

# Understanding and Mitigating the Effects of Toxic Stress for Children

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# INTRODUCTIONS

Parent

Preschool Teacher

Director

Family Childcare Home Provider

Early Intervention/Part C    Infant-Toddler Provider

Other Professional Discipline

?

# WHAT WE HOPE YOU'LL TAKE AWAY

## **Understanding of:**

Early Brain Development & Its Importance

Positive, Tolerable, & Toxic Stress

Effects of Stress on Brain Development

Lifelong Effects of Toxic Stress

The Importance of Resilience

Strategies to Reduce the Effects of Toxic Stress

The Importance of Relationships

Self-Care Strategies

# Anticipation Guide

Questions & Answers



# Still-Face Experiment Video

<http://youtu.be/apzXGEbZht0>

# What/How Did You Feel When Mom Stopped Interacting With Baby?

Confused, anxious, worried, cold inside

Interaction felt off, wrong, insensitive

Maybe you felt mad on behalf of the baby

Tense: increased breathing & heart rate



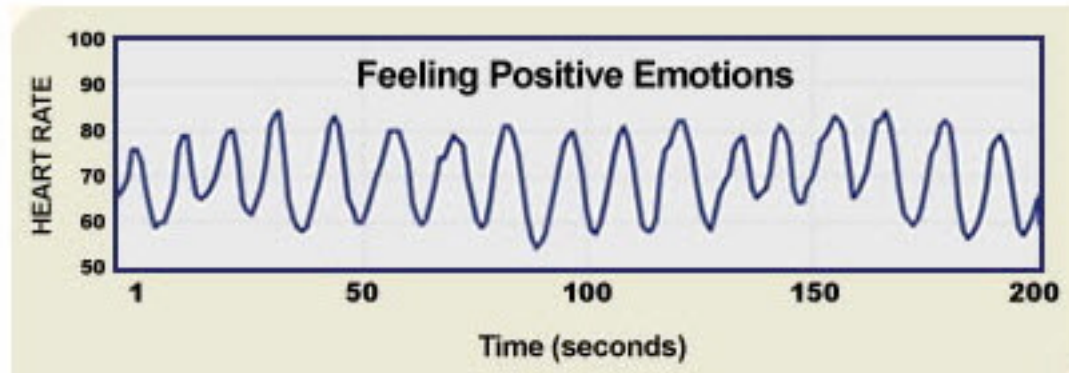
Heart rhythms when stressed

# What/How Did You Feel When Mom Once Again Was Responsive to Baby?

Relieved, soothed

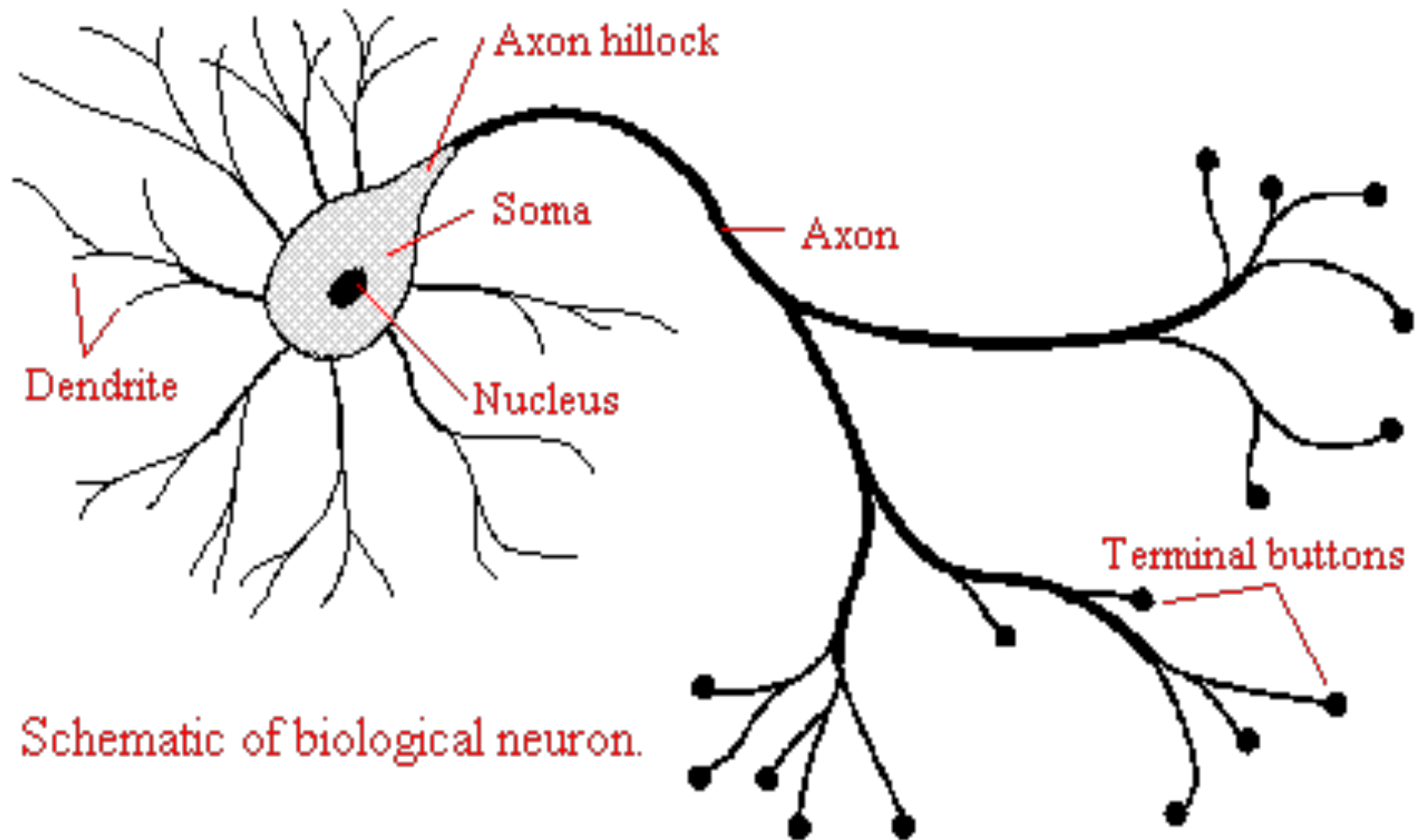
Happiness, pleasure, joy

Mom's loving response helped baby & you



Heart rhythms when feeling a positive emotion

# The Amazing Brain Cell – the Neuron



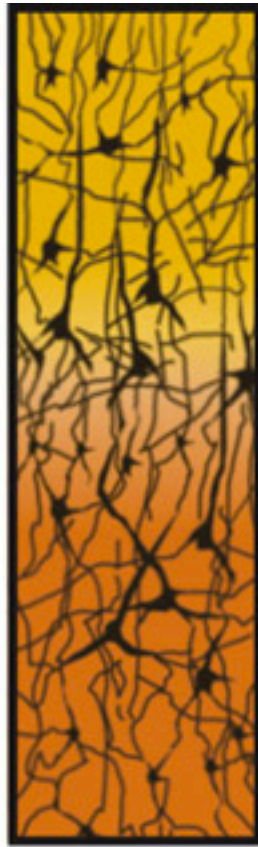
# 700 New Connections Per Second!



