

# Creating Neuro Pathways

Building Healthy Brains  
and  
Healthy Bodies

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- Understanding Trauma
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- Why is your kid crawling?
- Movement Makes Strong Brains

# Understanding Trauma



Dong Yang, China

Referral: May 2011

Age: 15 Months

Stated Special need:

Right Front Parietal Hollow

Actual Special needs:

- Reactive Attachment Disorder
- Sensory Processing Disorder



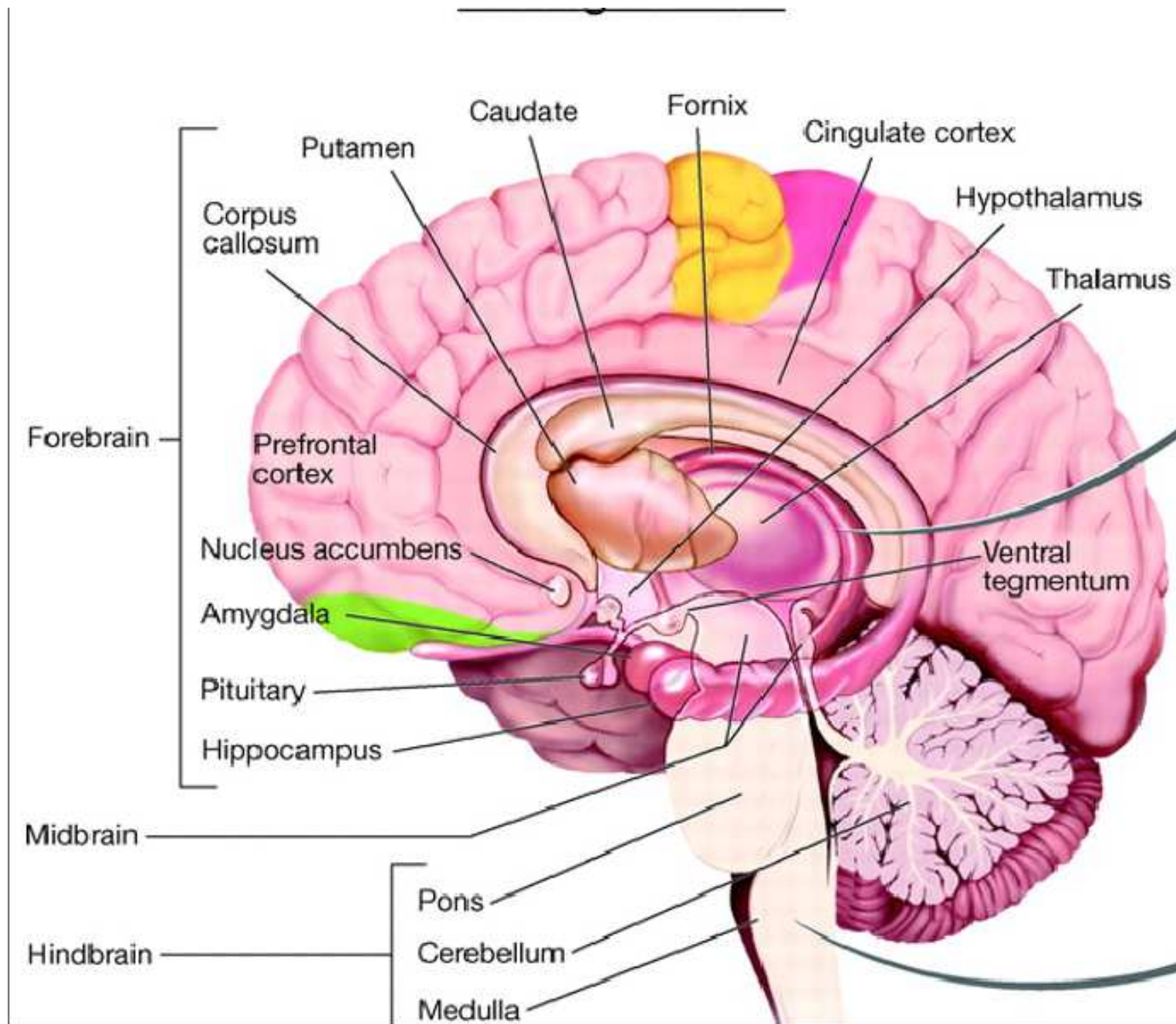
# Understanding Violet's Trauma

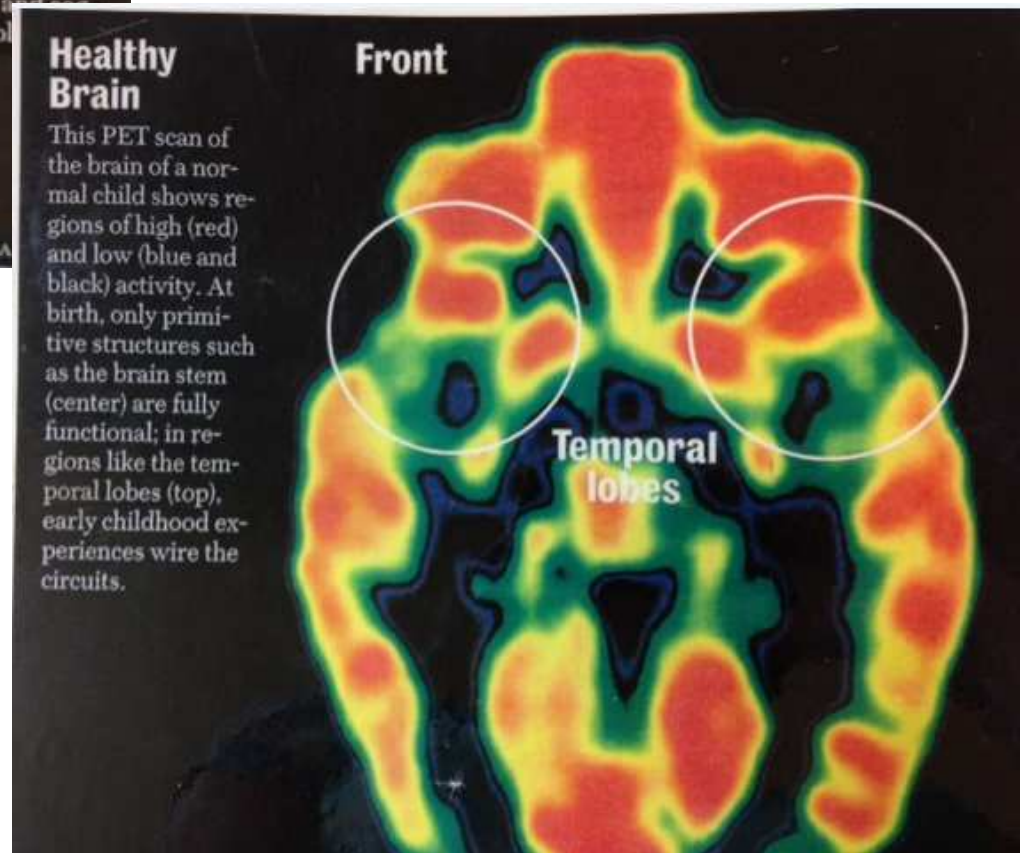
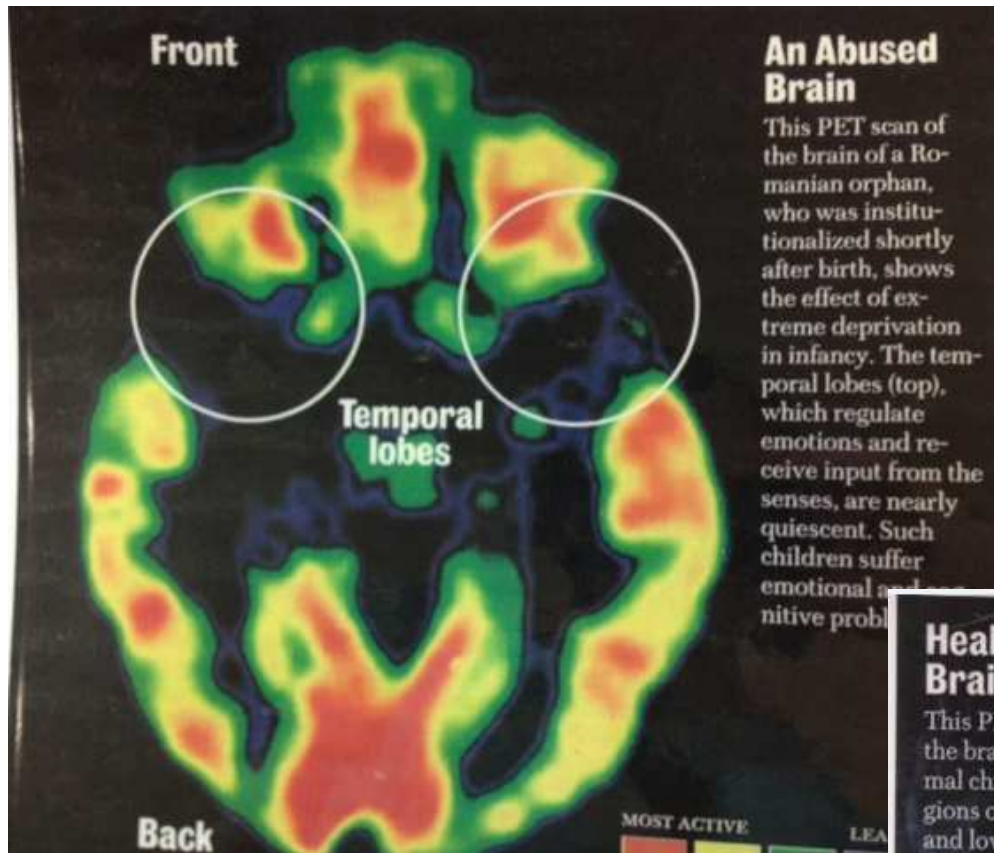
## Family:

- Baby fed on their schedule, able to eat until full, secure they will have enough to eat
- Bonding starts from breast feeding or bottle feeding
- Baby needs consistently met/learns to trust adults
- Baby given time on their tummy to promote brain development

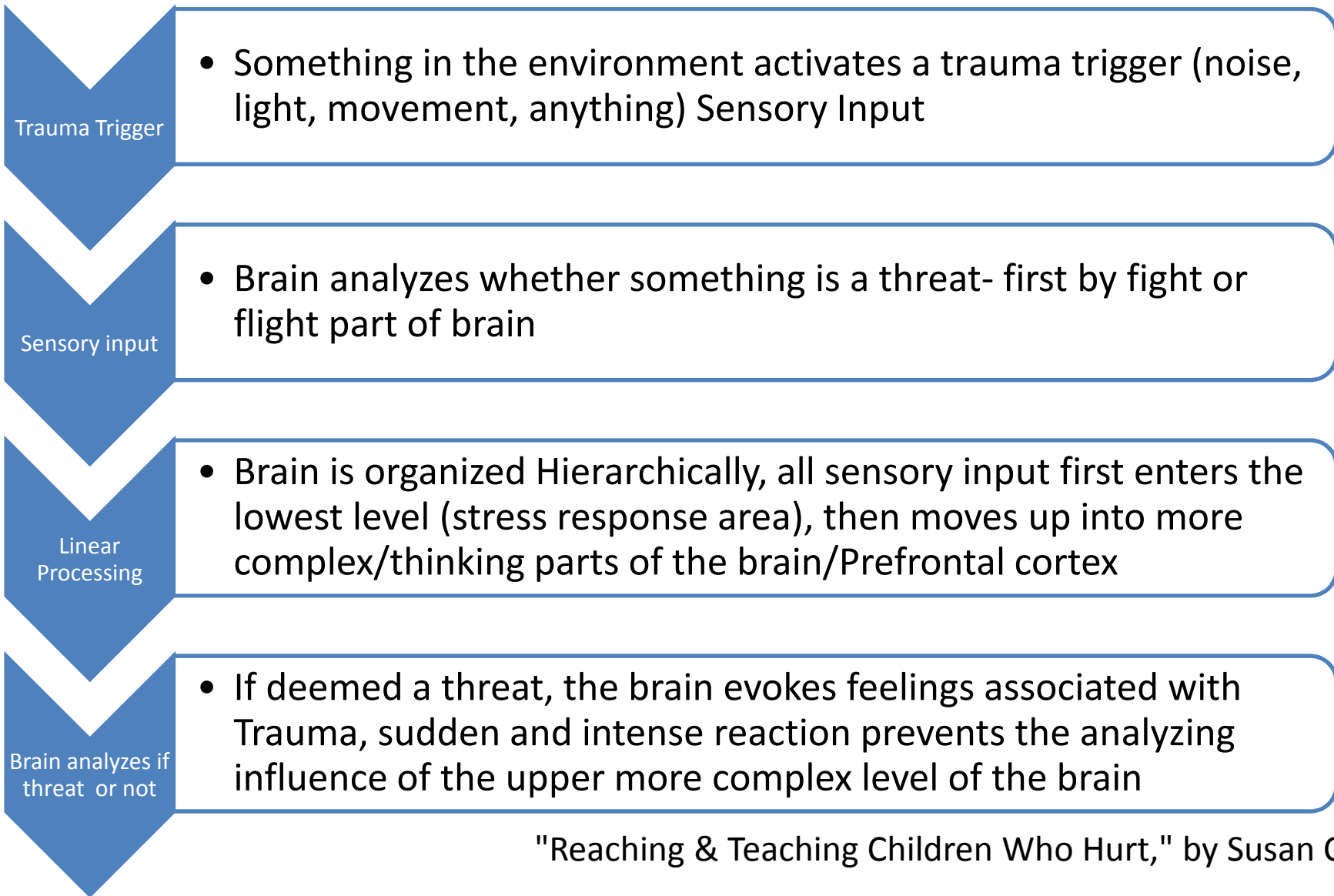
## Orphanage:

- Baby fed per schedule, given a prescribed amount of food. Toddlers may experience food being stolen from them.
- No opportunity for bonding
- No single caregiver to build trust with/needs not met or inconsistently met
- Babies left in cribs until diaper needs to be changed.





# Trauma Triggers



"Reaching & Teaching Children Who Hurt," by Susan Craig

# Rage vs Anger

(Cup Example)

- Anger Reaction



- Rage Reaction/Limbic Rage





# Trauma is not limited to orphanages

- Stressed pregnancy (amniotic sac flooded with cortisol)
- Injury in utero (ie: stroke)
- Premature separation of the placenta
- Traumatic birth or C-section
- Separation from mother (ie: NICU, loss of primary caregiver)
- FAE/FAS
- Childhood illness that results in extended hospitalization, even getting tubes in ears for some kids
- Anesthesia from surgery
- Physical Injury, baby shaking, trauma
- Stressful home life
- Abuse/neglect of child or physical/emotional abuse of mother while pregnant
- PKU problems
- Jaundice, limits red blood cell's ability to get oxygen to the brain
- Circumcision
- High fever
- Antibiotics leading to totally disrupted gut flora
- Lead or other heavy metals in toys or other things the baby chews
- Being confined and unable to move freely, such as babies tied down in orphanages, babies never taken out of the car seat
- Mother suffering from Depression or Post partum and unable to meet baby's needs

# Trauma = Brain Damage

## Pons Level

- Uses finger to track text across the page
- Gets hurt and makes little to no fuss (ex: teething but not fussing)
- Constantly hungry, even after eating
- Lack of empathy, picks on others, including animals
- Self-abuse, such as picking at scabs, biting fingernails until they bleed
- Bed wetting (beyond what is age appropriate)
- Fight or flight response to inappropriate situations
- Fool-hardy risk taking, “daring”
- Overly affectionate with strangers
- Inappropriate perception of danger
- Violent rages or creates chaos
- Anxiety
- Clingy
- Controlling/manipulative/difficulty bonding
- Pigeon-toed

