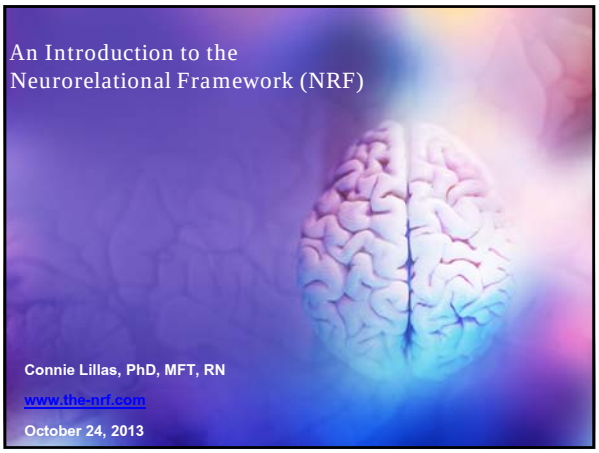


## The Importance of Early Years

### Critical Years for Setting Up a Fragile or Sturdy Foundation

"What happens during the first months and years of life matters a lot, not because this period of development provides an indelible blueprint for adult well-being, but because it sets either a sturdy or fragile stage for what follows."

– Shonkoff, Jack P. & Deborah A. Phillips, eds. *From Neurons to Neighborhoods: The Science of Early Childhood Development.* National Research Council and Institute of Medicine Committee on Integrating the Science of Early Childhood Development. Washington, D. C.: National Academy Press, 2000, 5.

## Safety =

These 3 factors create a way to assess the degree of safety a child has...

- The degree of the child's vulnerability
- The degree of danger or threat to the child (real & perceived)
- The degree of protection/resilience for the child

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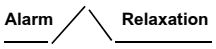
## The Importance of the Early Years (0-3)

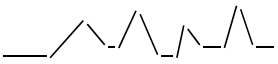
- Experiences lay down
  - Adaptive or toxic stress response patterns
  - Positive or negative lifelong expectations (procedural memories)
  - Neural connections and pathways (brain development)
- *Emotional care vs. custodial care is the most important factor in health development*

## The Importance of The First 3 Years
### Experiences Lay Down Reactions to Stress

Normal and Long-term Stress:




**Chronic Stress**



## The Importance of The First 3 Years
### Experiences Lay Down Life-Long Expectations

- What is most familiar and automatic to us, is called procedural memory
- Procedural memories = built in expectations
  - **To be loved**
  - **To be comforted**
  - **To be confident**
  - **To be neglected**
  - **To be treated with hostility**
  - **To be treated with anxiety**



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## Procedural Memories are Bottom-Up Processes

Bottom-up = Any behavior that is…

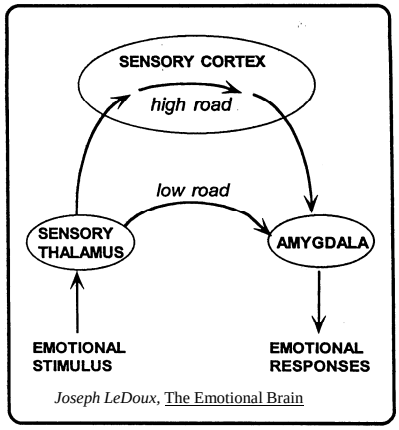
- Automatic & Habitual
- Things we do without thinking
- Often does not involve the use of words
- Begins at birth
- Dominates the early years
- Not easy to change; can last a lifetime

"We learn by example and by direct experience because there are real limits to the adequacy of verbal instruction."

Malcolm Gladwell

"Habit is Stronger Than Reason."

George Santayana




*Joseph LeDoux,* The Emotional Brain

Memories =

Sensory fragments

## Declarative Memories are Top-Down Processes

Top-down = Any behavior that is…

- Conscious & Effortful
- Things we do with thinking
- Often does involve the use of words

"The mind is everything, what we think, we become…"

Gautama Buddha

"There are two primary choices in life: to accept conditions as they exist, or accept the responsibility for changing them."

Dennis Waitley

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## We Need Both!

"Truly successful decision making relies on a balance between deliberate and instinctive thinking."

Malcolm Gladwell

We need to make distinctions between bottom-up and top-down processes and match the neurodevelopment of the child/family with the proper treatment.

Connie Lillas

## The Importance of The First 3 Years

Experiences Lay Down Circuits

**"Neurons that fire together wire together"**

**Newborn**

**Early Childhood**

**Later Childhood**

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## Experiences lay down circuits

- Brains are "use-dependent"
- "Use it or lose it"

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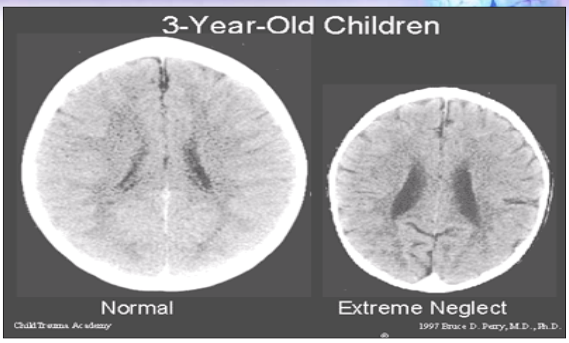
## The Importance of The First 3 Years

Experiences Lay Down Reactions to Stress

## The Importance of The First 3 Years

Experiences Lay Down Reactions to Stress

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## Bucharest Early Intervention Program (Los Angeles Times, July 24, 2012)

Following 136 Romanian orphans for now 12 years, first randomized control study of its kind between institutional care, foster care and typically developing children:

- MRI's on 76 of these Inst children. Compared to orphans that went into foster care or had remained in their own homes, those children that remained in institutional care had less white matter (tissue that connects different regions of the brain)
- Essentially, there is less electrical activity in these brains. If a typically developing child is a 100 watt light bulb, these children were a 40 watt light bulb; increased rates of anxiety and depression are prevalent.
- Those who left the institution and went into foster care between 6 and 31 months still had poorer outcomes – similar to institutionalized children, both having increased rates of ADHD & oppositional defiant behaviors

## The Importance of The First 3 Years
Experiences Lay Down Reactions to Stress

"Parents play an important role in setting up the neural circuitry that helps children regulate in response to stress."