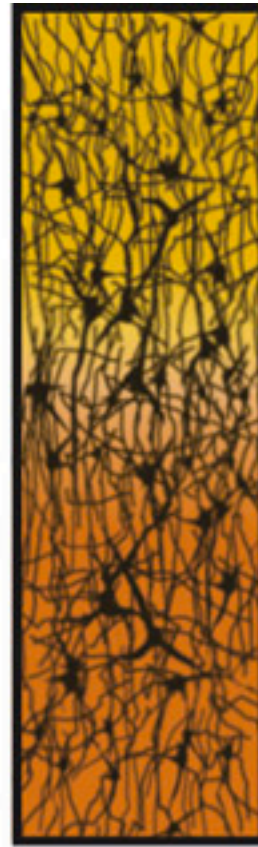
**Newborn**



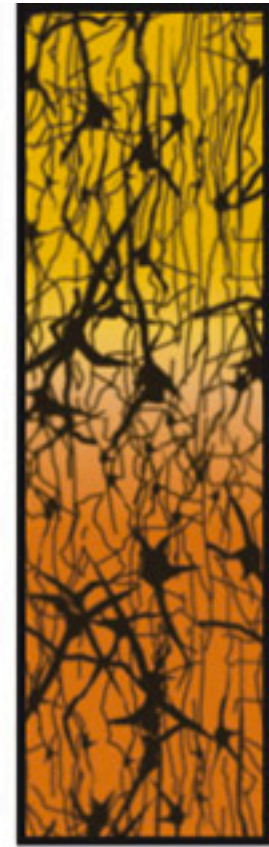
**1 Month**



**9 Months**



**2 Years**



**Adult**

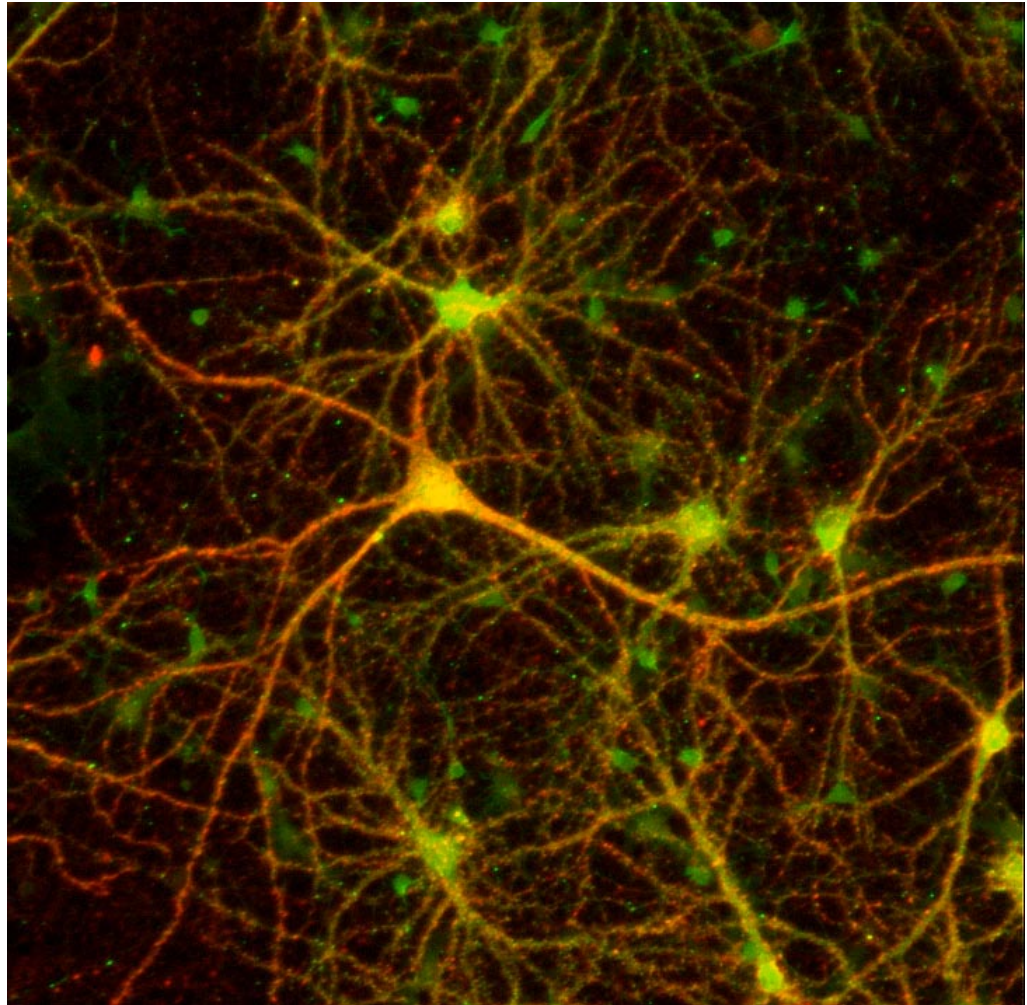


# The Amazing Architecture of the Brain

By 2 years:  
100 trillion  
connections.

By 3 years:  
1000 trillion  
connections.

Neurons that fire  
together, wire  
together.



# Mirrors in Our Brains

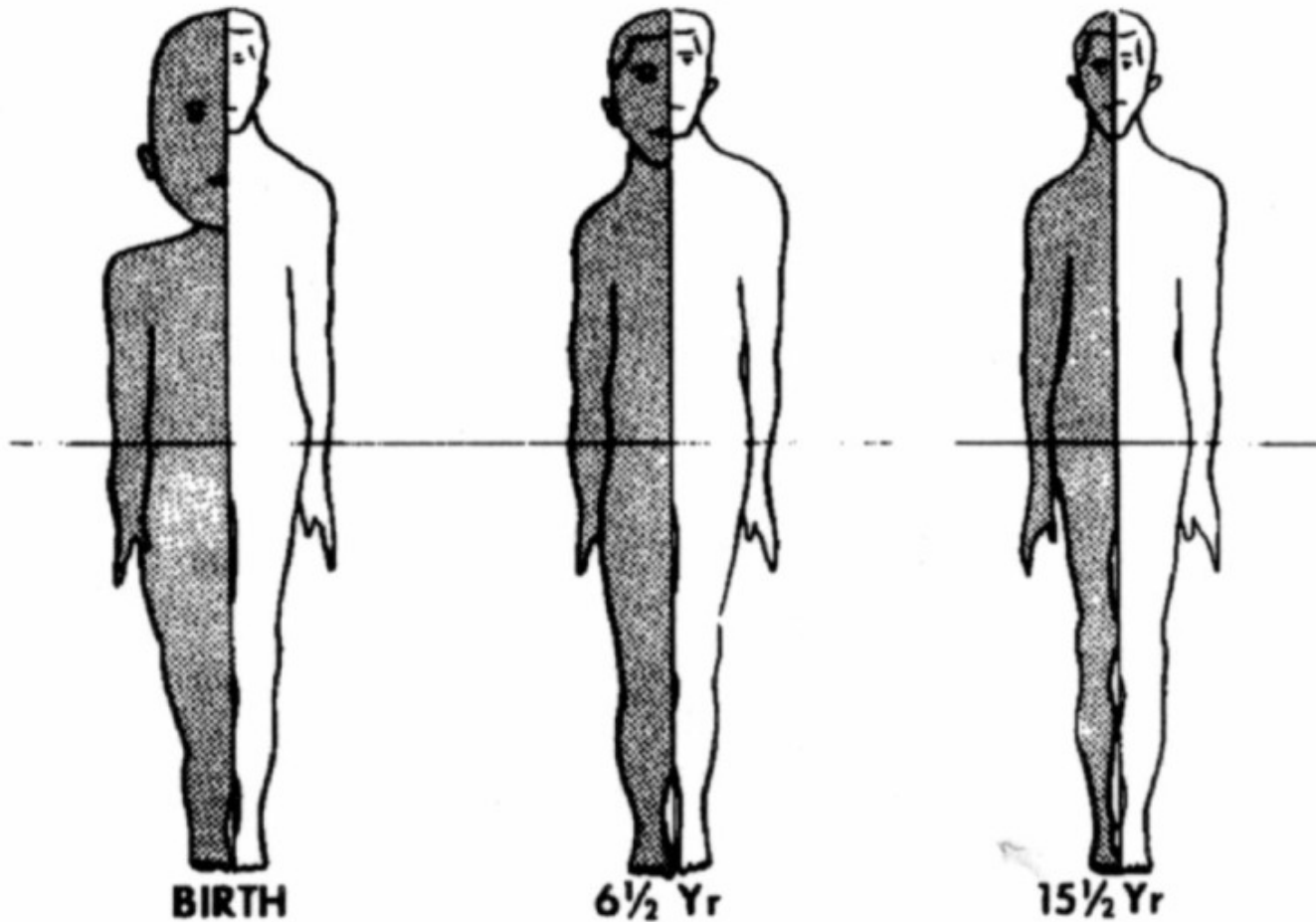
Built in wifi – a brain to brain link.

