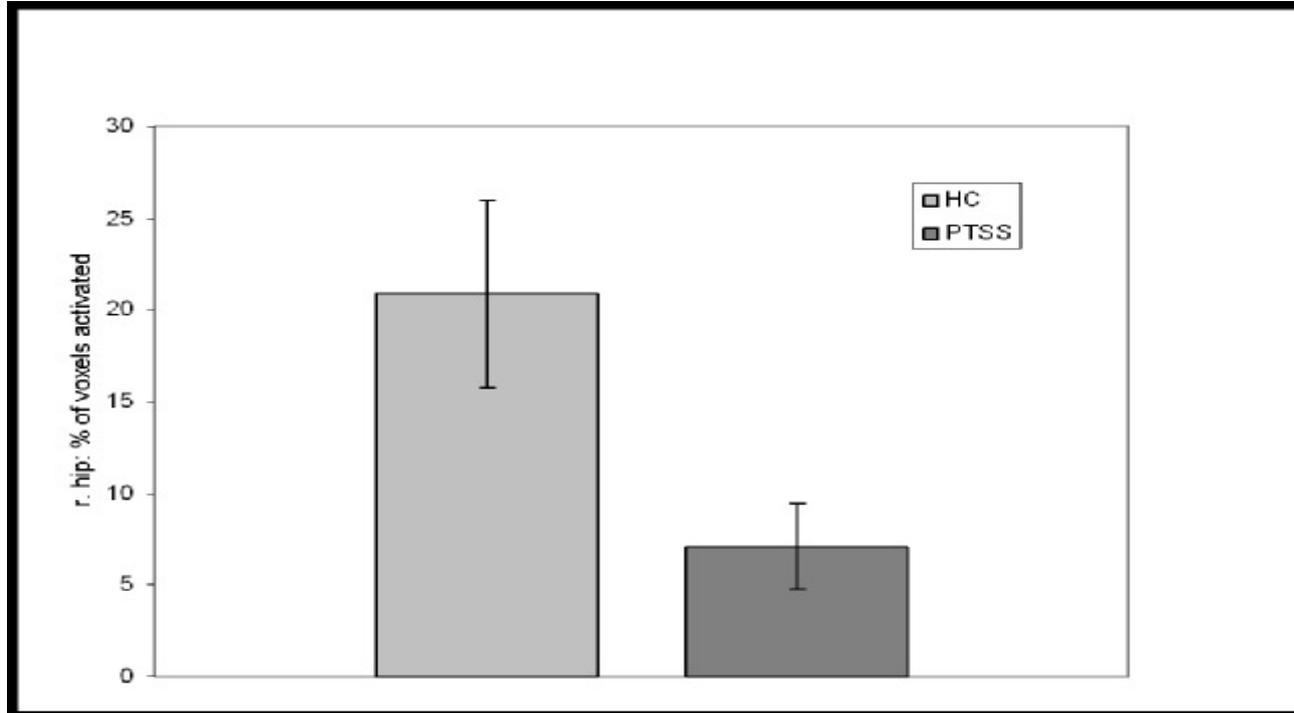
# Memory

Posttraumatic stress disorder symptoms and cortisol at baseline predicted hippocampal reduction over an ensuing 12- to 18-month interval.

Left and right hippocampal activation during retrieval found to be greater in the HC group compared to the PTSSgroup. Clusters are overlaid upon a standardized template brain in an axial view (left:  $z = -18$ ) and a coronal view (right:  $y = -20$ ). No areas of the left or right hippocampus were found to display greater activation during retrieval in the PTSS group compared to the HC group.

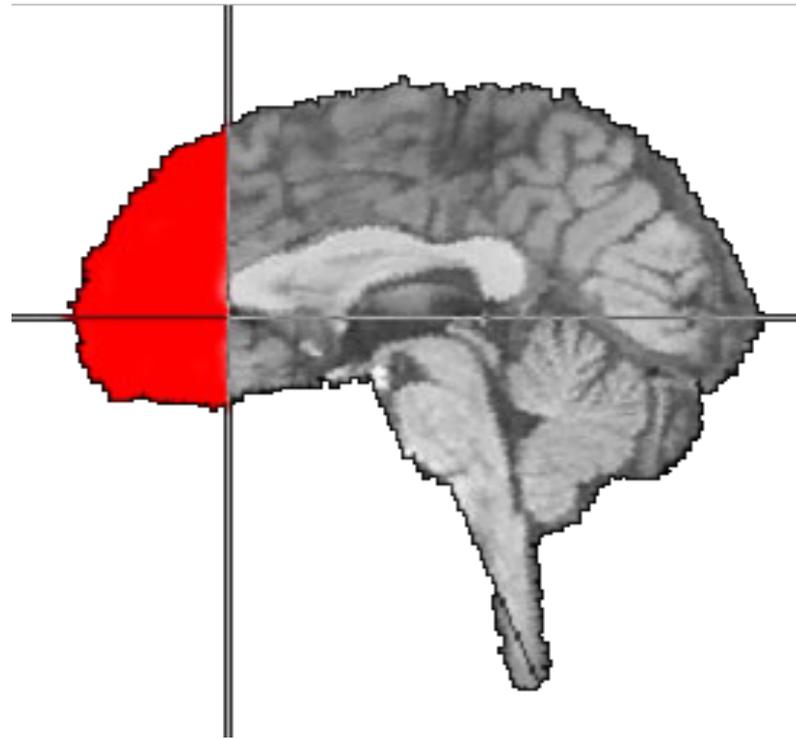


Percentage of total voxels within the right hippocampus activated ( $p < .05$ ) when comparing retrieval versus the control condition in the HC and PTSS group.