Bruce Perry

## The Importance of Emotional Care

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## Working Together to Provide Emotional Care

- Providing emotional care supports resilience
- Resilient factors come from:
  1. Concrete support in times of need
  2. Parental resilience (stress & stress recovery)
  3. *Social connections*
  4. *Children's social and emotional development*
  5. *Healthy parent & child relationships*
  6. *Knowledge of parenting and child development*

. *Center for Social and Public Policy; Strengthening Families Illinois*

## Let's Review The Importance of the Early Years

- Experiences lay down
  - Adaptive or toxic stress response patterns
  - Positive or negative lifelong expectations (procedural memories)
  - Neural connections and pathways (brain development)
- *Emotional care vs. custodial care is the most important factor in health development*

## Need for Translating Brain Development into Policy & Practice

"The expertise about early childhood development, brain development and trauma exists in different sectors and disciplines. Yet, we lack an integrated science of early childhood development…All this new knowledge on child development, trauma, the brain and protective factors is not being translated into public policy nor is it being introduced in our practice."

*Jack Shonkoff M.D., Director, Center for the Developing Child at Harvard University*

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## How do we translate "what matters" in brain development to a comprehensive assessment & intervention process for infants and parents?

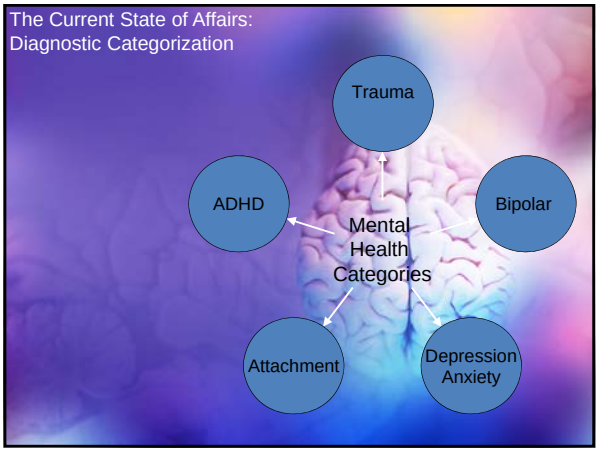
What Matters:

- Stress thresholds, with stress and stress recovery patterns
- Procedural memories and the quality of engagement
- Development of brain networks and circuits

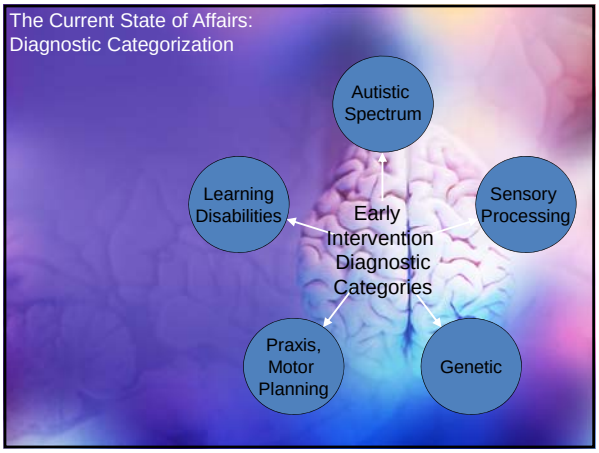
What assessment information to obtain (3 steps to NRF):

- *Step 1:* Assess & intervene to improve stress and stress recovery patterns in child and parent
- *Step 2:* Assess & intervene to improve the level(s) in the quality of engagement
- *Step 3:* Assess & intervene to improve individual sources of vulnerability (triggers) & resilience (toolkits) in brain networks

## The Current State of Affairs: Diagnostic Categorization




## The Current State of Affairs: Diagnostic Categorization

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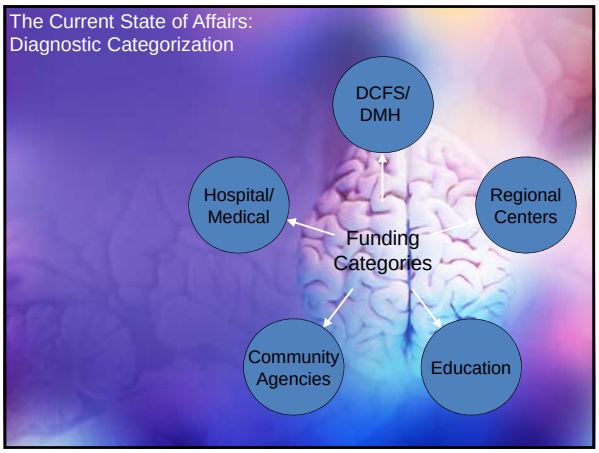
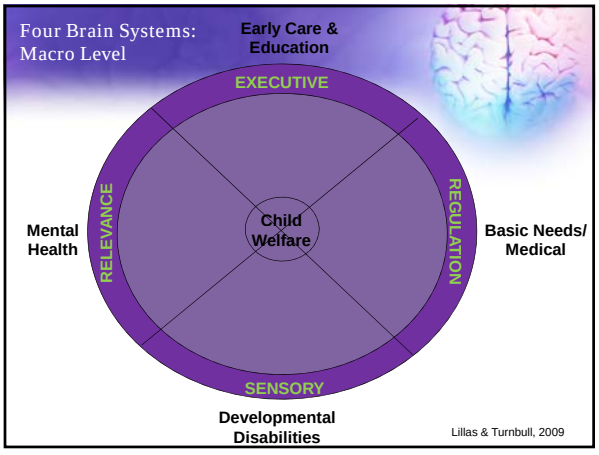



