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.”


The Importance of the Early Years
(0-3)

- Experiences lay down
  - Neural connections and pathways (brain development)
  - Positive or negative lifelong expectations (procedural memories)
  - Adaptive or toxic stress response patterns

- Emotional care vs. custodial care is the most important factor in health development
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

Connie Lillas, PhD, MFT, RN
infantmentalhealth@earthlink.net
www.the-nrf.com

The Importance of The First 3 Years Experiences Lay Down Circuits

Brain Growth

- Newborn’s brain is 25% of adult’s size
- By 3 years of age, the brain has grown to 80% to 85% of adult size
- By 5 years of age, the brain has grown to 90% of adult size

“Neurons that fire together wire together”

Newborn Early Childhood Later Childhood

Sheri Hill, PhD, Faculty on Policy, University of Washington
Experiences lay down circuits

- Brains are “use-dependent”
- “Use it or lose it”

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

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

Procedural Memories:
- Begin at birth
- Dominate the early years
- Not easy to change; can last a lifetime
- Lay down expectations for relationships, habits, routines
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

“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

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

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
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

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

Effects of stress on the brain

- Long-term stress from abuse, neglect, and multiple caregivers impact medical and mental health conditions
- Upper limits for stress tolerance are getting set up along with brain circuits and memories
- Brains bathed in long-term stress which activates stress hormones that poison the brain circuits

Connie Lillas, PhD, MFT, RN © 2010

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

Normal and Long-term Stress:

- Alarm
- Relaxation
- Chronic Stress

Connie Lillas, PhD, MFT, RN
infantmentalhealth@earthlink.net
www.the-nrf.com
The Importance of The First 3 Years
Experiences Lay Down Reactions to Stress

Neglect can warp the brain’s developing neural circuits so that they produce too much or too little of the hormones that control responses 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 The First 3 Years Experiences

**Experiences Lay Down Reactions to Stress**

### The Importance of Emotional Care

![Image of a baby]

### What practical information will guide us to offer comprehensive assessment of infants and parents?

<table>
<thead>
<tr>
<th>What Matters:</th>
<th>What assessment information to obtain (3 steps to NRF):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress thresholds, with stress and stress recovery patterns</td>
<td>• <strong>Step 1:</strong> Have child and parents assessed for toxic stress conditions</td>
</tr>
<tr>
<td>Procedural memories and the quality of engagement</td>
<td>• <strong>Step 2:</strong> Have parent-child socio-emotional milestones assessed</td>
</tr>
<tr>
<td>Development of brain networks and circuits</td>
<td>• <strong>Step 3:</strong> Have child &amp; parents assessed for individual sources of vulnerability &amp; resilience in brain networks</td>
</tr>
</tbody>
</table>
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

The Current State of Affairs: Diagnostic Categorization

- ADHD
- Bipolar
- Mental Health Categories
- Depression Anxiety
- Attachment

The Current State of Affairs: Diagnostic Categorization

- Autistic Spectrum
- Sensory Processing
- Learning Disabilities
- Early Intervention Diagnostic Categories
- Praxis, Motor Planning
- Genetic

The Current State of Affairs: Diagnostic Categorization

- DCFS/DMH
- Hospital/Medical
- Regional Centers
- Community Agencies
- Funding Categories
- Education

Connie Lillas, PhD, MFT, RN
infantmentalhealth@earthlink.net
www.the-nrf.com
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

Connie Lillas, PhD, MFT, RN
infantmentalhealth@earthlink.net
www.the-nrf.com

Need for a Cross-Sector Framework

“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

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

Four Brain Systems: Macro & Micro Levels

Mental Health

- Emotions
- Memories
- Meaning-making

Child Welfare

- Sensations
- Processing & Modulation
- Speech

Basic Needs: Medical

- Sleep/wake cycle
- Stress & Stress Recovery

Executive

- Motor planning
- Plan & sequence
- Theory of mind
- Language

Developmental Disabilities

- Nutrition
- Sleep/wake cycle
- Stress & Stress Recovery

Lillas & Turnbull, 2009
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

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

Deep sleep is restorative...
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

Alert processing is ‘just right’...
for learning and relationships

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

Recognize the three primary stress responses:

- Red zone
- Blue zone
- Combo zone
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 too much rigidity or too much chaos

Reading Non-Verbal Cues: Red Zone

A Baby’s Flooded State:
A Baby's Shut-Down State

- Heart Under Stress: Hypervigilance, Fear, Anxiety
- Hand Under Stress: Crying, Anger, Rage
- Head Under Stress: Hyperactivity, Mania

A Baby's Vigilant State:

- Heart Under Stress: Over accommodate
- Hand Under Stress: Detach too much
- Head Under Stress: Shout Down, Glazed

Reading Non-Verbal Cues: Combo Zone

Who We Are At Our Worst!