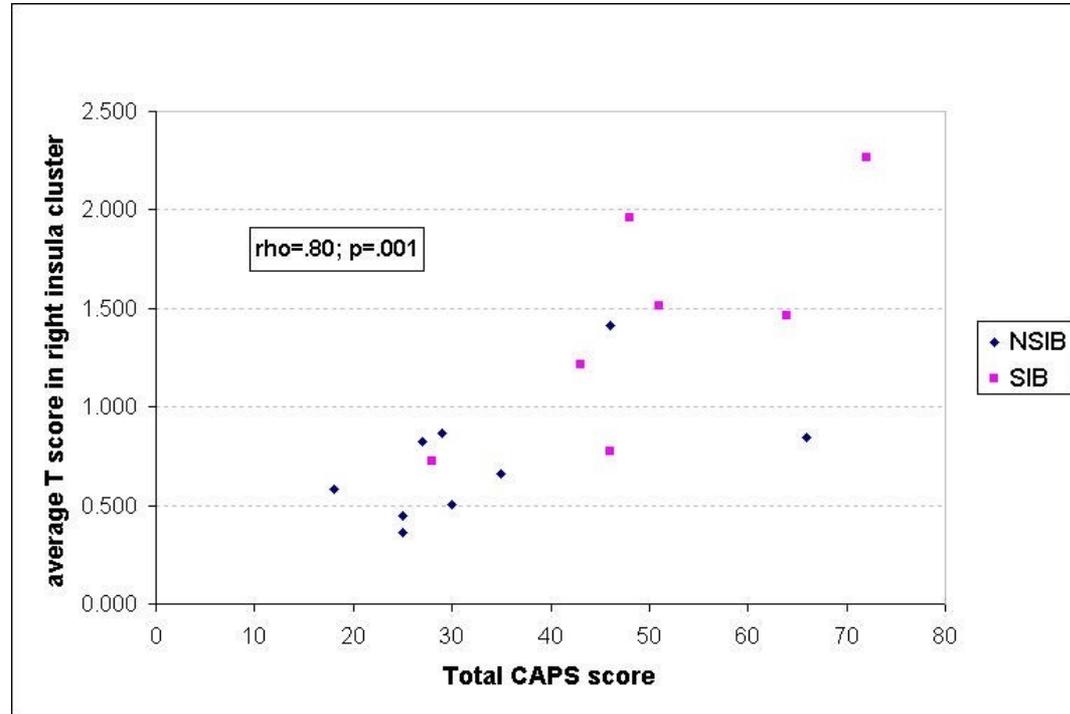


Carrion et al, 2010 J Pediatric Psych

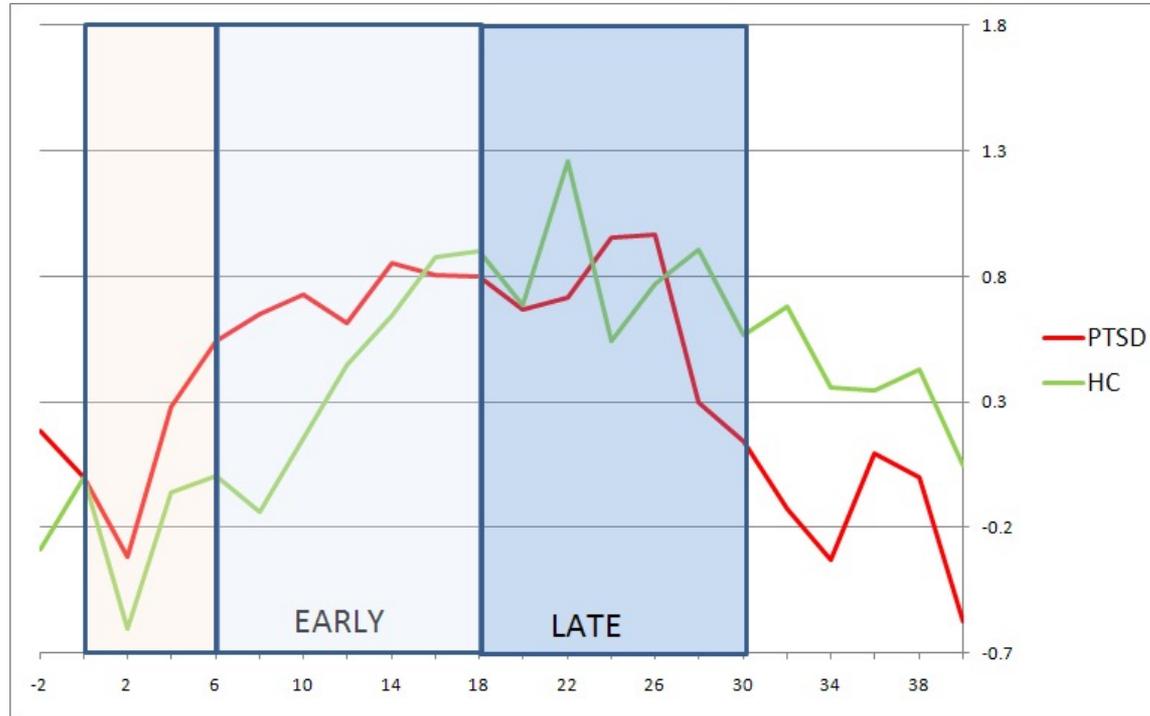
# Executive Function



# Correlation of Insula Activation with PTSD Symptom Severity

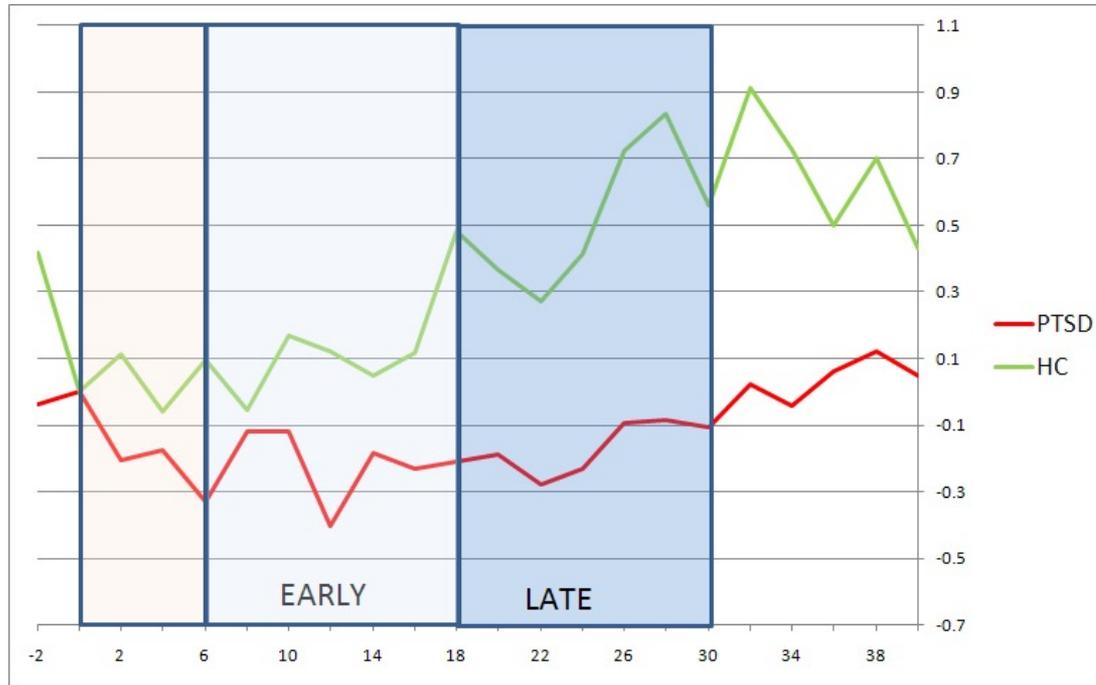


# Amygdala Early Activation when viewing Angry Faces



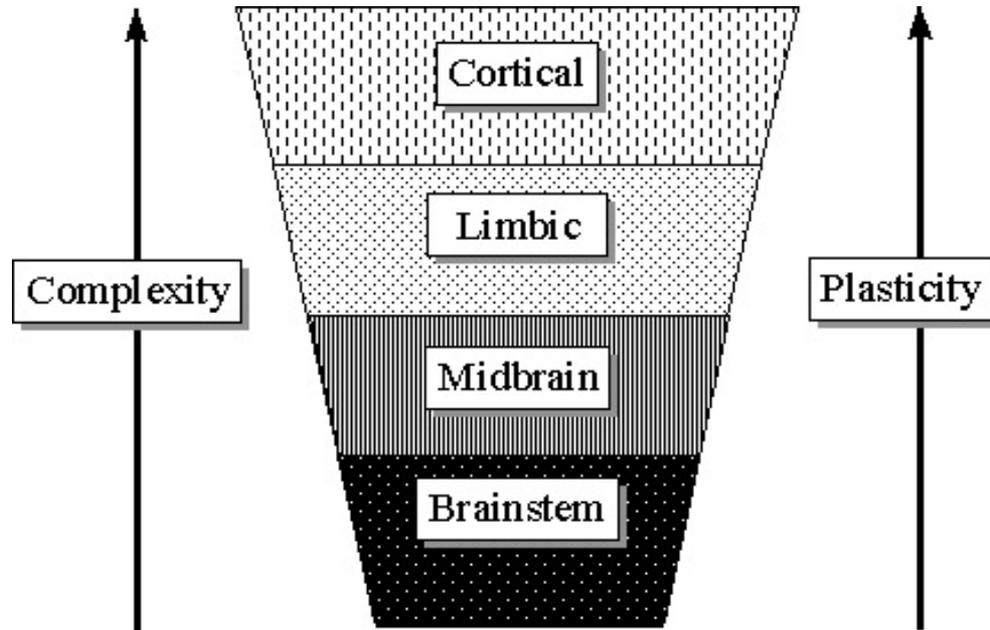
Garrett et al 2012 Depression and Anxiety

# Diminished PFC Activation when viewing Fearful Faces



Garrett et al 2012 Depression and Anxiety

# Nature



# Neuroplasticity

- Most active during development
- Clear impact of trauma on key regions
- Aerobic exercise promotes neurogenesis
- Best improvements: PFC and hippocampus
- Molecular and network levels
  - Strengthening/weakening of synapses
  - Strengthening/weakening of pathways

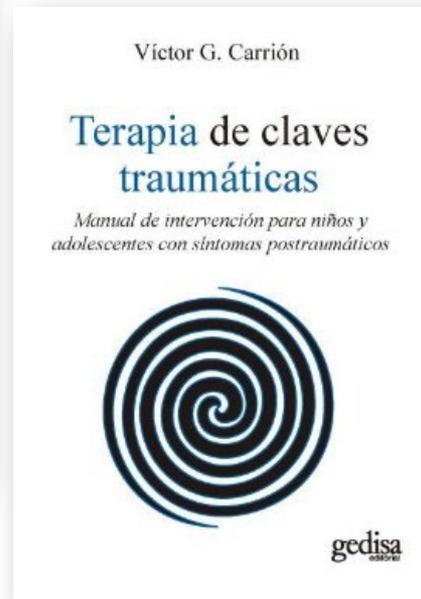
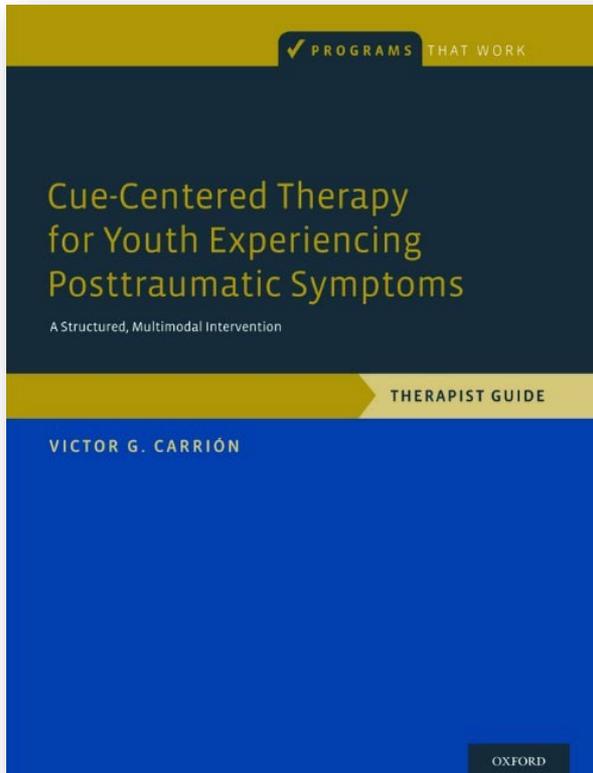
# The Need for Treatment

- Without treatment, PTSD can potentially become a chronic condition