## Framework vs. Model

The Neurorelational Framework (NRF)

- Framework holds multiple clinical models that one has been trained in
- Framework uses neurodevelopmental principles that can help you organize and more efficiently use the knowledge you already have (e.g., working bottom-up to top-down)
- Allows you to shift from foreground to background across multiple variables and dimensions versus only from a diagnostic "category"
- Enhances your understanding as to where your knowledge is weighted and where you need to expand across disciplinary boundaries

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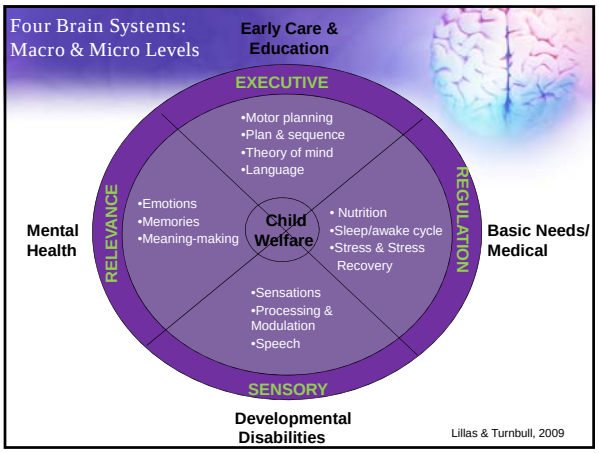



## Parallel Processes of the NRF

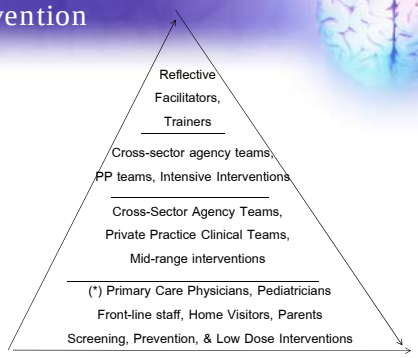
"Macro"

- Large-scale Community, Systems of Care Connections
  - Who are your community partners?
  - Do you know them well enough to facilitate a "warm handoff"?

"Micro"

- From Individuals & Personal Mapping, to
- Dyadic, Family Units, to
- Agency Patterns and Teams

## NRF Pyramid for Prevention & Intervention

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## 3 ways, 3 days

1. Apply 3 steps to oneself
2. Apply 3 steps to cases you observe
3. Apply 3 steps to your own cases

## Chinese Proverb

I hear and I forget

I see and I remember

I do and I understand

## Step One: The Foundation to the House

How Sturdy or Fragile is the Foundation?

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*Step #1:*
How do we identify stress & stress recovery ?

A. Recognize what stress recovery looks like

B. Recognize three primary stress responses

C. Recognize four toxic stress patterns

How do we identify healthy stress responses?

- Allostasis =
  - **Healthy rubber band, that stretches out nicely and bounces back**
  - **Coordination between flexibility & stability**
    - Flexible stress responses
    - Stable deep sleep and green zone

*Step #1A:*
How do we identify stress recovery ?

- Recognize what stress recovery looks like:
  - **Deep sleep**
  - **Green zone**

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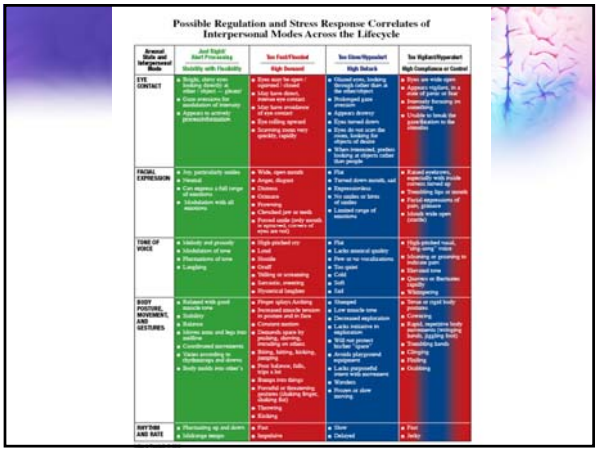
## Deep sleep is restorative...



Possible Regulation and Stress Response Correlates of Interpersonal Modes Across the Lifecycle

## Everyone Can Learn to Read
### Non-Verbal Cues

- 93% of communication is nonverbal
- Eye contact
- Facial expression
- Tone of voice
- Body posture, movement, & gestures
- Rhythm, rate, & intensity

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## Alert processing is 'just right'... for learning and relationships

## Stress & Stress Recovery
### Individual Differences

| *Who We Are At Our Best!* | | |
|---|---|---|
| ***Heart Under Coordination*** | ***Hand Under Coordination*** | ***Head Under Coordination*** |
| Responsive<br>Engagers/Feelers | Directive<br>Doers | Reflective<br>Thinkers |

Adapted from Lillas & Turnbull, © 2009

## *Step #1B:* How do we identify three primary stress responses?

Recognize the three primary stress responses:

