When Science Meets Practice: 
Applying the Science of Early Childhood Development 
to Infant Maltreatment

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Agenda

- What is healthy development?
- How does it happen?
- What can derail child development?
- How can we help?

See lecture by Jack Schonkoff prior to delivering this lecture
Take Home Messages

- Early experiences matter
- Babies are highly adaptable – but they can pay a price
- The best intervention is a consistent, predictable & long term, nurturing relationship

-because development is happening so quickly in the first three years, early experiences have a disproportionate effect on later health, mental health, and cognitive development
-we think of babies as highly adaptable. A newborn infant can be placed anywhere in the world, whether its Japan, Tanzania or Scotland, the baby will adapt beautifully to the culture, food, climate and so on. He or she will learn to speak the language fluently and without an accent, he doesn’t even need lessons, just a language rich environment.
-but when a baby is placed in a highly pathological environment, he will adapt to that as well, but those adaptations can be costly.
-a third major challenge for policy makers and practitioners is that when young children are maltreated we have very little time to act – we need to move quickly if we are going to give the family the best chance of success, and if we are going to avoid the longer term developmental damage.
Working With Chronic Neglect

- The journey upstream
- Good assessments are key
- Intervention plan should focus on reducing risk/enhancing resiliency
- Intervene early, offer services generously, act decisively
- Reports, court testimony should tell the
What is Child Development?

Healthy physical, emotional, cognitive & social development

Source: In Brief: the Science of Early Childhood Development at developingchild.harvard.edu


When we talk about healthy child development we are talking about the physical, emotional, cognitive & social development

Early experiences have a disproportionate effect on later physical & emotional health, our ability to engage in positive relationships

Early experiences lay the foundation for all that follows
Mental health & development are two sides of the same coin
What is Infant Mental Health?

- The ability to cope with emotions & manage behaviour
- The ability to form close emotional ties to others
- The ability to play, explore & learn

Source: Zero To Three

Zero To Three definition
Infant mental health... 

...& healthy development

...are two sides of the same coin
Child Development Happens In the Context of Relationships

- 3/4 brain growth occurs in first 3 years
- Brain triples in size between birth and adulthood
- Brains are built on the ‘serve & return’ of human interaction

Source: Harvard Center on the Developing Child developingchild.harvard.edu

The basic architecture of the brain is constructed in a bottom up sequence, and in a highly integrated way, with simple structures such as sensory pathways for vision and hearing forming first, and then language and higher cognitive functions coming after. Emotional stability and opportunities to develop social competence also form an important foundation for later development. You can’t do one without the other, the early capacities are important prerequisites for later skills. Take language – we don’t just suddenly start to talk, babies begin with eye contact, smiling, babbling, pointing. In order for language to develop the baby needs a reason to communicate and someone to communicate with.

Two important factors shape the developing brain – the genetic endowment you are born with is one that most of us are familiar with.

What is less well understood is the way in which early experiences also shape the developing architecture of the brain. A major component in this process is the ‘serve and return’ of human interaction that begins at birth and is extremely important to the developing brain.

Babies are biologically programmed to expect to interact with others and are disposed to prefer the human face and voice over other sights and sounds.
Babies Are Relationship Ready
You can see the difference between the 6 mo old brain and the newborn brain. What is happening here is not so much that new neurons, or brain cells, are forming. Rather, the brain cells are forming connections to one another called ‘synapses’. Through a process called ‘synaptogenesis’ the brain is rapidly developing these connections - about 700 new neural connections are formed every second during this period. At its peak the infant brain has more of these connections than there are stars in the Milky Way. These connections are then pruned according to usage – if the connection isn’t used, its lost.
Building a brain is like sculpting a marble statue, you don’t start with a little bit of marble and build upwards, you begin with more than you need, and sculpt away the parts you don’t need. Your brain can change throughout the lifespan, but the brain ARCHITECTURE or the organization of those connections is mostly happening at a very early age through this process of synaptogenesis or generation of the connections and subsequent pruning. You can see in this slide that the connections are much denser at age six and then many are pruned away by age 14.
Experience is the Sculptor

NOVA – The Secrets of the Brain
Brain Development Depends on Relationships

Babies need new stimuli to be offered in ways that are “safe, nurturing, predictable, repetitive, gradual, and attuned” to the infant’s developmental stage.” Glaser

What Derails Development?

- Every baby needs at least one consistent caregiver who is sensitive to the baby's cues & gives a nurturing response most of the time.
- Persistent stress & fear disrupt the developing brain architecture.
The Stress Response System

Was Designed for This
It was not designed for chronic activation such as we see in cases of exposure to chronic violence, or chronic neglect.
Stress Response System

Highly integrated repertoire of responses including

- Secretion of stress hormones – adrenaline, cortisol
- Mobilization of energy - increase glucose
- Increase heart rate, blood pressure
- Immune system, inflammatory response modified
- Redirection of blood perfusion to brain
- Suppression of higher order cognition – instinctual response – vigilance & fear
- Suppression of motivation for rewarding stimuli

Source: Matthew Hill, Ph.D
How Babies Regulate Stress

This clip can be found online at youtube or at Zero To Three website
http://www.zerotothree.org/site/PageServer?pagename=ter_stillface

What stresses a baby? Babies are stressed when they fail to get the expected response from their caregiver. The Still Face Experiment illustrates this very well.