# Brain Damage- M i d l e v e l

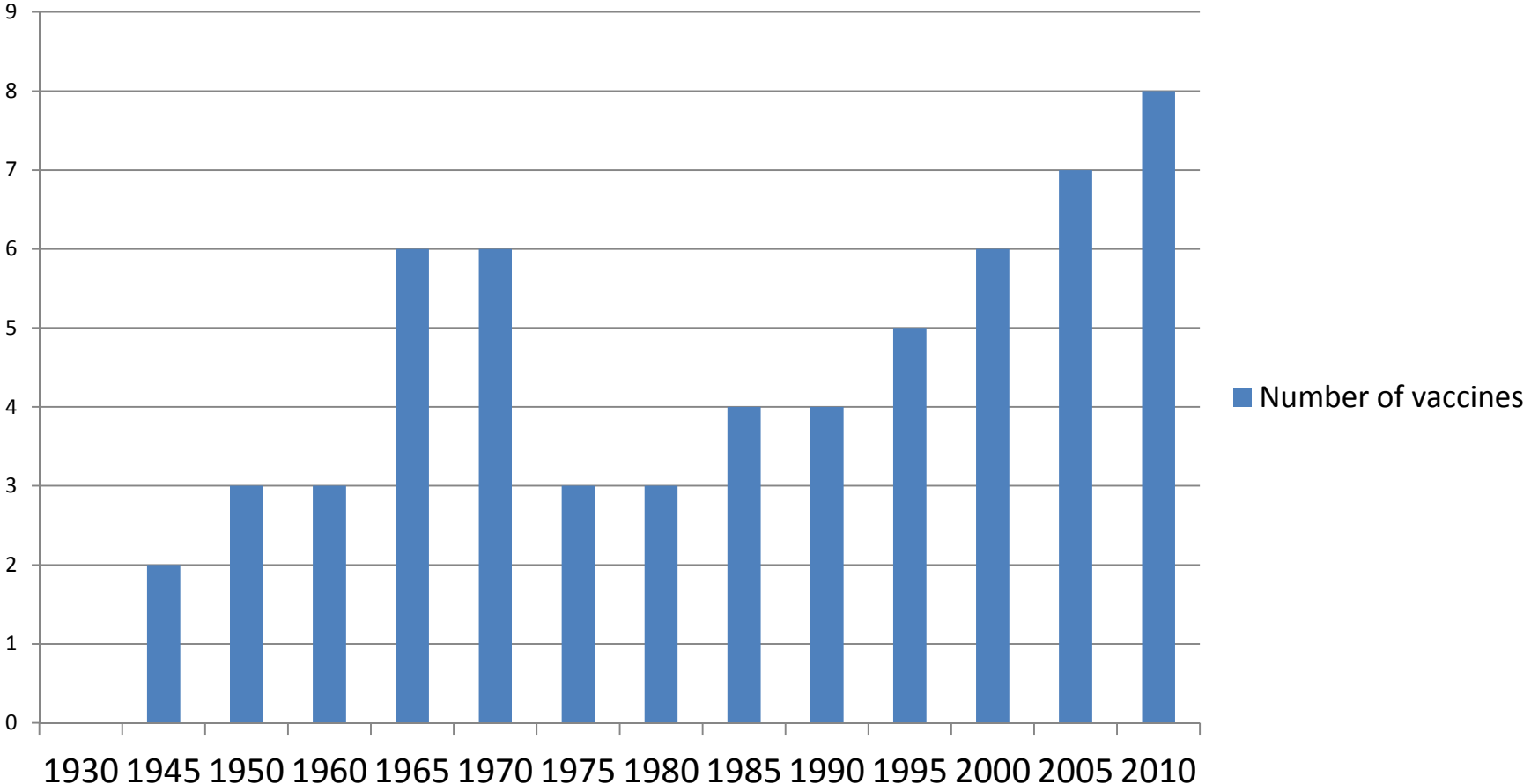
- Difficulty tracking text down a page and/or reading comprehension
- Depth perception issues
- Distractibility or Hyperactivity
- Difficulty reading non-verbal social cues
- Difficulty maintaining balance
- Inappropriate spatial boundaries; is in your face or hangs way back
- Impulse control issues
- Immense frustration, generally resulting in outbursts
- Reversal of letters and/or numbers
- Difficulty accessing words/auditory processing issues
- Poor temperature regulation-always hot or always cold
- Sensitivity to textures of clothes or clothing tags
- Neurochemical imbalance/ Bipolar disorder/Depression
- Rages
- Autism spectrum disorders
- Obsessive compulsive disorder
- Allergies

# What's changed? Why are kids traumatized now?

Many changes in the world in last 20-30 years – environmental/chemical impacts

- Advent of chemicals post WWII
  - cleaning & sanitizing homes
  - herbicides & pesticides
- Flame retardant childrens sleepwear-1971 (neurotoxins)
- Increase in convenience/boxed food, reduction of scratch cooking
- Need to preserve food to travel across country for sale/entrance of GMO's to market (1994)
- Increase in # of vaccines over past 20 years

# Number of vaccines



<http://www.chop.edu/service/vaccine-education-center/vaccine-schedule/history-of-vaccine-schedule.html>

	Number of vaccines	Vaccines										
1930												
1945	2	Small pox	Dtap									
1950	3	Small pox	Dtap	polio								
1960	3	Small pox	Dtap	polio								
1965	6	Small pox	Dtap	polio	Measles	Mumps	Rubella					
1970	6	Small pox	Dtap	polio	Measles	Mumps	Rubella					
1975	3		Dtap	polio	MMR							
1980	3		Dtap	polio	MMR							
1985	4		Dtap	polio	MMR	Hib						
1990	4		Dtap	polio	MMR	Hib						
1995	5		Dtap	polio	MMR	hib	Hep B					
2000	6		Dtap	polio	MMR	Hib	Hep B	Heb A	Varicella			
2005	7		Dtap	polio	MMR	Hib	Hep B	Heb A	Varicella	Pneumococcal	Influenza	
2010	8		Dtap	polio	MMR	Hib	Hep B	Heb A	Varicella	Pneumococcal	Influenza	rotavirus