- Red zone
- Blue zone
- Combo zone

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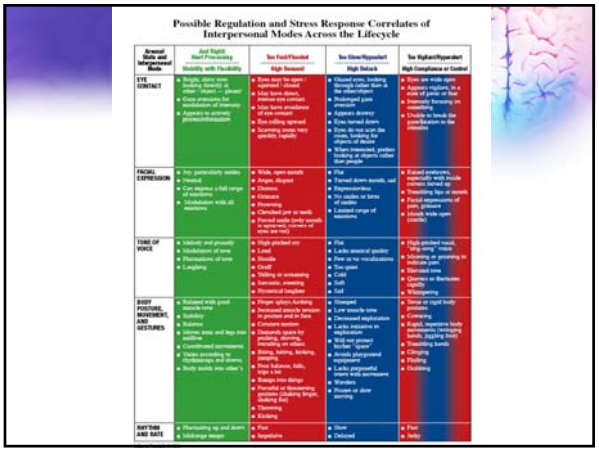
*Step 1C:*
How do we identify toxic stress?

- Allostatic load =
  - **Pattern where the rubber band is either too tight or too loose**
  - **Loss of coordination with <u>too much rigidity</u> or <u>too much chaos</u>**




Reading Non-Verbal Cues:
Red Zone

**A Baby's Flooded State:**

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## Reading Non-Verbal Cues: Blue Zone

**A Baby's Shut-Down State**

## Reading Non-Verbal Cues: Combo Zone

**A Baby's Vigilant State:**

## Head-On Reflection
### Individual Differences

**Who We Are At Our Worst!**

| *Heart Under Stress* | *Hand Under Stress* | *Head Under Stress* |
|---|---|---|
| Give too much<br>Over accommodate | Demand too much<br>Dominate and control | Detach too much<br>Dismiss and ignore |
| ***Body Under Stress***<br>Hypervigilance<br>Fear, Anxiety | ***Body Under Stress***<br>Crying, Anger, Rage<br>Hyperactivity, Mania | ***Body Under Stress***<br>Shut Down, Glazed<br>Depression, Dissociation |

Adapted from Lillas & Turnbull, © 2009

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## *Step #1C: How do we identify toxic stress patterns?*

Recognize stress responses that are
*too frequent, too quick / intense, too long*

**4 Toxic Stress Patterns**

1. *Over reactivity:* Stress responses that occur too frequently and too quickly
2. *Repeated reactivity:* Inability to adapt to "normal" challenges and transitions
3. *Extended reactivity:* Prolonged stress responses that take too long to recover (more than 10 to 20 mins)
4. *Dampened reactivity:* Inability to recover from stress response back to baseline health (healthy sleep cycle, healthy awake state)

McEwen

## Stress Patterns & Associated Health Issues

Disease does not begin at the onset of symptoms.
In fact, maladaptive stress related conditions are implicated in all of the following:

- Increase in heart attack & hypertension
- Melancholic depression
- Obsessive compulsive disorder
- Panic disorder
- Alcoholism
- Lowered immune system
- Decrease in memory functions
- Diabetes
- Malnutrition
- Hyperthyroidism
- Functional gastrointestinal disease
- Allergies
- Asthma
- Autoimmune diseases
- Chronic fatigue syndrome
- Rashes
- Rheumatoid arthritis
- Post Traumatic Stress Disorder

## Adverse Childhood Experiences Scale

CA's ACE List

1. Recurrent physical abuse
2. Recurrent emotional abuse
3. Contact sexual abuse
4. An alcohol and/or drug abuser in the household
5. An incarcerated household member
6. Someone who is chronically depressed, mentally ill, institutionalized, or suicidal
7. Violence between adults in the home
8. Parental separation or divorce
9. Emotional or physical neglect

Resources

- http://acestudy.org/home
- http://www.cavalcadeproductions.com/ace-study.html
- http://wichildrenstrustfund.org/files/WisconsinACEs.pdf

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## ACE Score Higher Than 4

**Score 4 or more**

- Twice as likely to smoke
- Twice as likely to have heart disease
- Twice as likely to be diagnosed with cancer
- Four times as likely to have emphysema or chronic bronchitis
- Six times as likely to have sex before age 15
- Seven times as likely to be alcoholics

**Score 4 or more compared to 0**

Score 4 or more compared to 0

- Twelve times as likely to have attempted suicide

Men with a score of 6 or more compared to 0

- Forty-six times as likely to have injected drugs

## Stress Patterns & Associated Health Issues

Disease does not begin at the onset of symptoms.
In fact, maladaptive stress related conditions are implicated in all of the following:

Toxic Patterns #1 to 3

- Increase in heart attack & hypertension
- Melancholic depression
- Obsessive compulsive disorder
- Panic disorder
- Alcoholism
- Lowered immune system
- Decrease in memory functions
- Diabetes
- Malnutrition
- Hyperthyroidism
- Functional gastrointestinal disease

Toxic Pattern #4

- Allergies
- Asthma
- Autoimmune diseases
- Chronic fatigue syndrome
- Rashes
- Rheumatoid arthritis
- Post Traumatic Stress Disorder

## *Step #2*: How do we identify high-quality engagement and positive procedural memories?

A. Recognize what "bottom-up" socio-emotional (SE) milestones look like

B. Recognize what "top-down" socio-emotional (SE) milestones look like

C. Recognize the links of SE milestones with positive procedural memories

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## Step #2 Assess the Quality of Engagement

Greenspan, 1985, 1992; Greenspan & Lourie, 1981; ZERO TO THREE, 1994, 2005)

**Bottom-Up (non-verbal capacities)**

- Getting calm together
- When *calm* able to make eye contact
- When making *eye contact,* able to share joy
- When sharing *joy,* able to create a continuous back-and-forth flow of communication
- When in a flow, able to expand *non-verbal communication* through an increasingly nuanced ability to read emotional cues, intentions, gestures, and to solve problems

SE Milestone Language Adapted by Connie Lillas

## Step #2 Assess the Quality of Engagement

**Top-Down (verbal capacities)**

- When sharing *emotions*, able to create stories via symbolic play & pretend play, with developing language skills
- When using emotional *stories,* able to make-sense and solve problems together

## The Importance of The First 3 Years

Experiences Lay Down Life-Long Expectations


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## It is rarely the case that there is a single cause to the symptoms we see.