- Even those who recover from PTSD are likely to relapse
- Due to their developmental level, youth may be particularly vulnerable to trauma's effects
- Trauma can also result in many other problems, including academic, social and emotional difficulties.

# Cue-Centered Therapy for Youth Experiencing Posttraumatic Symptoms

## A Structured Multimodal Intervention, Therapist Guide

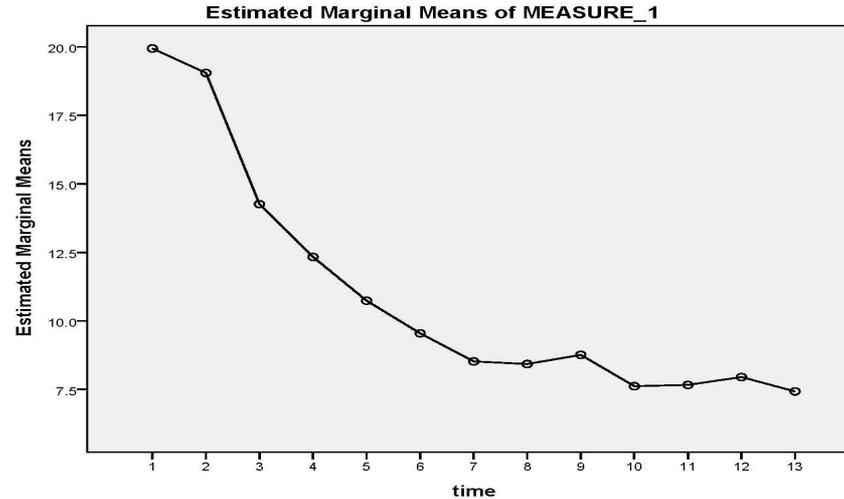
by Victor G. Carrión



- Developed for therapists treating the complex clinical scenarios of chronically traumatized children
- Emphasizes the importance of empowering children to become their own agents of change
- Allows therapists flexibility in conducting each session and leaves room for them to apply their own strengths
- Utilizes a hybrid of interventions shown to be effective when treating traumatized children
- Tailored specifically for the treatment of children who experience ongoing adversity