By 12 months of age mirror neuron systems are working in babies' brains.

By 3 years the system is fully developed.



# Baby's Brain Is Growing Fast



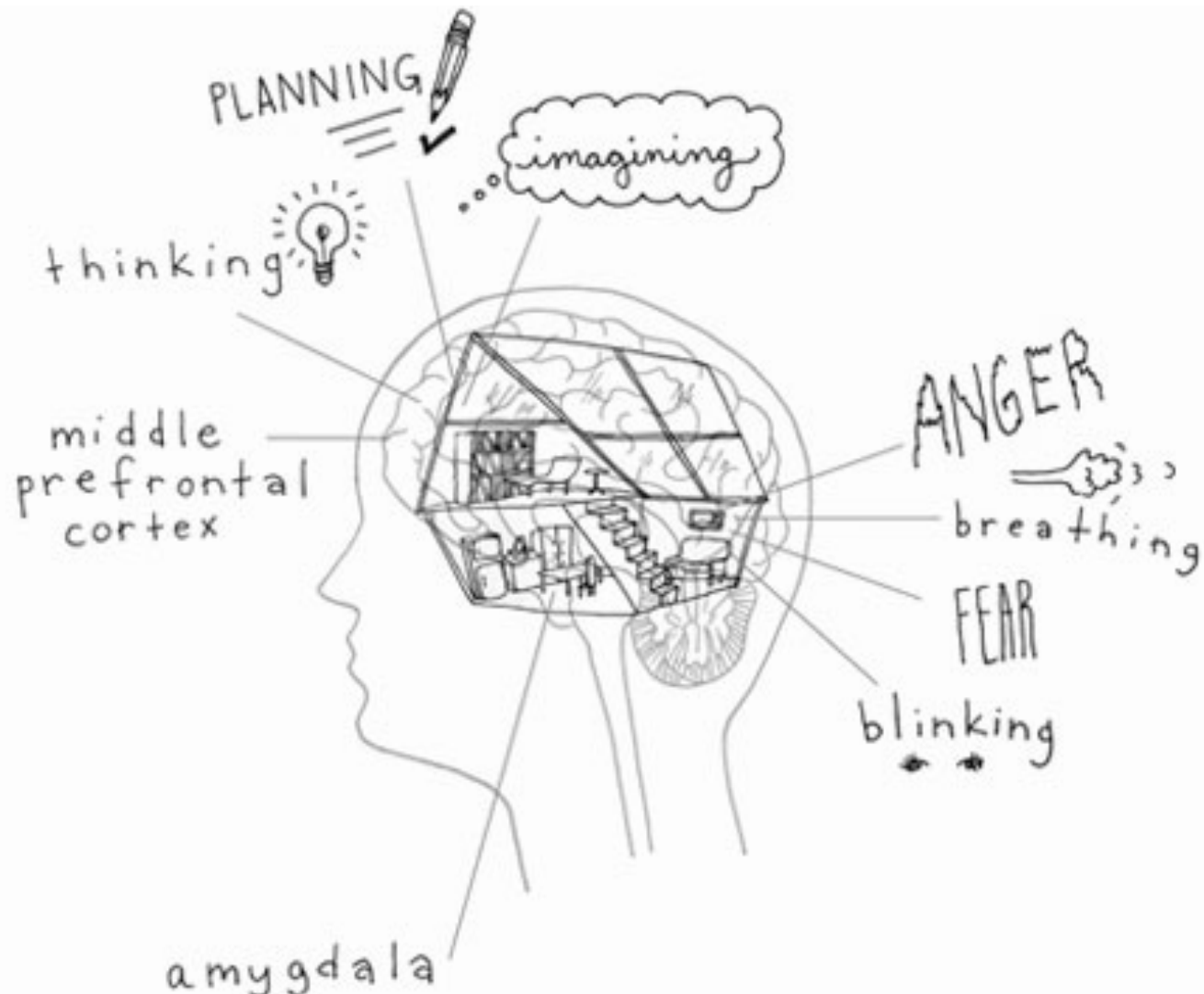


# IS IT LIFE OR IS IT ME?

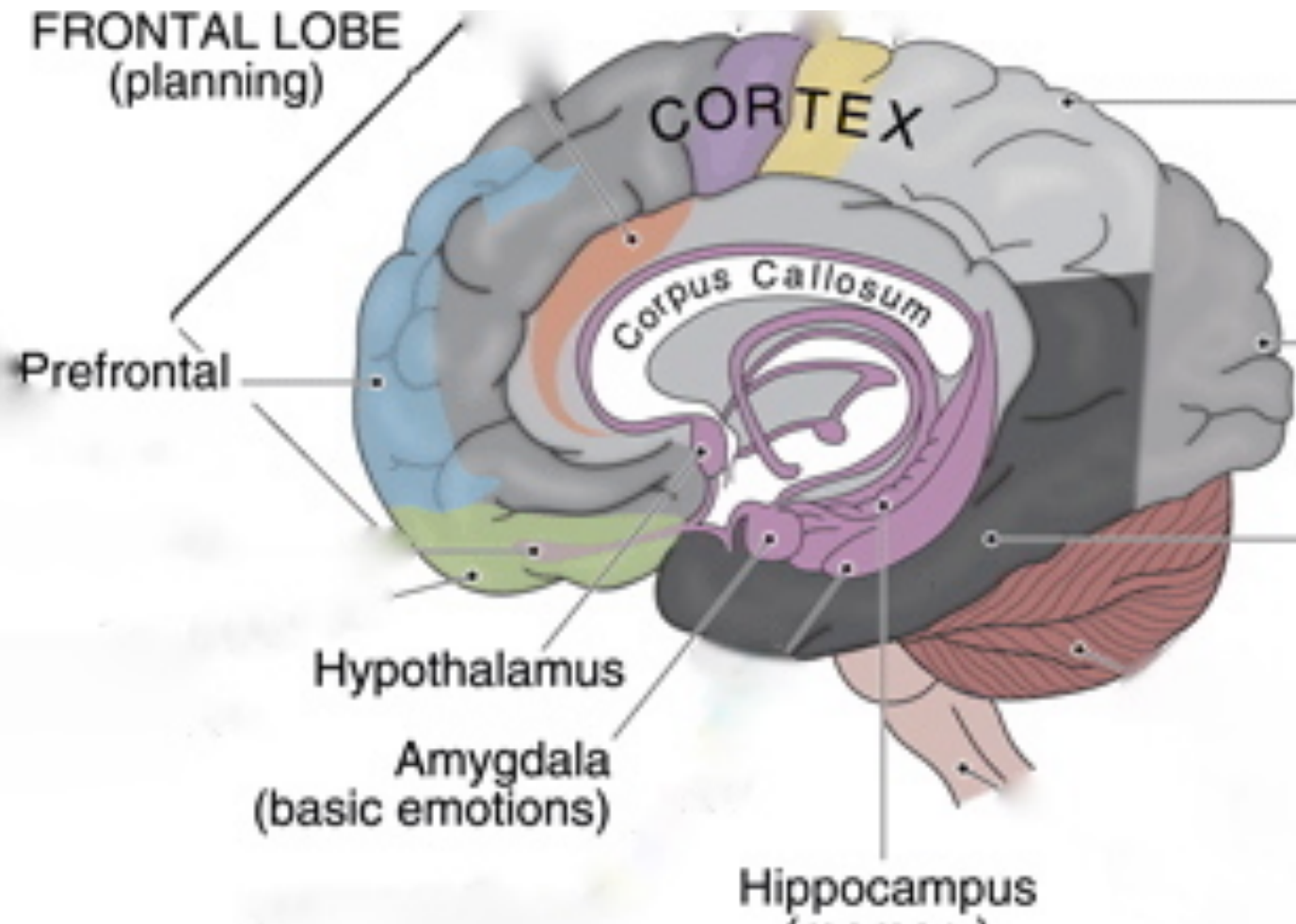


What exactly *is* stress?

# Upstairs Brain – Downstairs Brain



# The Brain's First Response to Stress



# The Autonomic Nervous System

## Sympathetic

- Heart rate, blood pressure increase.
- Breathing is faster.
- Blood leaves the brain & goes toward arms, legs.
- Communication, focus, retention, and regulation go off-line.
- Liver releases glucose.
- Adrenal glands release adrenalin & noradrenalin.
  - FIGHT, FLEE, FREEZE

## Parasympathetic

- Heart rate, blood pressure decrease.
- Breathing slows to normal.
- Muscles relax.
- Brain receives more oxygen.
- Thinking, creativity, & receptivity increase.
- Self-regulation is achieved.
  - REST AND DIGEST

# Physiological Stress Response

- All energy becomes focused on handling the threat