<table>
<thead>
<tr>
<th>Heart Under Stress</th>
<th>Hand Under Stress</th>
<th>Head Under Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Give too much</td>
<td>Demand too much</td>
<td>Detach too much</td>
</tr>
<tr>
<td>Over accommodate</td>
<td>Dominate and control</td>
<td>Dismis and ignore</td>
</tr>
<tr>
<td>Body Under Stress</td>
<td>Body Under Stress</td>
<td>Body Under Stress</td>
</tr>
<tr>
<td>Hypervigilance</td>
<td>Crying, Anger, Rage</td>
<td>Shout Down, Glazed</td>
</tr>
<tr>
<td>Fear, Anxiety</td>
<td>Hyperactivity, Mania</td>
<td>Depression, Dissociation</td>
</tr>
</tbody>
</table>

Adapted from Lillas & Turnbull. © 2009
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. Stress responses that occur too frequently and too quickly
2. Inability to adapt to “normal” challenges and transitions
3. Prolonged stress responses that take too long to recover (more than 10 to 20 mins)
4. Inability to recover from stress response back to baseline health (healthy sleep cycle, healthy awake state)

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 alcoholic 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
ACE Score Higher Than 4

<table>
<thead>
<tr>
<th>Score 4 or more</th>
<th>Score 4 or more compared to 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Twice as likely to smoke</td>
<td></td>
</tr>
<tr>
<td>• Twice as likely to have heart disease</td>
<td></td>
</tr>
<tr>
<td>• Twice as likely to be diagnosed with cancer</td>
<td></td>
</tr>
<tr>
<td>• Four times as likely to have emphysema or chronic bronchitis</td>
<td></td>
</tr>
<tr>
<td>• Six times as likely to have sex before age 15</td>
<td></td>
</tr>
<tr>
<td>• Seven times as likely to be alcoholics</td>
<td></td>
</tr>
</tbody>
</table>

National Movement of ACE Studies Across the States

<table>
<thead>
<tr>
<th>%s of Population with 4+ ACEs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louisiana</td>
</tr>
<tr>
<td>California</td>
</tr>
<tr>
<td>Arkansas</td>
</tr>
<tr>
<td>Wisconsin</td>
</tr>
<tr>
<td>Tennessee</td>
</tr>
<tr>
<td>New Mexico</td>
</tr>
<tr>
<td>Washington</td>
</tr>
</tbody>
</table>

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
Step #2 Assess the Quality of Engagement

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

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

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

SE Milestone Language Adapted by Connie Lillas
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

Four Brain Systems: Macro & Micro Levels

<table>
<thead>
<tr>
<th>Mental Health</th>
<th>Executive</th>
<th>Early Care &amp; Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Emotions</td>
<td>- Motor planning</td>
<td>- Speech</td>
</tr>
<tr>
<td>- Memories</td>
<td>- Plan &amp; sequence</td>
<td>- Sensing &amp; Modulation</td>
</tr>
<tr>
<td>- Meaning-making</td>
<td>- Theory of mind</td>
<td>- Speech</td>
</tr>
</tbody>
</table>

Child Welfare
- Stress & Stress Recovery

Basic Needs/Medical
- Sleep/awake cycle
- Nutrition

Developmental Disabilities
- Sensations
- Processing & Modulation

Lillas & Turnbull, 2009
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

Functional behaviors representing brain systems

- Regulation
- Sensory
- Relevance
- Executive

- States of Arousal
- Reactions to all sources of sensory information (including vestibular, proprioception, pain, temperature)
- Emotions, memories, & meanings
- Ability to initiate and shift as well as inhibit and sustain motor (includes attention) activity and behavior according to the context

Double Jeopardy Risk Factors

- Anthony
  - Drug exposure in utero
  - VLBW & pre-maturity
  - NICU - forced separation from mom
  - Invasive medical procedures
  - Exposure to violence
  - Chase and Dodge Pattern
- Erika
  - Substance Abuse
  - Pre-term labor
  - Pre-teen mom
  - Victim of violence
  - Acculturation/Poverty
  - Relationship Disorder
Hypoalert at 4 months

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
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

**Working Bottom Up & Top Down**

- **Top-Down**
  - Purposeful activities
  - Cognitive processing abilities
  - Meanings relationships
  - Inhibitory goals

- **Bottom-Up**
  - States of arousal
  - Preference triggers
  - Mood
  - Motor programs
  - Regulatory

**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, 2006, p. 197
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

Capacity One...

Processing = Registration + Location/Discrimination + Accuracy

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...

Modulation = Intensity, duration, & rhythm + Preferences + Triggers
Memories = Sensory fragments

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**
- Support down-regulation to sleep
- Support calm, alertness for engagement
- Support stress recovery

**Triggers**
- Stimulate a stress or load response...
- Because memories are "sensory" fragments
- Most often, are procedurally based and "automatic"
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

Connie Lillas, PhD, MFT, RN
infantmentalhealth@earthlink.net
www.the-nrf.com

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

Connie Lillas, PhD, MFT, RN
infantmentalhealth@earthlink.net
www.the-nrf.com

24
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

**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!
What does “load” look like in the context of challenge or threat at 4 months?

- **Regulation:**
  - Hipoalert state
  - Glared 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

---

**Erika and Anthony Case Study**

---

**DIAGNOSTIC CLASSIFICATION**

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
Bridging the Gaps. An Introduction to the Neurorelational Framework (NRF)

Connie Lillas, PhD, MFT, RN
infantmentalhealth@earthlink.net
www.the-nrf.com
Anthony and Erika from Load to Coordination

- **Regulation:**
  - Optimal state of arousal – calm and attentive
  - Bright shiny eyes
  - Signs of learning and relating

- **Sensory:**
  - Tolerating sensations
  - Orienting to sounds, sights, and touch
  - Cooing begun; sign of beginning speech & language

- **Relevance:**
  - Mutual pleasure and joy
  - Back and forth rhythm
  - Falling in love facilitating a strong commitment and increases chances of permanency and a nurturing relationship

- **Executive:**
  - Motor system at midline
  - Motor movement increased with looking, reaching, and kissing

Pay Now or Pay Later

Bruce Perry, 2004

Thank You!