- The meaning of behavior is based upon multiple causality, rather than singular causality, as multiple causes usually underlie the "behavioral problems" that are identified as the presenting problem
- *Lillas & Turnbull, © 2009*

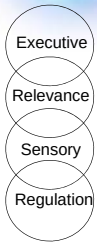
## What can we do about it?

- Looking at the big picture…
  - **Assess for multiple causes that can be mutually influencing each other**
  - **Build resilience through any one of multiple ports of entry**

## Step #3: Assess for Sources of Vulnerability and Resilience Across Four Brain Systems

**Guiding Principles**

- There is no one-size fits all
- Assess on a "Macro" level the links with systems of care
- Assess on a "Micro" level functional needs that help guide the triage
- Distinguish between developmental age and chronological age




**Bottom-Up Progression**

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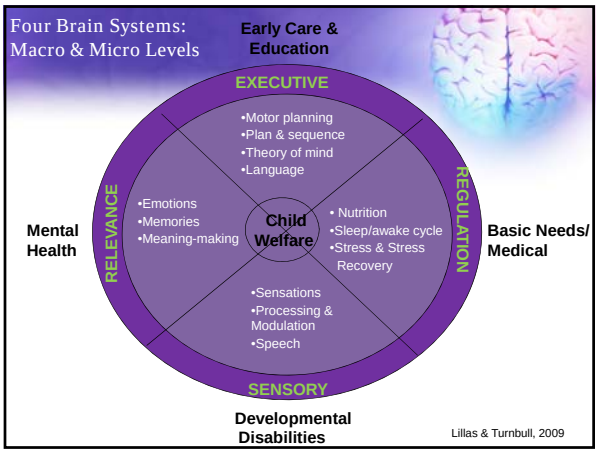


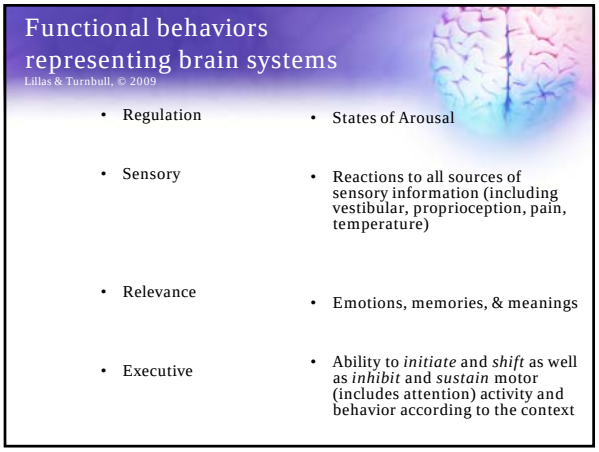


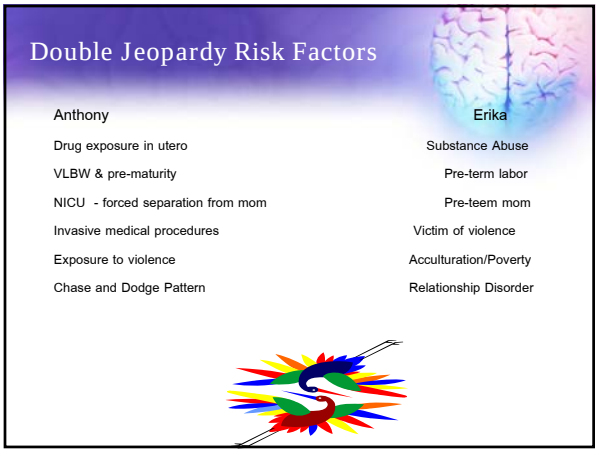


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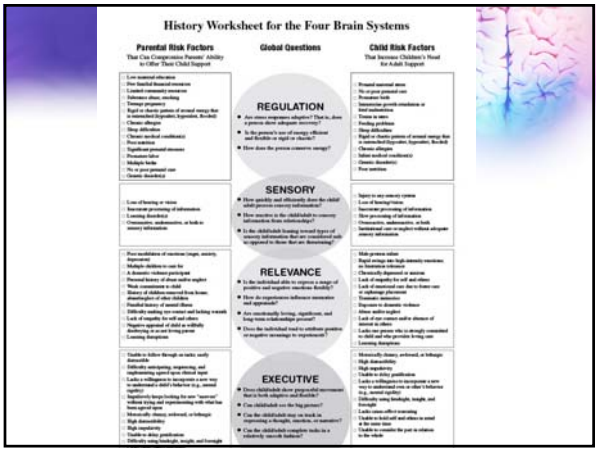
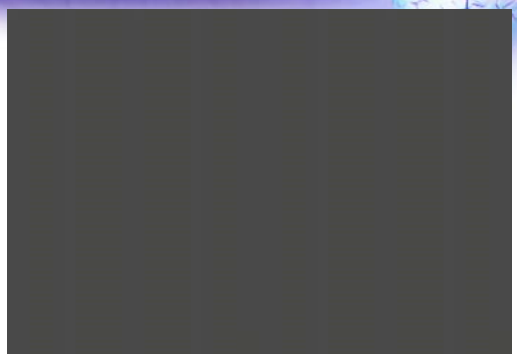