- Our stress systems divert energy from long-term processes to the immediate threat

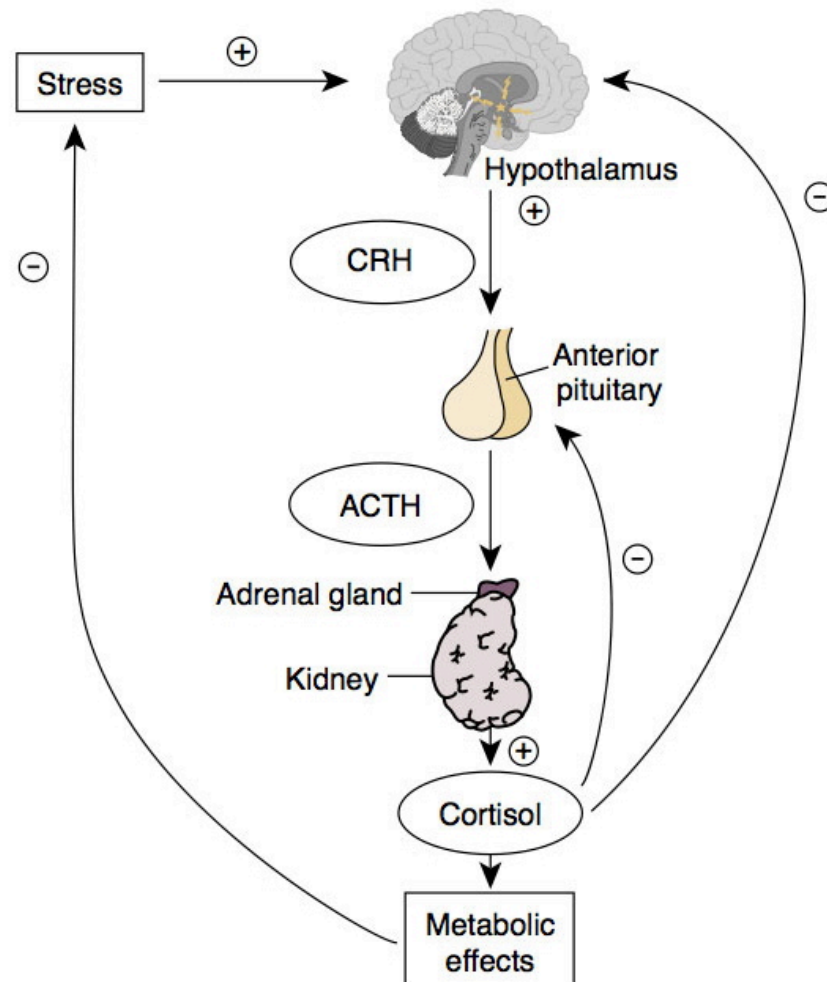
## Away from...

- digestion
- reproduction
- growth
- repair
- long-term immune processes (making antibodies to fight infection and disease)

## Toward...

- respiration
- glucose to burn for energy
- increased heart rate to move energy to muscles
- short-term immune processes (moving white blood cells to sight of infection)

# The Second Stress Response System

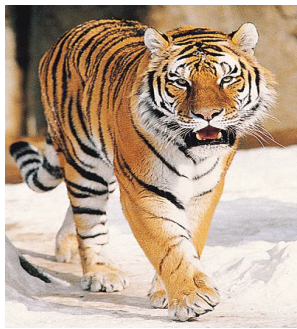


CRH = Corticotropin-releasing hormone

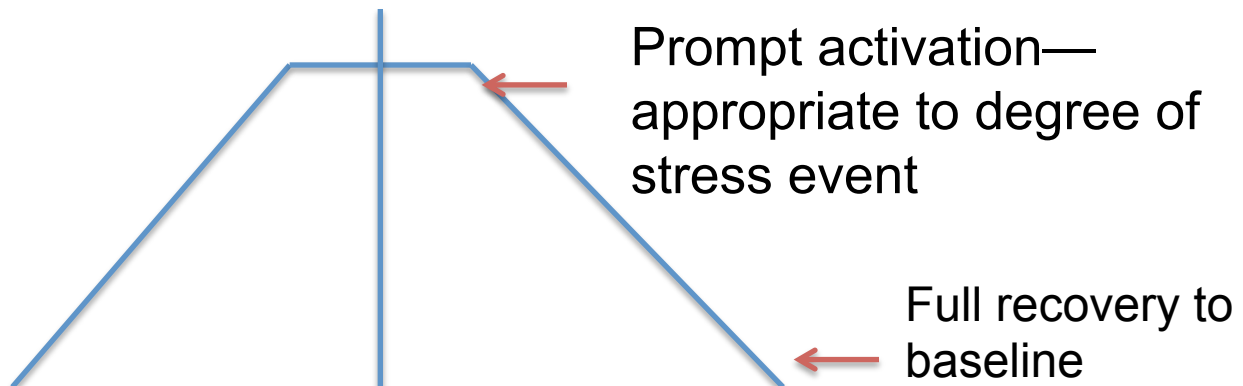
ACTH = Adrenocorticotrophic hormone

# The Bottom Line...

- Humans are very good at turning on defense systems when we don't need to (ruminating, worrying, fuming)
- The ideal stress response looks like this:



Stress onset



Stress off-set; active coping mechanisms engaged



# If You're Being Chased By A Lion

Make sure it's this one!