# What's changed? Why are kids traumatized now?

Many changes in the world in last 20-30 years – Child rearing practices

- Increase of 2 working parents
- Increased TV/screen time (Baby Einstein)
- Fear of “germs” keeps kids off floors
- Pressure from TV ads/mega baby stores to buy entertainment for children
- Inability to move naturally (constrained in a baby carrier, car seat, swing, or other “baby device” for too long (modern conveniences)
- “Back to sleep” campaign to keep babies on backs (2003)
- Shift from outdoor activity to indoor play (toys vs activities)

# Brain Damage?? WHAT?

- Natural “fixes” through normal neurological development
  - Tummy time
  - Floor time
  - Baby’s needs met on a consistent basis
  - Babies able to be exposed to various sensory stimulus (hard, soft, squishy, spiky, wet, dry...)
  - Eye contact with parents and primary caregivers during bottle feeding or breast feeding
  - Free play time/ability to move around on their own (not constrained to a “device”)
  - Bouncing babies/active babies



# Typical Infant Development

A typical infant goes through a series of reflexes or whole body patterns of movement that lead to mobility and expands their sensory world.

The more they move and the greater the interaction with parents and the sensory world around them, the more whole they will be neurologically, emotionally, physically, academically, and socially.

-Nina Jonio, Neuro Developmental Solutions

We've gone from this:



# To this in 50 years:



# The toy industry wants us to believe:

- Toys must be educational
- Toys must be fun for parents
- Toys must make noise
- Toys must do everything for our children
- Toys must entertain our children

# What Babies REALLY Need



And this...



# Why floor time?

- Crawling is like a 'double' click on the pons level brain. By that I mean that it is much like double clicking an icon on your computer and a whole program opens. When you are crawling you are triggering many, many functions. The pons needs that stimulus to achieve a wide range of tasks. The body integrates from the inside out and from the top down the last thing we integrate is the extremities, so feet and hands often do not function fully and appropriately until the last stages.

-Bette Lamont, Developmental Movement Consultants

# A “Double Click on the Brain”

When crawling, you are:

- strengthening the horizontal eye tracking
- supporting the part of the brain that feels strong sensory input
- helping the lumbar and cervical curves of the spine stabilize
- stimulating pelvic awareness, leading to better bowel and bladder control and digestion
- helping the body get a sense of 'vertical throughness', leading to good posture
- reducing anxiety
- and ..... maybe 20 more things I haven't mentioned.

-Bette Lamont



# Society wants us to believe:

Children should be

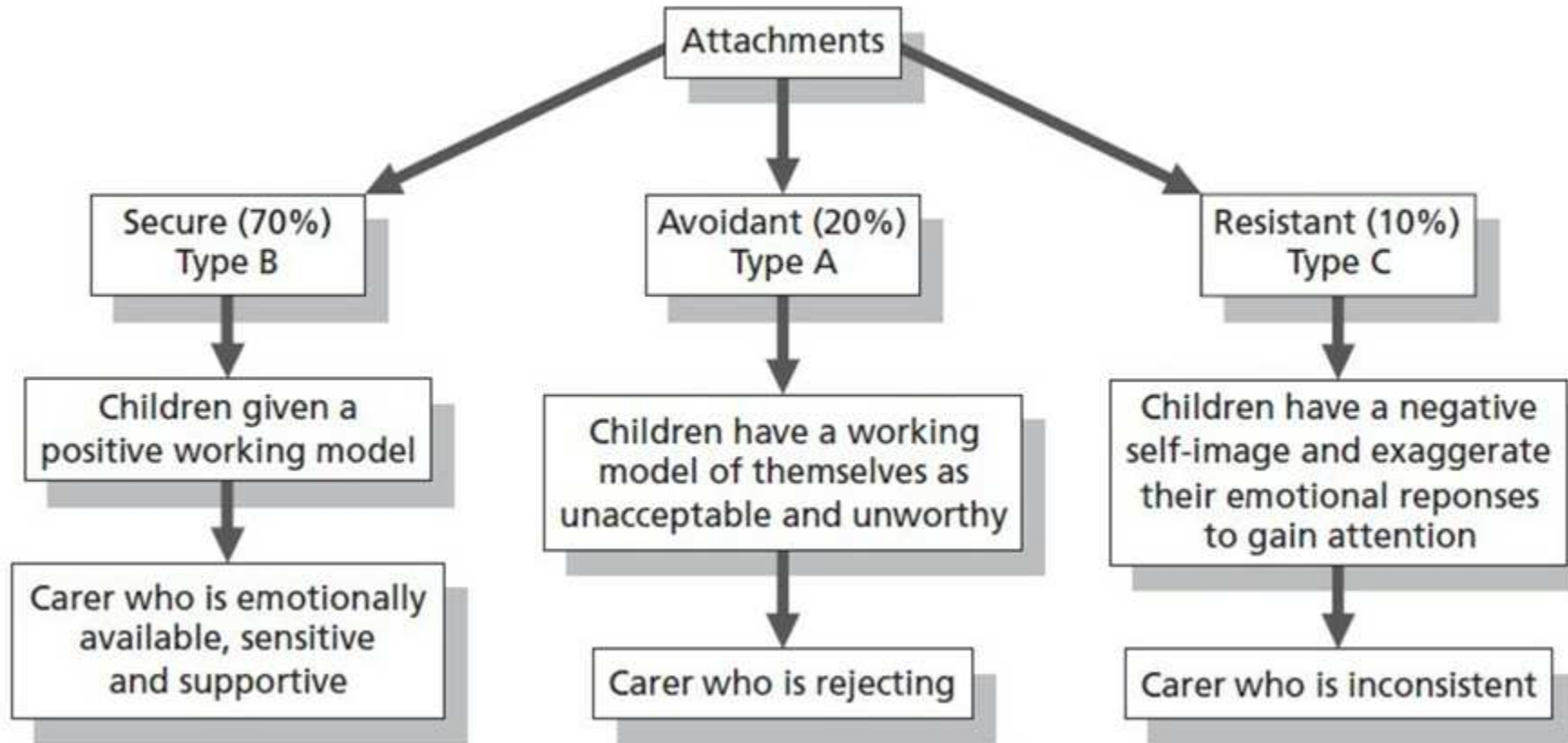
- Convenient
- Not hinder our lifestyle
- Easy
- No Mess
- Entertained by Toys