## Hypoalert at 4 months



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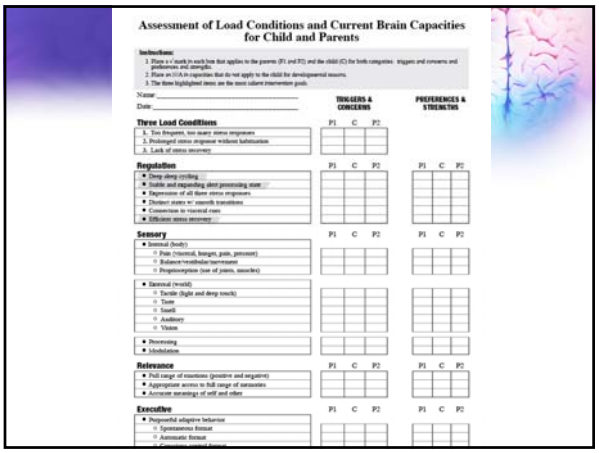

Assessment of Load Conditions and Current Brain Capacities for Child and Parents

Instructions:

1. Place a √ mark in each box that applies to the parents (P1 and P2) and the child (C) for both categories: triggers and concerns and preferences and strengths.
2. Place an N/A in capacities that do not apply to the child for developmental reasons.
3. The three highlighted items are the most salient intervention goals.

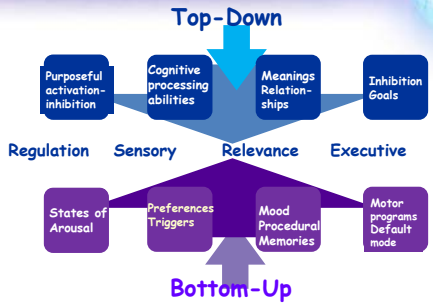
Name: _____ Date: _____

| | TRIGGERS & CONCERNS | | | PREFERENCES & STRENGTHS | | |
|---|---|---|---|---|---|---|
| **Three Load Conditions** | P1 | C | P2 | | | |
| 1. Too frequent, too many stress responses | | | | | | |
| 2. Prolonged stress response without habituation | | | | | | |
| 3. Lack of stress recovery | | | | | | |
| **Regulation** | P1 | C | P2 | P1 | C | P2 |
| • Deep sleep cycling | | | | | | |
| • Stable and expanding alert processing state | | | | | | |
| • Expression of all three stress responses | | | | | | |
| • Distinct states w/ smooth transitions | | | | | | |
| • Connection to visceral cues | | | | | | |
| • Efficient stress recovery | | | | | | |
| **Sensory** | P1 | C | P2 | P1 | C | P2 |
| • Internal (body) | | | | | | |
| ○ Pain (visceral, hunger, pain, pressure) | | | | | | |
| ○ Balance/vestibular/movement | | | | | | |
| ○ Proprioception (use of joints, muscles) | | | | | | |
| • External (world) | | | | | | |
| ○ Tactile (light and deep touch) | | | | | | |
| ○ Taste | | | | | | |
| ○ Smell | | | | | | |
| ○ Auditory | | | | | | |
| ○ Vision | | | | | | |
| • Processing | | | | | | |
| • Modulation | | | | | | |
| **Relevance** | P1 | C | P2 | P1 | C | P2 |
| • Full range of emotions (positive and negative) | | | | | | |
| • Appropriate access to full range of memories | | | | | | |
| • Accurate meanings of self and other | | | | | | |
| **Executive** | P1 | C | P2 | P1 | C | P2 |
| • Purposeful adaptive behavior | | | | | | |
| ○ Spontaneous format | | | | | | |
| ○ Automatic format | | | | | | |
| ○ Cognitive mental format | | | | | | |

## Functional Capacities of the Regulation System

1. *The capacity for deep sleep cycling*
2. *The capacity for alert processing*
3. The capacity for the adaptive expression of all stress responses
4. The capacity for distinct states of arousal and smooth transitions between them
5. The capacity for connection to visceral cues
6. *The capacity for efficient stress recovery*

## Working Bottom Up & Top Down

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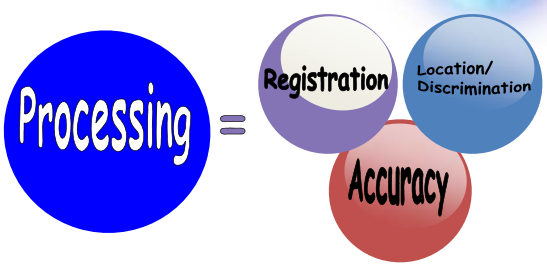
## Functional Capacities of the Sensory System

1. The capacity to receive, translate, associate, and elaborate sensory signals within and across sensory modalities in a developmentally appropriate way (*sensory processing*)
2. The capacity to balance the flow of sensory signals in a way that is appropriate to context (*sensory modulation*)

## Processing & Modulation Distinctions

- *"Processing* is weighted toward the modality and location attributes of the sensory information (what is it, where is it?)
- *Modulation* is weighted toward the intensity and timing attributes of the sensory information (how much of it, how fast is it, how long does it last?)"
  - ***Lillas & Turnbull, 2009, p. 197***