January 2016 | Paperback

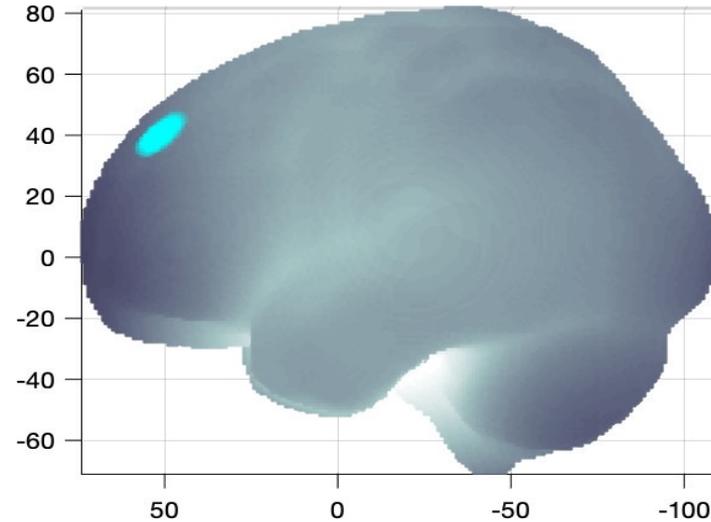
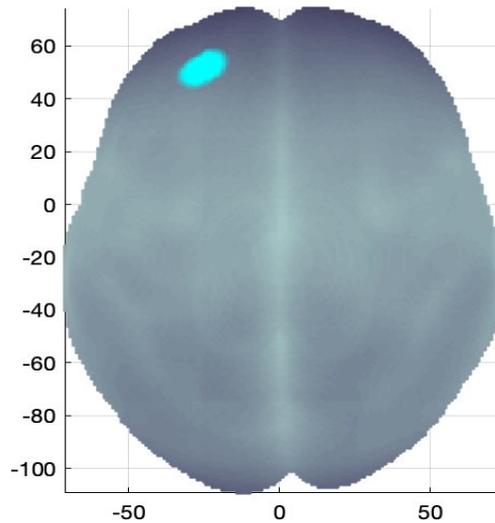
# PTSD Symptoms and Sessions



Level 1 HLM analyses indicated a significant linear, coefficient = -2.84,  $t(500) = -6.72$ ,  $p < .001$  and curvilinear (quadratic) change, coefficient = 0.13,  $t(500) = 5.60$ ,  $p < 0.001$