# Stop and Connect

- Remember a time you went into 'fight or flight' mode
- Talk to your neighbor about the threat
- Was it a perceived threat or a real threat?
- How did you react?
- What happened inside your body before and after?

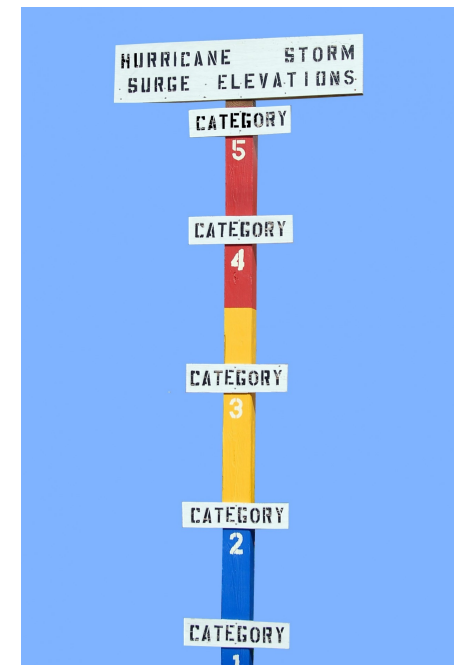
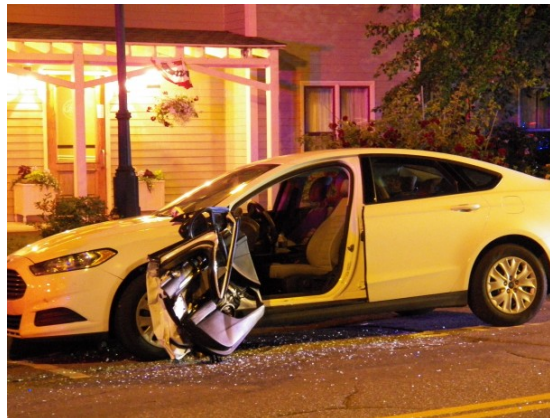
# POSITIVE STRESS EVENTS

Brief increases in heart rate, mild elevations in cortisol.



# TOLERABLE STRESS EVENTS

Serious, temporary stress response to events buffered by supportive relationships

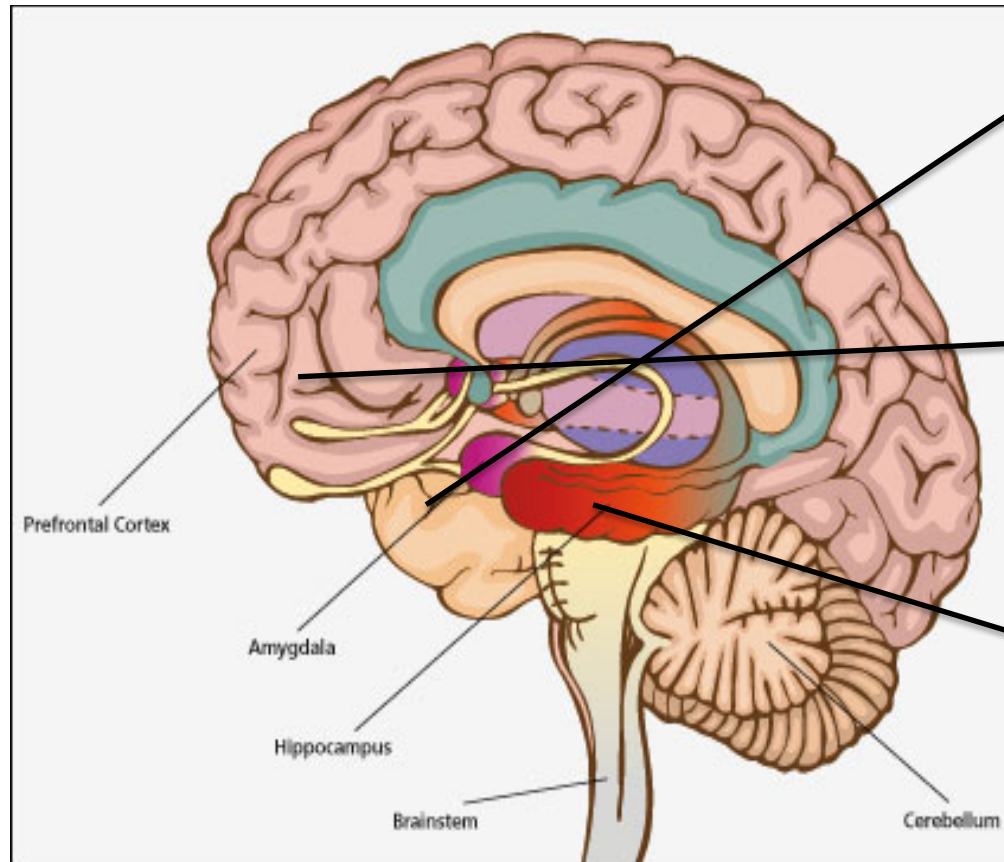


# TOXIC STRESS EVENTS

Prolonged, frequent, and harmful activation  
of the stress response in the absence of  
protective relationships

[http://developingchild.harvard.edu/index.php/resources/multimedia/videos/three\\_core\\_concepts/toxic\\_stress/](http://developingchild.harvard.edu/index.php/resources/multimedia/videos/three_core_concepts/toxic_stress/)

# The Chronically Stressed Brain



The amygdalae are enlarged & too easily activated.

The prefrontal cortexes lose brain cells; go offline more often; less able to function.

The hippocampi store memories and their associated emotions poorly, leading to reactivation of stress response with remembering.

# Consider yourself in this equation:

Experienced  
Event/Thought/  
Situation

+/-

Available  
Supports

X

Prior Experience/  
History

=

Physiological  
Stress  
Response

Add to it this information...