## Capacity One…

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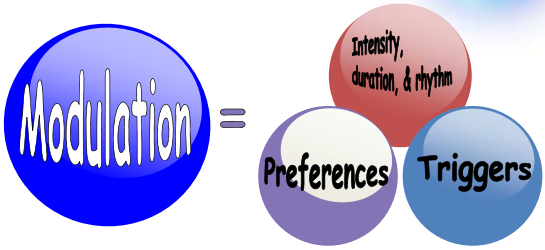
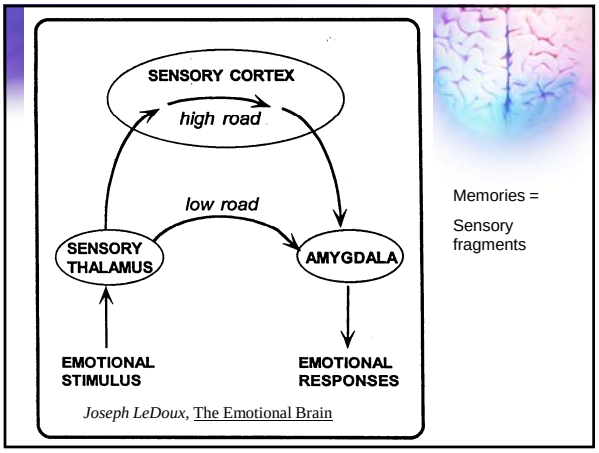
## Processing Variables

- Is the infant, child, adult registering the sensory information?
- Is the infant, child, adult accurately identifying the source of the sensory information?
- Is the infant, child, adult accurately discriminating the sensory information?

## Capacity Two…




Memories =

Sensory fragments

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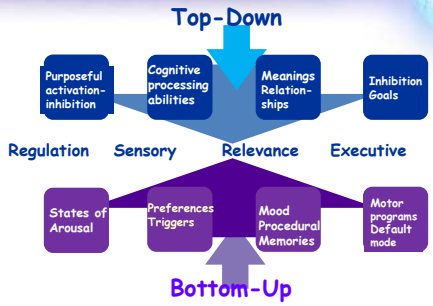
## Modulation Variables

- Is the infant, child, or adult over or under-reactive to sensory information?
- Do mid-range intensities of sensations support optimal arousal or do extremes need to be used?
- Experiment with sensations: begin with low intensity, slow rhythms, and short durations to be safe
- **Does the infant, child, adult need to be matched or countered?**

## Sensory Preferences & Triggers

| Preferences | Triggers |
|---|---|
| • Support down-regulation to sleep | • Stimulate a stress or load response… |
| • Support calm, alertness for engagement | • Because memories are "sensory" fragments |
| • Support stress recovery | • Most often, are procedurally based and "automatic" |

## Working Bottom Up & Top Down

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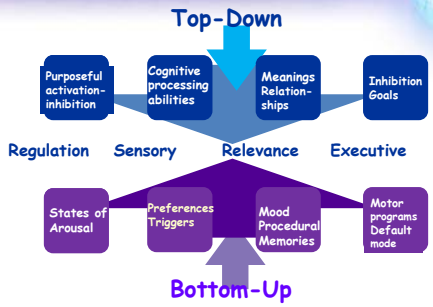
## Functional Capacities of the Relevance System

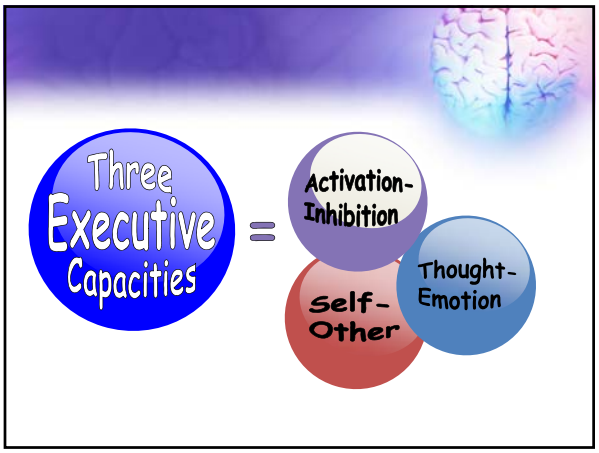
1. The capacity to flexibly experience, express, and modulate a full range of emotions in ways that are appropriate to context
2. The capacity to learn from experience by scanning and accessing a full range of memories that are appropriate to the context
3. The capacity to create meanings that accurately reflect self and others

## Working Bottom Up & Top Down




## Functional Capacities of the Executive System

1. The capacity to express spontaneous, automatic, and consciously controlled behaviors in a flexible and purposeful manner
2. The capacity to integrate the bottom-up influences of emotions with the top-down control of thoughts
3. The capacity to assess, integrate, and prioritize one's own internal (self) needs in relation to external (context/other) needs




## The 4 dimensions of the EX system

- Spontaneous (Flexibility)
  - **Initiate: mobility of spontaneous movement**
  - **Shift: mobility imposed on stability**
- Automatic (Stability)
  - **Inhibit: ability to inhibit spontaneous movement**
  - **Sustain: supported by postural control and needs inhibition**
- Motor control: ability to regulate or direct the mechanisms essential to coordinated functional movement (Shumway-Cook & Woollacott, 2007), which uses all of these dimensions!