# CCT Group: Cortical Response (Time 2 – Time 1)

## Fearful Faces

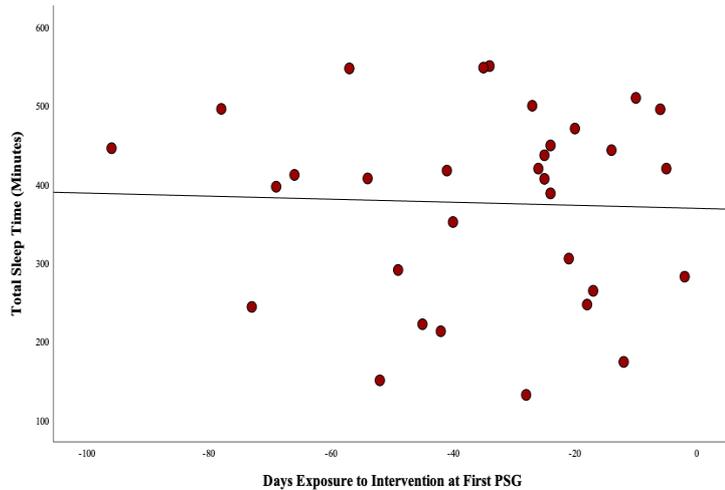


- Decreased activation:
- Left DLPFC

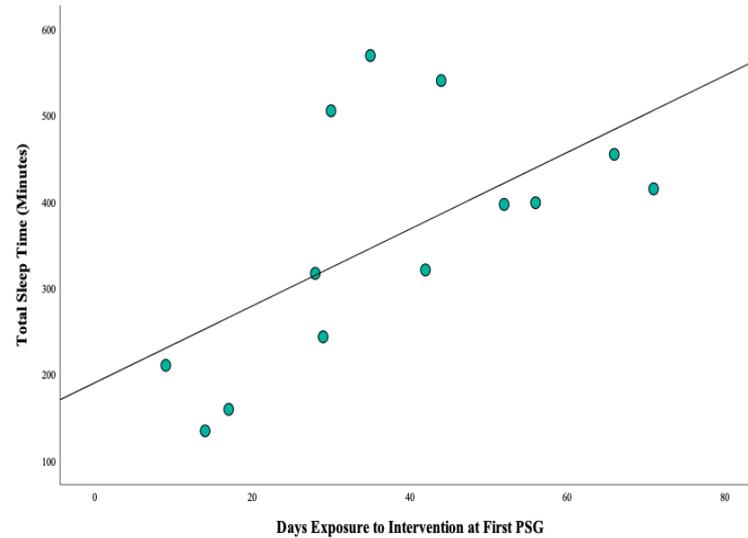
# Prevention: Pure Power Curriculum



# Increased Total Sleep Time (Minutes) Following Curriculum (p=.04)

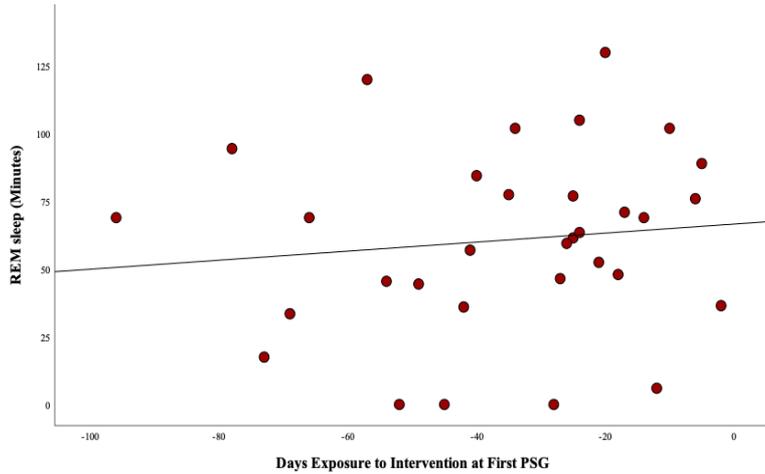


Pre-Curriculum

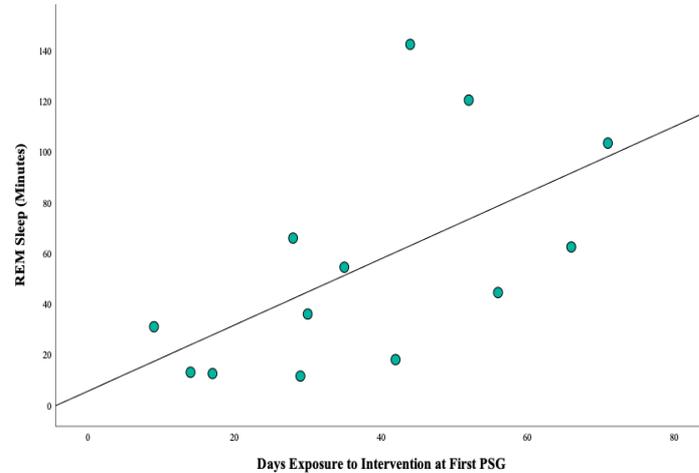


Curriculum: Dose-Response

# Increased REM Sleep (Minutes) Following Curriculum (p=.04)



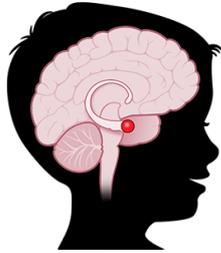
Pre-Curriculum



Curriculum: Dose-Response

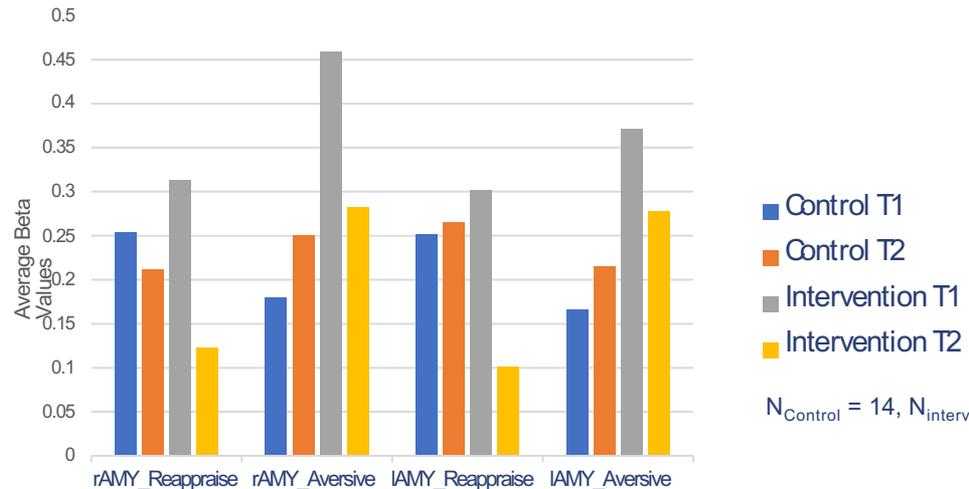
# Decreased Amygdala Reactivity After Intervention

## AMYGDALA



Amygdala activation is associated with emotional responses: in particular fear, anxiety, and aggression. Amygdala hyperactivity is seen in a variety of psychopathologies including PTSD and exposure to early life stress. After the mindfulness intervention, children in the intervention group showed decreased amygdala reactivity to aversive images.

## Amygdala Reactivity



$N_{\text{Control}} = 14$ ,  $N_{\text{Intervention}} = 11$

# Stress, Adaptation, and Resilience: In Response to Crisis

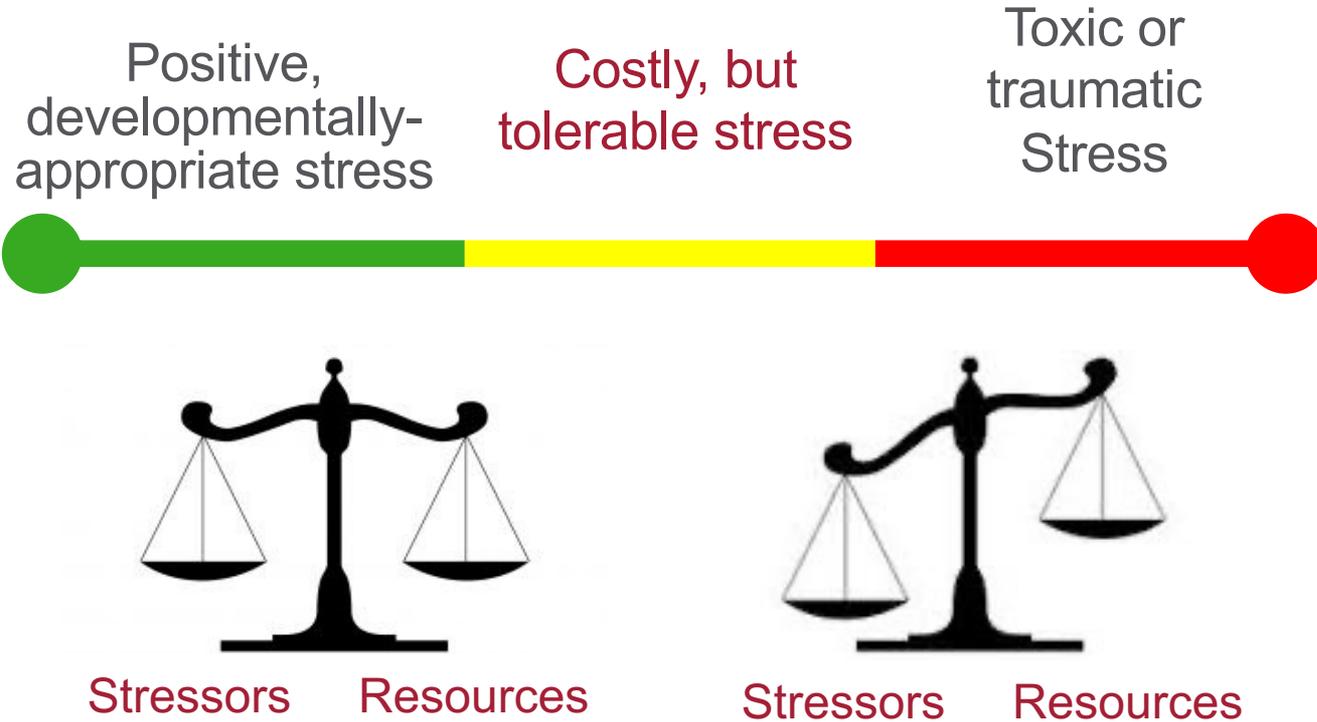
Adapted from:

*Psychological First Aid and Skills for Psychological Recovery* developed by the National Child Traumatic Stress Network and National Center for PTSD and principles of *Cue-Centered Treatment* by the Early Life Stress and Resilience Program at Stanford University

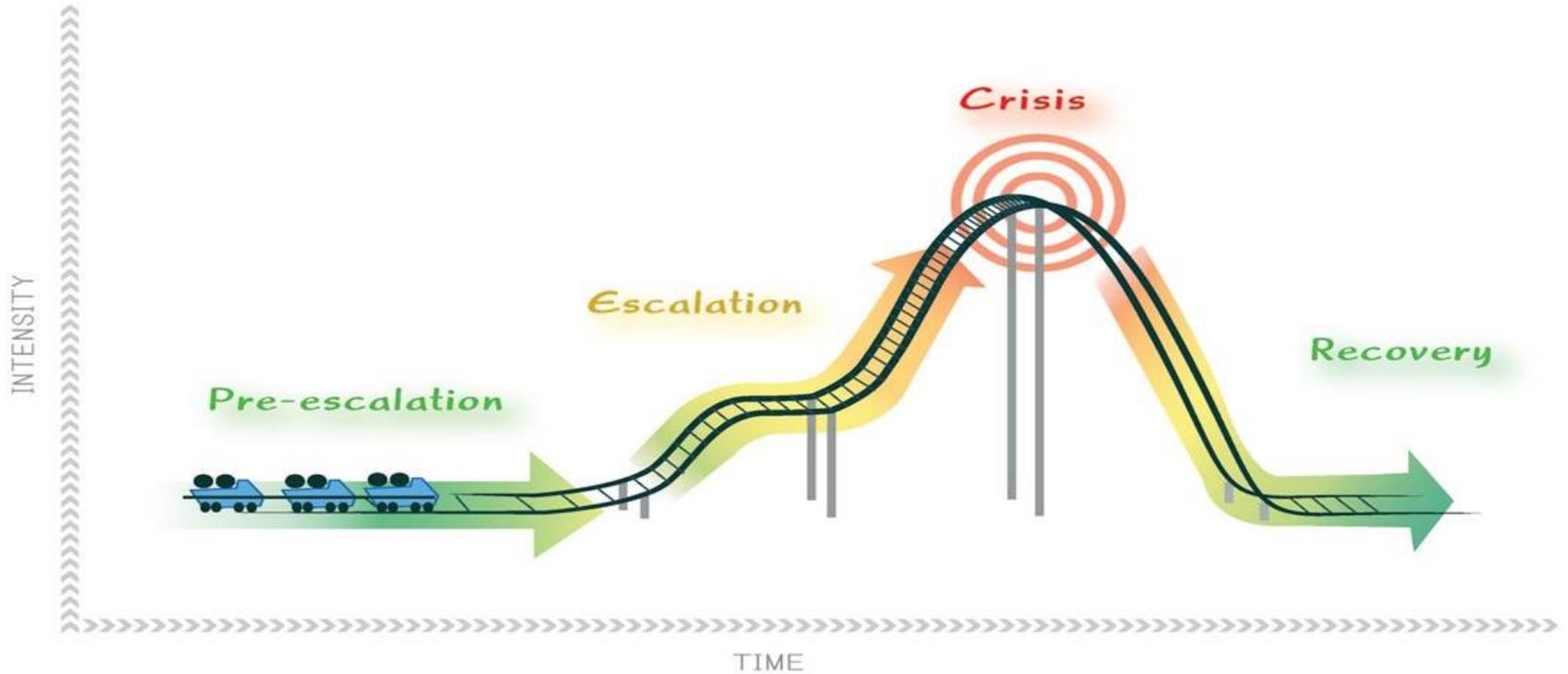
**Ryan Matlow, Ph.D.**

(slides adapted from Dr. Debra Kaysen)

# Responding to crisis & Cultivating resilience



# Resilience Requires Fluidity and Flexibility



# Following crisis or disaster, approach varies depending on time since exposure to a stressor.

## First 24-72 hours

### Safety/stabilization

- Initial crisis
- Safety and stabilization
- Psychological first aid
- Non-mental health intervention
- Typically 1-2 sessions

## Post-Trauma

### Recovery

- Chronic mental health symptoms
- Trauma focused therapies (exposure or cognitive restructuring – e.g. PE or CPT)
- 5-15 sessions
- Specialty mental health

## Days to weeks post-trauma

### Building resilience

- Natural recovery phase
- Secondary prevention
- Skills based (social support, coping efficacy, behavioral activation, managing reactions)
- 1-6 sessions

# Resilience



The capacity to adapt successfully to challenges that threaten function, survival, or development  
(Masten, 2014)

<http://www.apa.org/helpcenter/road-resilience.aspx>

# Resilience



- Being resilient does not mean the absence of difficulty or distress.
- Resilience is ordinary and common. We all have this capacity.
- Resilience needs to be cultivated-- it can be acquired through learning and practice We need to work on our self-care to be able to care for others

<http://www.apa.org/helpcenter/road-resilience.aspx>

# Resilience Factors

- Connection to a Caring Person
- Capacity for Self-Care & Wellness
- Emotional Regulation
- Commitment to a purpose
- Creativity & Cognitive Flexibility

# Process for Promoting Resilience



## 1. Awareness and Reflection to identify impact(s) of Crisis

- Identify and normalize difficulties
- Begin to explore what is needed



## 2. Stabilization and Grounding

- Connection



## 3. Explore resources and strategies for managing stressors and impact

- Resilience resources and coping skills
- Systems and communities of support



## 4. Set plans and intentions for engaging with resources

# RESOURCES

- Stress and Resilience Intervention
- Psychological First Aid
- Skills for Psychological Recovery
- Cue Centered Therapy