# What babies really need is:



Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). Patterns of attachment: A psychological study of the strange situation. [Patterns of attachment: A psychological study of the strange situation](#). Hillsdale, N.J.: Erlbaum.  
Mary D. Salter Ainsworth Mary C. Blehar Everett Waters Sally Wall



## Attachment Indicators:

- Lack of eye contact
- Not affectionate w/ parents
  - Lying about obvious
    - Stealing
    - Learning Lags
- Poor peer relationships
- Persistent nonsense chatter
- Inappropriately demanding & Abnormal speech patterns
- Triangulation of adults

## Pons level dysfunction

- Uses finger to track text across the page
- Bed wetting (age inappropriate)
  - Pigeon-toed

## Mid brain level

- Difficulty tracking or reading comprehension
- Reversal of letters or numbers
  - Depth perception issues
- Difficulty reading non-verbal social cues
  - balance issues
  - Inappropriate spatial boundaries
  - Difficulty accessing words/Auditory processing
- Poor temperature regulation
  - Sensitivity to textures
- Neurochemical imbalance/ Bipolar disorder/Depression
  - Autism spectrum disorders
- Obsessive compulsive disorder
  - Allergies

# Attachment indicators located in the Pons and Mid Brain

- Distractibility or hyperactivity, impulse control issues
- Immense frustration, resulting in outbursts
- Rages
- limited pain perception (ex: teething, but not fussing)
- Constantly hungry, even after eating
- Lack of empathy, picks on others, including animals
- Self-abuse, (skin picking), destruction of things
- Fight or flight response to inappropriate situations
- Risk-taking, “daring”/inaccurate perception of danger
- Indiscriminate affection with strangers
- Anxiety
- Clingy
- Controlling/manipulative/superficially charming
- Lack of conscience

# What Can We do?

For infants up to 3 months old:

- Tummy time should be most of the time

For wobblers up to a year old:

- Encourage tummy crawling and creeping on hands and knees as much as possible
- Climbing
- Jumping
- For all ages: encourage parents to leave the carseat in the car, buckle them in when you get to the car.

- You're absolutely right--a sensitivity to loud noises is a pons level dysfunction. At this level of development, babies distinguish between what is and isn't a threat (such as a dog barking). Over-sensitivity to loud noises stems from not being able to make this distinction.

The midbrain level is the part of the brain that serves as a filter, so that is where we can have sensitivities to the more moderate sounds, such as blender, vacuum cleaner, etc.