## DIAGNOSTIC CLASSIFICATION 0-3R TRIAGE SYSTEM:

1. TRAUMA
2. GRIEF & LOSS
3. REGULATORY DISORDERS
4. ADJUSTMENT DISORDER
5. MOOD & AFFECT DISORDERS
6. MULTIPLE DELAYS (MDD) (genetics)
7. RELATIONSHIP DISORDER (AXIS II)
8. REACTIVE ATTACHMENT DISORDER
9. FEEDING & SLEEPING DISORDERS

## How would you organize this list of symptoms & diagnoses?

### Symptoms

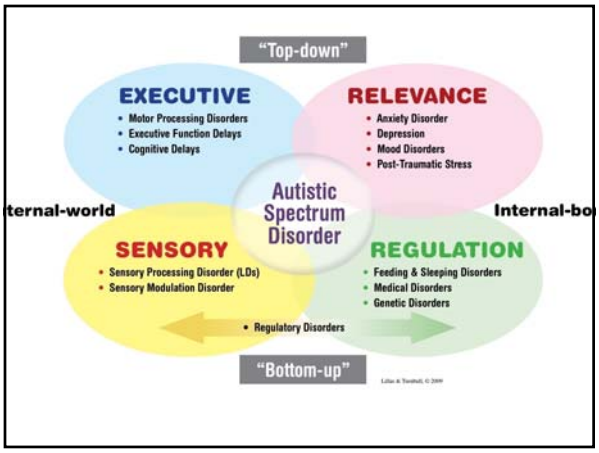
- Lack of joyful exchanges
- Poor head control
- No eye contact
- Limited cooing
- Chronic avoidance/aversion to sensory input
- Primary blue zone state
- No signs of learning
- Sleeping too much
- Lack of orienting to sights and sounds
- Lack of engagement
- Lack of movement of reaching, rolling, turning eyes or head
- Chase and dodge relational pattern

### Diagnoses

- Relationship Disorder
- R/O Mood Disorder
- Trauma
- Regulatory Disorder
- Speech Delay
- Motor Delay

## What does "load" look like in the context of challenge or threat at 4 months?

- **Regulation:**
  - Hypoalert state
  - Glazed eyes
  - Shut down; No signs of learning and relating occurring
- **Sensory:**
  - Non-responsive to sensory information
  - Chronic avoidance/aversion to sensory input
  - Lack of orienting to sights and sounds
  - No cooing or babbling (speech delay)
- **Relevance:**
  - Lack of engagement
  - Lack of joyful exchanges (facilitates a 'weak' commitment)
  - Lack of back and forth rhythm
- **Executive:**
  - Lack of head stability
  - Lack of movement of reaching, rolling, turning eyes or head to sights and sounds

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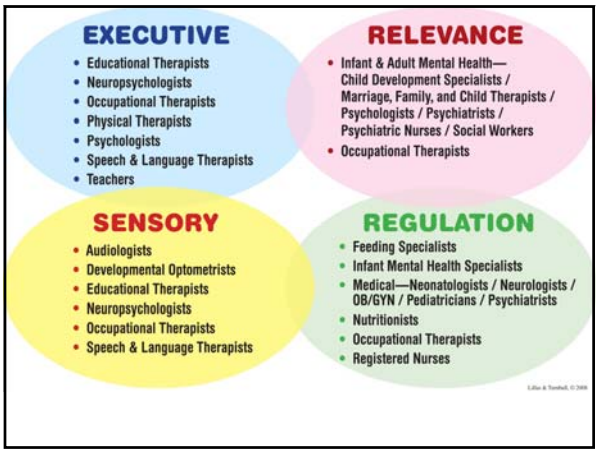


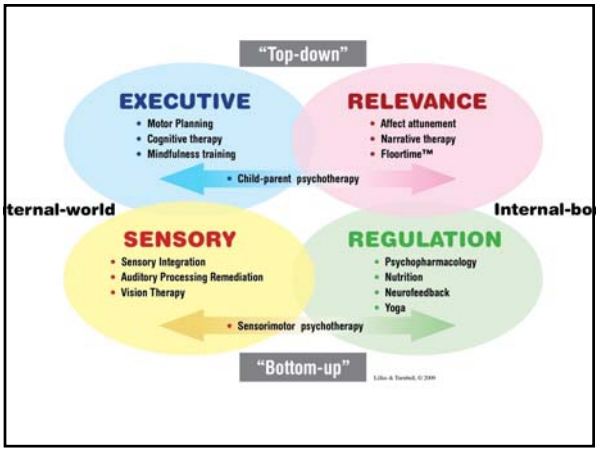


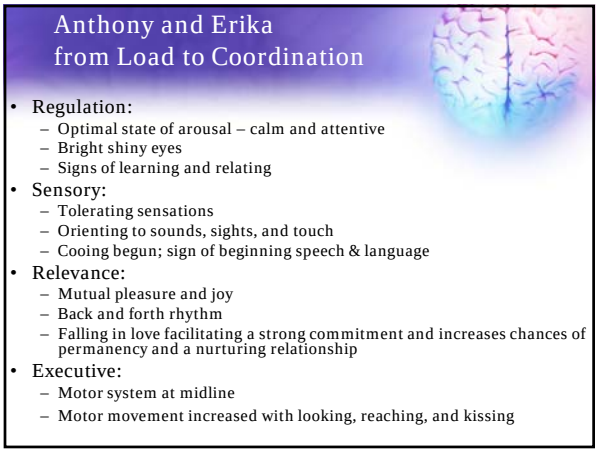


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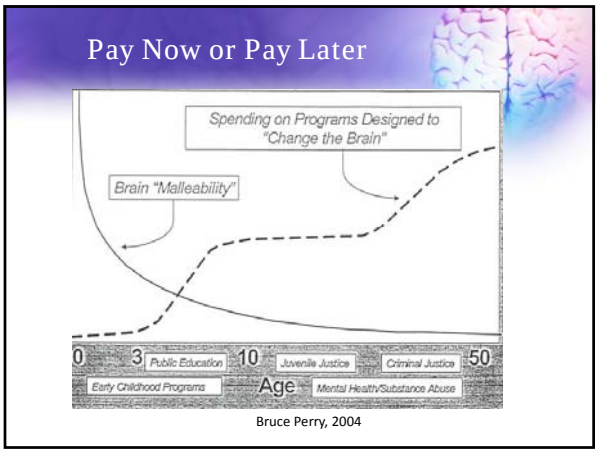

Bruce Perry, 2004


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