## **Risk Factors' Effect on Life Expectancy**

- |                      |            |
|----------------------|------------|
| –Smoking             | -10 years  |
| –Obesity             | -6-7 years |
| –High blood pressure | -5 years   |
| –Diabetes            | -7-8 years |
| –Early Life Stress   | -20 years  |



# Adverse Childhood Experiences Study (ACES)



- Collaboration between the CDC and Kaiser
- 17,000 Participants
- Compute an ACE score to calculate early life adversity
- 6 or more associated with a 20-year reduction in life span
- 4 or more with a number of serious health conditions



# Calculate your own ACE score

Item Type	Score
Verbal abuse, OR threat of physical abuse to child	1
Physical abuse of child	1
Sexual abuse of child	1
Lack of supportive, loving environment	1
Neglect of child	1
Parents ever separated or divorced	1
Mother/stepmother physically abused	1
Household member substance abuse	1
Household member mental illness	1
Household member incarcerated	1
<b>Total Score</b>	<b>10</b>

# The Special Case of Early Development

- Very young children can't plan or ask for help
- They are completely dependent on us...even if we are the problem
- In utero, fetus is susceptible to both organizing and disorganizing influences (which can alter fetal development) with lasting influences on health



# 2012-2013 Colorado Data

- 1 in 4 pregnant women in Colorado experiences 3 or more stressors during pregnancy
- 2.6 percent of women were abused by their husband or partner during pregnancy
- More than 1 in every 12 children ages 0-5 in Colorado already experienced 2 or more adverse family experiences
- Nearly 9 out of every 1,000 children in Colorado is the victim of child abuse or neglect
- Roughly 8 out of every 1,000 children in Colorado is placed in out of home care

# Other Colorado Data

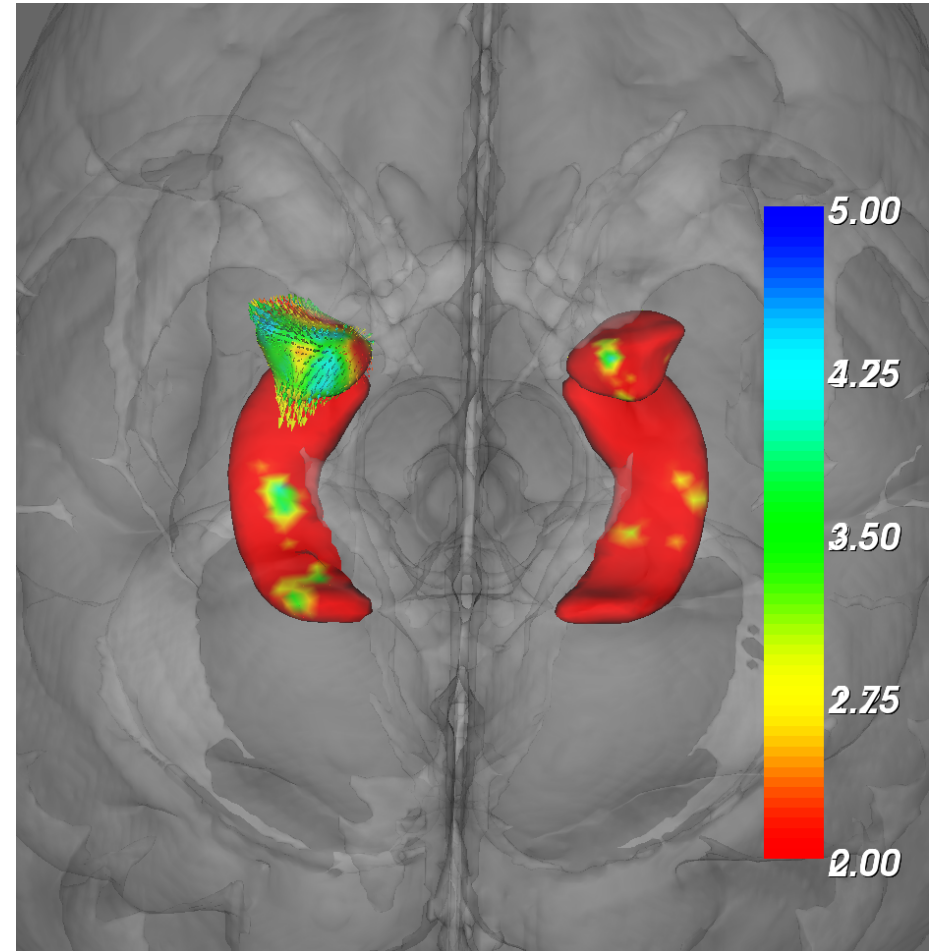
6% of babies have been spanked by 3 months of age according to parent report.

25% have been spanked by 9 month well-baby visit, according to parent report.



# Brain Imagery Research

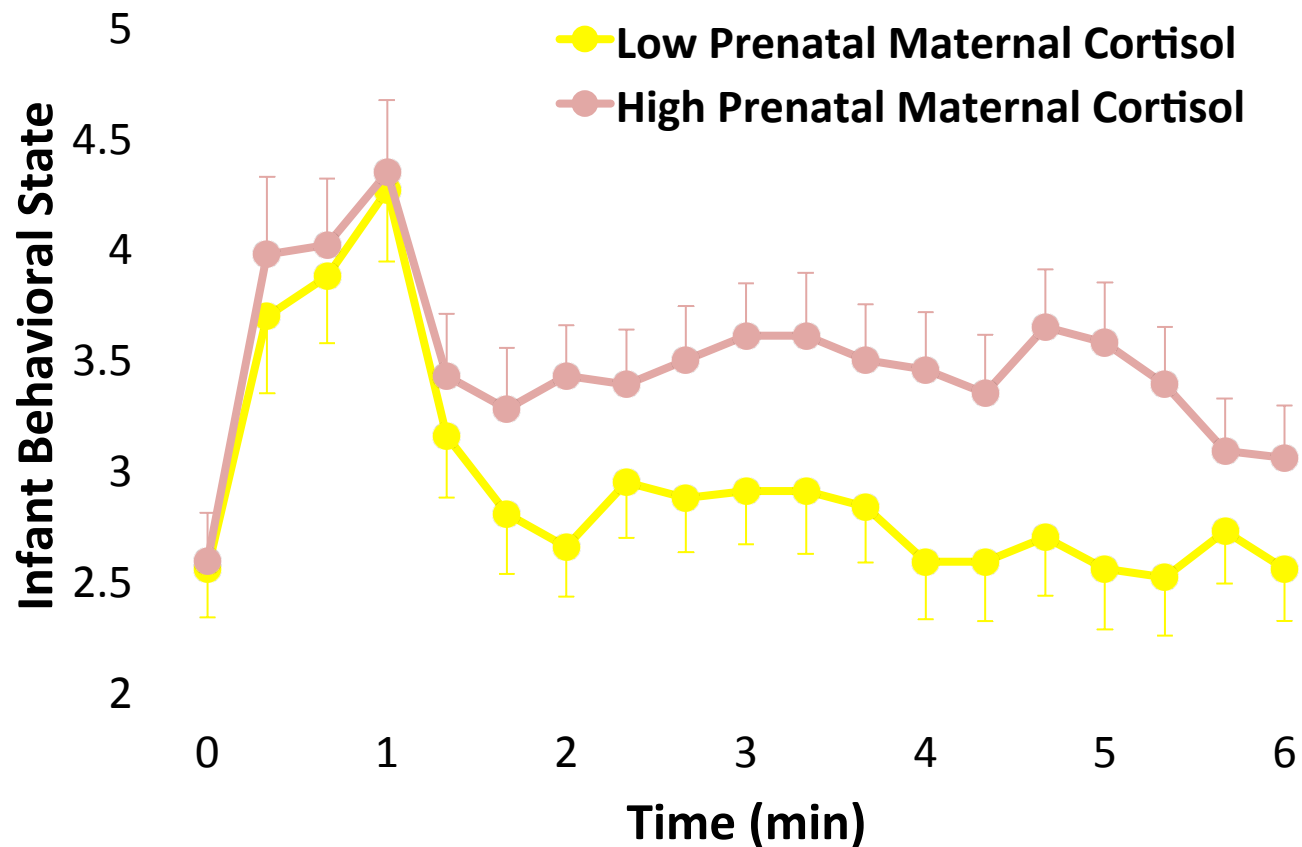
Higher maternal cortisol in early gestation associated with larger right amygdala and affective problems in girls ages 6-9.