# Grounding for Acute Distress

Notice some  
non-distressing  
things in their  
environment

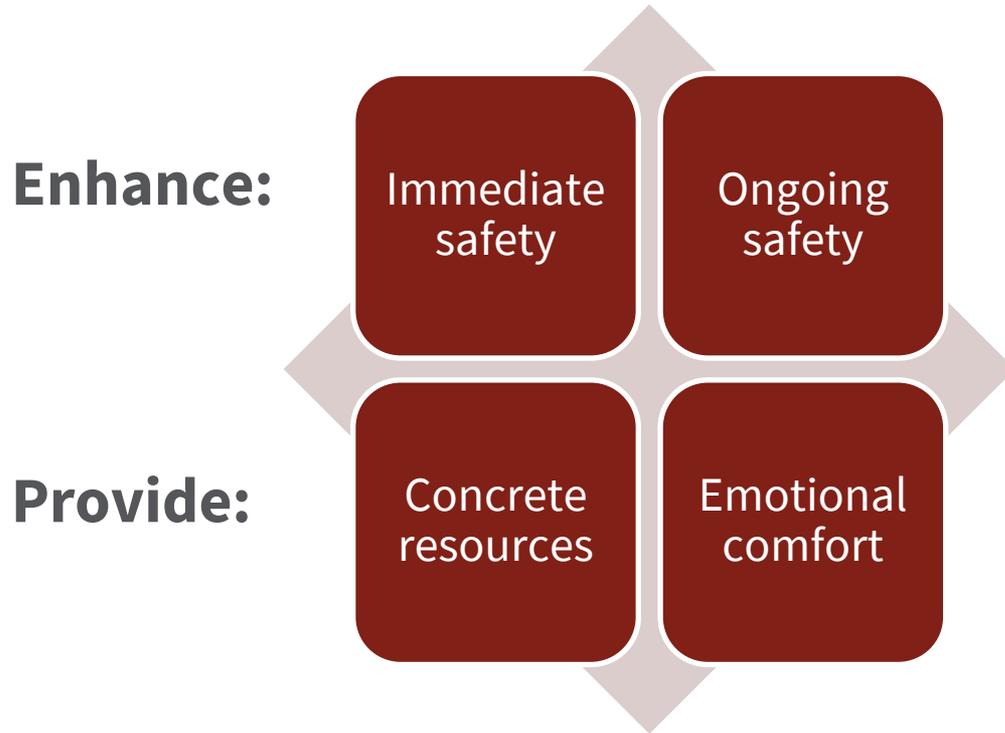
Focus on  
breathing,  
breathe slowly

Place and feel  
feet on the floor

*things they  
can see,  
hear, or feel*

Describe  
what you see  
and hear

# Identifying Needs and Priorities for Safety and Comfort



NOTE: This is a collaborative process!

## Effective Goal-Setting:

- One thing at time
- Prioritized based on personal needs or values
- SMART (specific, measurable, attainable, relevant, time-limited)
- Anticipate barriers or challenges
- Effort (not outcomes)-based

# Cue Centered Therapy (CCT)

**Hilit Kletter, Ph.D.**, Director Stress & Resilience Clinic of the Early Life Stress and Pediatric Anxiety Program, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine

# Background

- Multimodal approach
- 15 sessions
- Primarily individual + 3-4 conjoint child/caregiver sessions
- Ages 8 and above
- Focus on chronic, ongoing trauma
- Suitable for any trauma type

# Unique Features of CCT

- Focus on allostatic load
- Insight oriented approach
- Minimal caregiver participation required
- Trauma narrative done at two time points

# Aims of CCT

- Reduce negative cognitions
- Express emotions regarding the trauma
- Identify and change trauma-related behavioral responses
- Gain empowerment through knowledge and skills
- Strengthen the relationship between caretaker and child

# Change one corner, everything changes!



# Four Phases of Treatment

- **Phase 1:** Assessment, psychoeducation, coping toolbox
- **Phase 2:** Chronic traumatic stress history
- **Phase 3:** Gradual exposure
- **Phase 4:** Revisiting trauma narrative; integration of skills learned

# First RCT: Efficacy of CCT

- 65 participants, ages 8-17 ( $M= 11.56$ )
- 13 low-income, high-risk schools in SF and EPA
- Randomized to CCT group ( $N= 38$ ) vs. waitlist group ( $N= 27$ )
- Minority youth: 33 Afr Amer, 26 Hisp, 1 PI, 5 Mixed

All participants had at least 2 traumas ( $M=5$ ):

- Separation/loss: 75%
- Witnessing violence: 61.5%
- Homicide: 51.9%
- Physical abuse: 25%
- Bullying: 25%

## Cue-Centered Treatment for Youth Exposed to Interpersonal Violence: A Randomized Controlled Trial

Victor G. Carrion,<sup>1</sup> Hilit Kletter,<sup>1</sup> Carl F. Weems,<sup>2</sup> Rebecca Rialon Berry,<sup>1</sup> and John P. Rettger<sup>1</sup>

<sup>1</sup>Stanford Early Life Stress Program, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California, USA

<sup>2</sup>Department of Psychology, University of New Orleans, New Orleans, Louisiana, USA

This study provides preliminary evidence of the feasibility and efficacy of the Stanford cue-centered treatment for reducing posttraumatic stress, depression, and anxiety in children chronically exposed to violence. Sixty-five youth aged 8–17 years were recruited from 13 schools. Participants were randomly assigned to cue-centered treatment or a waitlist control group. Assessments were conducted at 4 discrete time points. Self-report measures assessed youth symptoms of posttraumatic stress disorder (PTSD), anxiety, and depression. Self-report ratings of caregiver anxiety and depression as well as caregiver report of child PTSD were also obtained. Therapists evaluated participants' overall symptom improvement across treatment sessions. Hierarchical linear modeling analyses showed that compared to the waitlist group, the cue-centered treatment group had greater reductions in PTSD symptoms both by caregiver and child report, as well as caregiver anxiety. Cue-centered treatment, a hybrid trauma intervention merging diverse theoretical approaches, demonstrated feasibility, adherence, and efficacy in treating youth with a history of interpersonal violence.

# Results

- CCT group experienced significant reductions on PTSD, anxiety, and depression symptoms (both parent and child reports)
- Reductions in caregiver anxiety
- Improvement of overall functioning as rated by therapists
- Treatment gains maintained at 3-month follow-up

# Second RCT: Treatment Conditions

- 73 participants ages 7-17 in a community mental health agency
- Randomized to CCT, TF-CBT, or Treatment as Usual (TAU)
- CCT and TF-CBT significantly effective as compared to TAU

(Carrion, Cohen, Lieberman, & Amaya-Jackson, 2020)

- fNIRS examining neuromarkers of treatment outcome

# CCT Training Program

- Therapist manual available in English and Spanish (Oxford University Press and Gedisa Editorial)
- Three steps to become a CCT therapist:
  1. Online course (6 hours; provides CME's):  
<https://mededucation.stanford.edu/courses/cue-centered-therapy/>
  2. Live course (8 hours; provides CME's)
  3. Case consultation
- Additional steps to become a trainer



# Special Considerations: *Young Children and Trauma*

**Anne Benham M.D.**, Clinical Professor, Department of Psychiatry and Behavioral Sciences-  
Child & Adolescent Psychiatry and Child Development

Focus on issues for young children both in Ukraine and displaced to other countries/parts of Ukraine.