# Brain damage in Utero

- Rutherford et al<sup>6</sup> showed that piglets whose mothers experienced high levels of “social stress” during pregnancy demonstrated a heightened arousal and decreased tolerance to pain. They demonstrated that exposure to higher levels of stress or maternal cortisol mid-gestation induces an adaptive advantage for offspring born into a potentially adverse environment by hardwiring them to a state of hyperarousal and increased sensitivity. The modification of gene expression *in utero* in response to stressors can be seen as adaptive, allowing the adjustment of phenotype to environmental pressures.<sup>6</sup> However, if the environmental conditions are not as anticipated, programming of the fetus to a stressful environment is not adaptive and may be harmful, predisposing the unborn child to neurodevelopmental detriment.<sup>1,7</sup> Children who are exposed to prenatal maternal anxiety, depression, or stress seem to be more likely to struggle with several challenges, including anxiety, symptoms of attention-deficit/hyperactivity disorder, reduced cognitive capacity,<sup>1,2</sup> maternally perceived “negative temperament,”<sup>8</sup> autism, schizophrenia,<sup>9</sup> and learning delay.<sup>1</sup> **Researchers observed elevated levels of cortisol in amniotic fluid prenatally and umbilical cord blood at birth in infants exposed to maternal distress. Maternal stress during the 3<sup>rd</sup> trimester affects the Limbic system-includes amygdala and Pons level brain and mid level brain, which develops in the third trimester (fight or Flight response is part of the pons level brain) )**
- The effect of such *in utero* stress may in fact be lifelong. The young adult children of women who experienced severe stress during pregnancy demonstrated statistically significant changes in cortisol secretion in response to a standardized social stress test, as well as corticotropin stimulation, compared with an age-matched control group.<sup>11</sup>
- 
- <http://ndnr.com/web-articles/pediatrics/the-effect-of-in-utero-maternal-distress-on-the-neurodevelopment-of-the-fetus/>



- From "Reaching & Teaching Children Who Hurt," by Susan Craig  
Chapter 5, Creating Opportunities for Self Regulation, page 100, Interpretation of Danger
- The impact of trauma on the brain's right hemisphere effects children's ability to self-regulate when it results in an "over reactive stress response system and an underdeveloped cortex" (Stein & Kendall, 2004, p. 10). Because the brain is organized hierarchically, all incoming sensory input first enters the lower parts of the brain and then makes its way up into higher, more complex areas. Along the way, these "waves of neural activity" are matched against previously stored patterns. If the incoming neural activity is associated with a previous threat, the lower brain's stress response system is activated, often before the prefrontal cortex or thinking part of the brain can completely process and interpret the input (Perry, 2006, p. 31).

This is what happens when a memory of trauma (called a trauma trigger) is activated by something in the environment. The child's brain associates the interaction or activity occurring in the present with past traumatic events. This unconscious connection evokes many of the feelings associated with the earlier trauma. The reaction is so intense and immediate that there is no time for the mediating influence of the higher, more complex areas of the brain

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# Understanding Trauma-Violet

- 5 ayis over 3 shifts to care for 15-20 children, most severely mentally handicapped
- Children left in crib except when diaper is changed
- Fed on schedule, diaper changed on schedule
- Needs are not met on baby's schedule
- Children not held or cuddled
- Bottle tops snipped & bottles are propped with sheets until baby can hold it themselves
- No tummy time

# In simple words

- Your brain develops from the base up
- Sensory input comes in at the base, moves up
- Lower non verbal parts of your brain react before it gets to the intelligent cortex which can adequately interpret the sensory input. For kids with trauma brains, the fight or flight reflex is so highly charged that their reaction to stimuli is instant vs. a non trauma brain where a child is not equating it with previous experiences and can wait until it reaches their cortex to understand what the stimuli is all about. When the fight or flight portion of a trauma brain is alerted, the rest of the brain essentially shuts down, and they are unable to process other information until they can realize it is not a life or death situation. This is a rage.

Bette Lamont MA/DMT

<http://www.developmentalmovement.org>

Development interrupted-Citation:

[http://www.a4everfamily.org/index.php?option=com\\_content  
&task=view&id=182&Itemid=69](http://www.a4everfamily.org/index.php?option=com_content&task=view&id=182&Itemid=69)

Current early childhood rearing practices detrimental:

[http://www.sciencedaily.com/releases/2013/01/1301071105  
38.htm?utm\\_source=feedburner&utm\\_medium=feed&utm\\_c  
ampaign=Feed%3A+sciencedaily+%28ScienceDaily%3A+Latest  
+Science+News%29](http://www.sciencedaily.com/releases/2013/01/130107110538.htm?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+sciencedaily+%28ScienceDaily%3A+Latest+Science+News%29)