*Buss et al., Proceedings of the National Academy of Science, 2012, 109, E1312-1319*

# Maternal Cortisol Research

## Prenatal Maternal Cortisol and Infant Stress Regulation- Heel Stick Test & Infant Reactivity



Davis et al., 2010a Child Psychology and Psychiatry

# Affective & Behavioral Problems

## High Profile Children



- Highly reactive
- Sensory seeking
- Hyperactive
- Poor impulse control
- Anger control problems
- Acting out behaviors
- More trainable

## Low Profile Children



- Under-reactive
- “Not worth it”
- Learned helplessness
- 18% of kids in Colorado fit this profile
- More difficult to identify & treat



# Stop & Connect

1. Think about the children you care for – how do these concepts apply?

2. Which word best describes how you are feeling right now?

a. Hopeless   b. Sad   c. Frustrated   d. a, b, & c

3. What is your role in helping children who experience multiple adverse childhood events?

# Flipping Our Perspective

**Glass half empty**

**Glass half full**

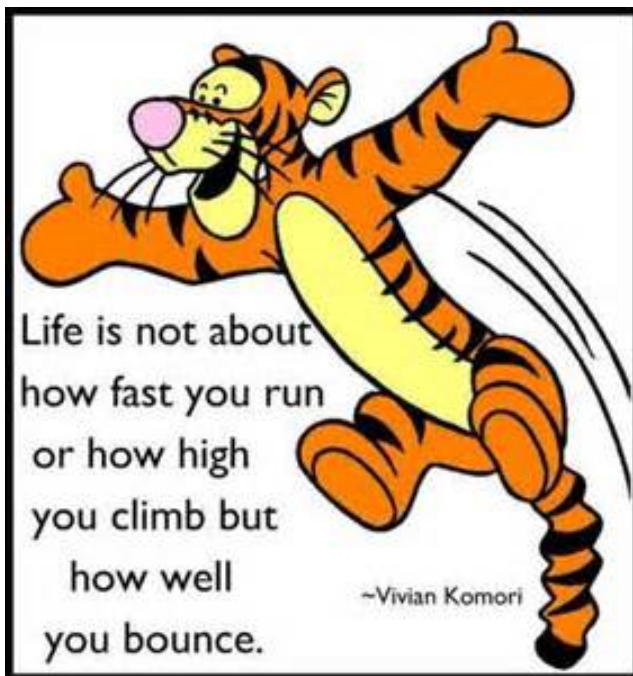


Deficit Model

Strengths-based Model

# Strengths-Based

## Risk and Resiliency Research



## Multi-generational Approaches



# Risk and Resiliency

Social and biological risk is NOT deterministic!

## Emmy Werner Ray of Hope Longitudinal study

- Of 700 babies, 70 were immune to multiple risk factors
  - Why? They were born with ‘outgoing’ dispositions
  - They were able to recruit several resources for support themselves!
- The other 5/6 of the “high risk” group developed problems but ‘bounced back’ (RESILIENCY!)
  - How? They told researchers that someone reached out and told them they mattered!

One, predictable, reliable, consistent supportive adult in a child's life can mitigate the impact of toxic stress.

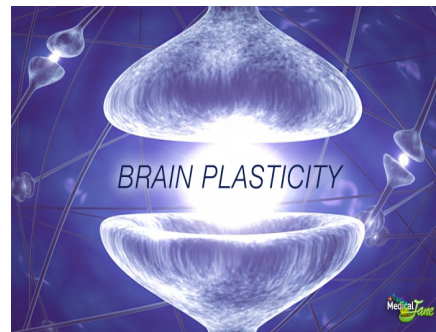


# Risk and Resiliency (Cont.)

Question of  
LOAD & Timing=  
How much we  
can take?



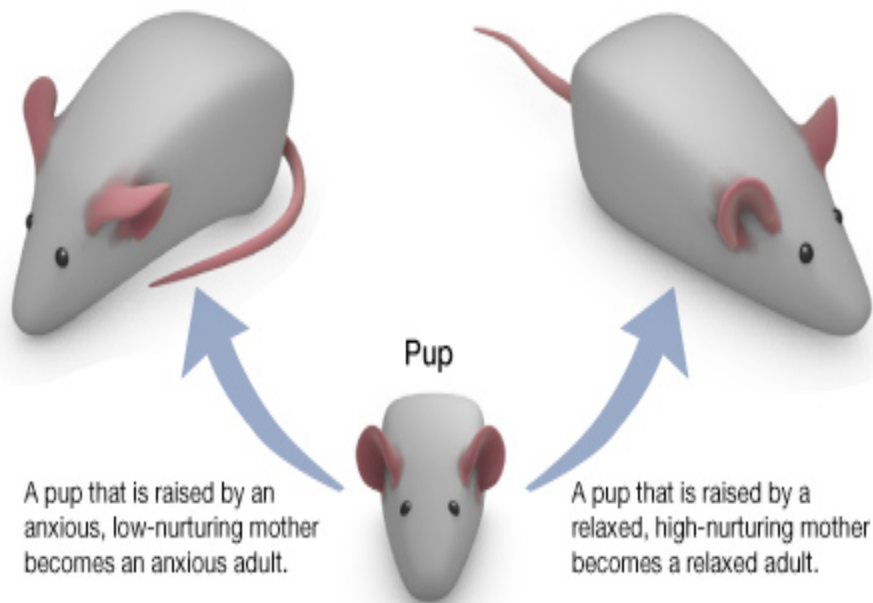
Brain plasticity =  
brains can be  
changed (Ex:  
enlarged areas of  
brain can return to  
normal  
proportions)



Some children  
are able to  
create micro-  
climates for  
themselves



# Multi-generational Approaches: Starting With Mothers



# Multi-generational Approaches: Early Childhood Work REALLY Matters

“The best way to help children is to help their parents and best way to reach parents is through their children.”

“We must learn to love everyone so that we can love their babies.”

What is your reaction  
to these quotes?

“How we ARE matters more than what we DO.”



And so.....Brainstorm

What CAN we DO  
becomes what are we  
already DOING?

# CHALK TALK EXERCISE

WHAT are we doing in our community to build resiliency in kids and their families?

What are we doing in our classrooms & homes?

What are we doing center-wide?

What programs & interventions help mothers?

What would YOU like to see happen?

## WHAT are we doing in our community to build resilience in kids and families?

Educate parents about support in the community that they may not know they qualify for.

Have a shelter for homeless families – so they have a place to go.

Family involvement.

Childhood fair.

Carnivals.

After school programs, youth center open daily 4 – 9 pm!

San Juan BOCES.

Department of Human/Social Services.

Love & Logic.

Referral to Child Advocate team.

Family Center.

Supplemental food programs.

Library involvement.

Tumbling Tots.

# What are we doing in our classrooms & homes?

Building relationships with parents & families, ask them how they are doing each day. ✓✓

Take time to read with children.

Parent-teacher conferences that are open-door – focusing on what parents can tell teachers about their kids. ✓✓

Providing opportunities for children to develop in a safe environment. ✓✓✓✓

Being friendly & open, nonjudgmental.