There are differences for all people in this conflict but for young children there may not be as many differences even once “safe” away from the armed conflict.

1. **First Principle:** Trauma to a primary caregiver, including witnessed by child even if not experienced directly, is sufficient cause and diagnostic criterion for PTSD in children ages 0-6 years.
2. **Second Principle:** The coping of the caregiver may predict the coping of a young child (and older ones) so a focus on care of the caregivers is reasonable and important.
3. **Third Principle:** In a traumatic situation the provision of safety is the first priority,
  - Physical Safety
  - Psychological Safety: Loss of primary caregiver is key trauma and thus young child needs to be with a familiar adult or sibling.

# Young Child Reactions to Danger

## Trauma and Loss:

- TERROR= being alone, abandoned, not with any familiar person
- Changes in sleep, increased or decreased, increased nightmares. Fear of sleep
- Changes in eating, increased or decreased
- Increased somatic symptoms, headaches, stomachaches, etc
- Poor attention
- Poor emotion and behavior regulation
- Behavior: defiance, withdrawal, clinginess
- Darting away unlikely but may represent child's search for familiar persons
- Regression in toileting, sleep, wanting to be fed, clinginess and separation anxiety.

# Young Children's Reaction to DEATH of Others

- \*\* they do not understand death as permanent until age 5-6
- They will ask when dead person will return or continue to look for them
- Grief is expressed differently: Young children may dip in and out of sadness, may play and be happy at times. This is confusing and sometimes angers adults who then think the child does not understand or does not care.
- \*\* Children must not be scolded for this variation in their grief reactions
- The ability of children to play can be framed as a vehicle of HOPE for adults, that there may be eventual life after this terrible trauma has resolved or moved to new stages. Children process trauma via play rather than verbally ( see more)
- Do not equate death with sleep. Young children are literal and may develop sleep disorders. They

# Helping Young Children to Cope

**Transitional objects:** a familiar toy, blanket, parent piece of clothing, bottle or pacifier serves to help child remember and hold on to the experience of safety and soothing by a parent or familiar caregiver. Trauma is especially a sensory experience for young children and sensory soothers are helpful. Giving a child a new stuffed animal or something soft to hold can be calming and reassuring even if it does not have the “right smell” yet.

**Self Calming techniques:** *Soup breathing:* cup hands, take a deep breath to smell favorite soup, then slowly blow on it to cool it enough to eat (kids love pretend) *Belly breathing:* have child (and adult if able to) lie down with something on tummy like a stuffed animal. Slowly breathe in and out to give the toy a ride up and down. This may also help adult learn these deep breathing techniques in an acceptable way to them.

# Helping Young Children to Cope

**Correct self-referential beliefs:** Young children believe that their thoughts, wishes and fears can make things happen. They may blame themselves or parents for the terrible experiences they have been through. It is important to let them fully express these erroneous beliefs, not belittle them.

**Sleep:** Help with use of calming activities like singing, stories before sleep, have child sleep with caregiver if needed, be helped with experience of nightmares, nightlight.

**Give the child more true explanations** about what is happening in the war, the bombing or their house or the death or injury of someone close. It needs to be simple, oriented to young child cognitive capacities, with the clear explanation that these are actions by adults that are hurtful and dangerous and wrong. They can be told that adults all over the world are working to end this war and to help all the people like themselves who have been harmed and terrified.

# PLAY

- Sit or kneel at the child's eye level
- Use simple terms

**Name feelings:** Help child tell his /her story and empathize. “That sounds scary, you must have felt sad, those bombs could also make you angry”. Draw a chart of faces with simple feeling expressions, especially sad, mad , scared, happy, confused, worried, relieved. Help children identify their experiences in these terms

**PLAY:** Children express their experiences in art , play , pretend and movement. Their memories are primarily visual rather than verbal as well as other senses like sounds, smells, tastes, movement of their bodies ( being shaken or thrown to the ground by outside forces). Encourage them to show you their experience in any of these ways including telling but often not verbally until adult translates it into words.

# PLAY

**Children often talk more easily** when doing something else like drawing or playing with a toy. They may also have NO words for what happened but can show you.

## **What does playing out traumatic events do positively?**

- It can facilitate communicating the experience to others and open channels for correcting false beliefs about what happened.
- The child can express intense emotions in a safer environment, play or drama.
- Adults can express empathy for child's experience of fear, loss, and rage and the wish they could have prevented this from happening. Express that it is not the child's fault.
- The child can play out wishful corrections like the return of someone who died. This can be supported by an adult as a true wish by many people and may open communication between them.

**When is playing out traumatic events negative for the child?** Group trauma play can be positive or negative. They can all unite in fighting the bad guys, helping to give the children a sense of agency and power in fantasy. ( Why is superhero play so popular in this age group? ) This play can also be harmful if some children are labeled the bad guys and have group anger directed at them. Play about trauma can be reparative especially if an adult monitors it and helps kids discuss their experiences and feel united. Trauma Play, a repetitive story that has no room for correction or salvation can become fixed and actually traumatic itself instead of helping the child to process and share experience.



**ART:** The act of drawing or painting can be soothing or an expression of traumatic experience as seen in colors or intensity. Adults can help child by drawing something the child wants to show but is too young to create.

**Art** can also be used to draw a picture to someone missing, absent or dead as the child's gift and communication.

A drawing may be the child's contribution to a funeral or commemoration of a loved one. Art may be a way to remember places that have been lost or soothing memories of positive times past.



**BODY MOVEMENT:** Helps with stress hormone activation. This includes singing, dancing, walking, “ stretch and wiggle”, running and active games. Children may have been in enforced silence and stillness during hiding . Movement will be liberating and may help child with periods of enforced stillness at other times. Calm holding and rocking of child by an adult can be especially soothing to both.

**ENHANCING RESILIENCE:** The essential protective factor is the reliable presence of a positive, caring and protective parent or caregiver who can encourage them to talk about their experience and give reassurance that adults are working to keep them safe.

# Questions and Answers Session

# Mindfulness Practice: Mindful Minute + Safe Place



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# Mindfulness Practice: Poem and Resources

*“Perhaps all the dragons in our lives are princesses who are only waiting to see us act, just once with beauty and courage.*

*Perhaps everything that frightens us is, in its deepest essence something helpless that wants our love”*

R.M. RILKE

- Resources:

- Early life stress and resilience program –Soundcloud  
<https://soundcloud.com/user-130304670>
- Pure Edge Inc  
<https://pureedgeinc.org>
- Headspace  
<https://www.headspace.com>

# THANK YOU!