Encouraging kids to use imaginative play.

Love children; let them know God loves them.

Newsletters.

Axis Integrated Health.

Family home visit.

Family Center.

Food, coats.

Caring, nurturing, happy, warm, bright environments. ✓✓

Communication.

Team work.

Provide healthy food, meals, snacks.

Encourage parents to spend time in the classroom.

Movie nights w/ my kids.

## What are we doing at our Early Learning Center?

Free parenting class offered to 16 families a year.

Family potluck dinners, open houses, discovery nights, picnics, gardens, teas, celebrate Mothers & Fathers Day. ✓✓✓✓

Making sure parents feel comfortable & safe.

Low turnover of employees; staff meetings.

Offer workshops/classes to families & teachers. ✓✓

Parent-teacher conferences. ✓✓

Home visits.

Parent Orientation.

Consistency with daily routines.

Staff 2 staff; Staff 2 parents; Parents 2 parents – SUPPORT.

Make portfolios of student work & share with families!

Providing a resource referral list to assist families with their needs (economic, health support, etc.).

## What programs & interventions help mothers?

Cortez (Axis) Integrated Health Care Mental Health Services.✓

Prenatal care.

WIC (Women Infants Children).✓✓

Teacher-mother relationships.

Parenting classes (Pinon Project has parenting classes for moms and dads).✓

## What would YOU like to see happen?

Make childcare more affordable.

More home visits.

Ban cellphones, just interact with your child.

Teamwork – share/communicate to ensure the growth & development of ALL children.

Father support group that is non-threatening to their egos.

Growth in the # of children in centers.

Support for teachers to do all this! Self-care.

Everyone to be more open & not afraid to ask for help.

Parenting classes in middle and high school to develop realistic expectations for anyone considering being a parent in the future.

State or federal government paid programs like Incredible Years (IY) for teachers & parents. Mad mandatory for curriculum for EC Educators.

Increased connection between home & classroom.

# Strategies for working directly with children:

## Attunement

- floor time
- stop & look at the child
- mirror their emotions
- read books
- physical contact

## Nurturing

- quiet classroom corners
- family pictures
- meals together
- greetings & good byes
- band aides for boo-boos



## Attachment

- continuity of care
- staff stability/low staff turn-over

## Best Practice

- Teach calm down strategies
- Partner with families
- Use play, puppets, and picture books to help children self regulate



How do we make sure we  
feel this good every day?



# Group Brainstorm: Self-Care Strategies

- Sing a silly song.
- Listen to a funny radio show – laugh a lot.
- Walk to work & elsewhere.
- Check in w/ kids, take the kids' negative vibes, flatten it out, & let it go.
- Self-talk “It's all gonna' be ok”.
- Do something special for yourself at least once a week (essential oils, bubble bath).
- Do something special for an early comer child to regroup.
- Ask for help & support from colleagues, co-workers.
- Ask co-teachers who needs what.

# Conclusion: 6 word essays

- Early experience is not fate. Resilience.
- It's OK to ask for help.
- It's not a tantrum, it's distress.
- Yesterday is history, tomorrow is a mystery.
- Adults are responsible for childhood stress.
- There is hope. We can recover.

# Resources

- This website is a wealth of information for parents, teachers, caregivers, child advocates, and anyone interested in breaking the cycle of traumatic stress. It includes research on spanking, Robynn's Peters Bennett's TEDx Talk on family violence, alternatives to spanking, an online ACE score calculator, and more. 5 stars. <http://stopspanking.org>
- This section of the Urban Child Institute website gives a more technical overview of brain anatomy and development from conception to age 3 – for neuro-nerds. <http://www.urbanchildinstitute.org/why-0-3/baby-and-brain>
- This is a one-slide schematic with notes that is pretty nifty. [http://prezi.com/sikbiotnddxo/early-childhood-brain-development-and-toxic-stress/?utm\\_campaign=share&utm\\_medium=copy](http://prezi.com/sikbiotnddxo/early-childhood-brain-development-and-toxic-stress/?utm_campaign=share&utm_medium=copy)
- The Safe Start Center website has resources for professionals, the public, and the media. It reviews evidenced-based practices, highlights Safe Start communities, and more. <http://www.safestartcenter.org>
- Tips for Parents, and Tips for Teachers, from the Defending Childhood Initiative, US DOJ and Safe Start 3 page PDFs that identify signs of trauma, and give some resources and tools. <http://www.justice.gov/defendingchildhood/tips-caregivers.pdf>  
<http://www.justice.gov/defendingchildhood/tips-teachers.pdf>
- The National Child Traumatic Stress Network has information for professionals, including free, online training in trauma, and comprehensive descriptions of different types of trauma. <http://www.nctsnet.org/content/defining-trauma-and-child-traumatic-stress>

# Resources, cont.

- Through Our Eyes features adult victims of trauma in childhood.  
<https://www.youtube.com/watch?v=z8vZxDa2KPM>
- Healing Resources has several short video clips on early childhood toxic stress and trauma that feature experts on these topics.  
[http://www.healingresources.info/emotional\\_trauma\\_online\\_video.htm](http://www.healingresources.info/emotional_trauma_online_video.htm)
- A great website that highlights treatment for children who are victims of abuse, and resources for professionals. <http://www.kempe.org>
- The Child Trauma Academy YouTube Channel has many videos of Bruce Perry, M.D. and others talking about the effects of stress and trauma on brain development.  
<https://www.youtube.com/channel/UCf4ZUgIXyXrCUNLuhimA5mA?feature=watch>
- The Mindsight Institute YouTube Channel has slides and videos by Dan Siegel, M.D. the originator of the concept of interpersonal neurobiology.  
<https://www.youtube.com/user/mindsightinstitute>
- CDC's Adverse Childhood Experiences (ACEs) page that contains a wealth of information, history, current research, and data about this important study.  
<http://www.cdc.gov/ace/index.htm>
- The Center on the Developing Child at Harvard University has short videos and printable resources on the effect of toxic stress on the developing brain. This is a link to the video, and once on that page you'll find links to the others.  
[http://developingchild.harvard.edu/resources/multimedia/videos/three\\_core\\_concepts/toxic\\_stress/](http://developingchild.harvard.edu/resources/multimedia/videos/three_core_concepts/toxic_stress/)

# Resources, cont.

- The Civic Canopy convened the January 2014 Toxic Stress Summit in Denver and have been instrumental in generating efforts to mitigate the effects of t.s.  
<http://civiccanopy.org/what-we-do/early-childhood-initiatives/early-childhood-colorado-partnership/adverse-childhood-experiences-and-toxic-stress>
- There Are Children Who Play to be Invisible – a short, heart breaking video about children who live in fear of their parent/s.  
<https://www.youtube.com/watch?v=rSsTs3GzMpw&feature=youtu.be>
- Meet Dr. Bruce Perry, Scholastic.  
<http://teacher.scholastic.com/professional/bruceperry/index.htm>
- All books by Bruce Perry, M.D., especially *Born For Love – Why Empathy Is Essential – and Endangered*, Harper Collins, 2010.
- All books by Dan Siegel, MD, especially:
  - *The Whole Brain Child – 12 Revolutionary Strategies to Nurture Your Child’s Developing Mind*, 2012.
  - *Mindsight – The New Science of Personal Transformation*, 2010.
  - *The Developing Mind*, 2012.