How many people found that stressful to watch? Most people do. Why? The baby wasn’t hurt physically in any way, she wasn’t dirty and she doesn’t appear to be hungry. Why is it so upsetting?

How did the baby respond? What cues did she use to try to engage her mother in an interaction? What do you think the baby would do if the mother stopped interacting with her all the time? What if the baby couldn't predict how the mother would respond? What if she responded sometimes but not others?
Chronic Stress, Persistent Fear & Anxiety

- The SR system is operational at birth
- Babies can experience stress but can’t regulate the stress response
- Babies rely on caregivers to manage stress


What is Toxic Stress?

• Uncontrollable, unpredictable & pervasive adversity
• Persistently elevated stress response
• Highly individual
• Persistent stress exacts a price in terms of wear & tear on the organs including the brain – especially the hippocampus and prefrontal cortex


See lecture by Dr. Matthew Hill, Postdoctoral Fellow Laboratory of Neuroendocrinology at The Rockefeller University http://ebbd.banffcentre.ca/mod/mplayer/view.php?id=105

Persistent stress exacts a price in terms of wear & tear on the organs including the brain – especially the hippocampus and prefrontal cortex
Some stress is normal and even necessary – like the stress a baby experiences when they are learning to sleep alone, or when they get a vaccine. Some stress - the death of a parent for example – is manageable if the baby has support.
Chronic Neglect is a Triple Whammy

• Lack of stimulation at critical periods leads to ‘over pruning’ of connections

• Lack of adequate nutrition impairs growth

• Chronic stress associated with lack of caregiver response derails development of the brain & the stress response system itself no longer works properly

This graphic is from:

Model very helpful to our team in examining our approach to clinical practice

Model can be used as a template in examining the work of CMHC

Overlapping areas are of particular significance
Where all 4 circles overlap, these children are 34 times more likely to be seen in mental health clinics

25 years of research
Risk factors interact in ways that can overwhelm the child’s natural resilience
At-risk children interact with their environment in ways that amplify risks
High quality caregiving is known to buffer the effects of multiple risks

Suggested Reading:
Assessing the Child

- What does the baby do when hurt, ill, upset?
  Does the baby give accurate cues?
- Does the baby seem alert, interested, engaged?
- Is the baby on track developmentally?
- Basic medical condition, dehydration, malnutrition, muscle tone
- Pick the baby up – does the baby feel floppy?
  Listless? Does the baby protest and reach for a parent?

Eye contact
Head shape—does it look like they spent all their day laying in their care seat?
Pre-existing medical conditions.
Prenatal exposure to teratogens.
Child’s temperment—many of us know how challenging it is to parent a colicky baby—when no matter what we do we still have a crying infant.
What do parents say about the baby
  he’s such a good baby he doesn’t cry (so how does communicate—how does he let you know he’s hungry, tired, sick, etc. Babies cry, that’s their means of communicating
She’s so independent—she doesn’t really need me

Two year old child who had been apprehended from his parent’s care due to neglect, parental addictions, and chronic transience. Placed in foster care and at 2 years of age we were asked to consult. The foster mother did not have any specific concerns about this child but when we did the screening this child was not meeting any of his developmental milestones. What we determined was he was a very “easily” baby—he didn’t make demands. He didn’t cry when upset, he sat when she placed him, he smiled when you engaged with him. He could not communicate, he could barely walk, and he did not know how to play.
Traumatized Children are Challenging

- Cue giving difficulties
- Self soothing
- Developmental Delays
- Hyper-compliance or tantrums
- ‘Good baby’
- Food, sleep issues
- Genetics, poor prenatal care, prenatal exposure, & other congenital factors

Is the ability to manage emotions and behaviour independently
Is considered by some to be the central organizing factor in human development
Most mental illnesses can be thought of as a problem of self-regulation
Babies learn to self regulate from their caregiving experiences

Suggested Reading


Understanding the Traumatized Foster Child
Parent Child Interactions

- **Cues:** look for distress & self-comfort cues
- **Showing affection:** empathy
- **Facial expressions & level of arousal**
- **Eye contact**
- **Gestures & vocalizations**

Use observation tool with Helping babies clip and with boulder boy clip

Play the video once, ask for feedback, then two to three times more concentrating on one area at a time.

Remember, we are watching both the child and the parent in these interactions. When things are working well it’s like watching a well-choreographed dance, when things aren’t working well it’s like watching me and my partner dance. We may look like we are trying but something is “off” and we certainly are not having a good time.

Small gestures, complicated, takes training in order to be aware of what we are looking for. At CMHC we often use two sets of eyes to observe visits or parent-child interactions because it’s so easy to miss.
Visit Coaching
Who Should Help?

- Too many children for assess-refer-treat model
- Professionals spending the most time with families often have the least support/professional development opportunities
- Large overlap between development & mental health problems
Targeting 3 Critical Needs

- They may not be able to regulate their attention, behaviour, appetite, sleep/wake cycles as expected
- They give puzzling cues
- They can provoke a negative response from caregivers

They may act as if they don’t want or need your help

They may be difficult to console

They may not turn to you for comfort /affection

They may appear to have little remorse
Targeting Critical Needs

- Increasing gap between expectations and abilities
- Have not developed the neural pathways required to manage behaviour
- Therefore …
Traditional strategies for handling sleep, food, or behavior problems, such as time outs, ignoring, withdrawal of privileges, letting them cry it out, etc. can be ineffective and sometimes even make things worse.
## Developmental vs. Behavioural Mistakes

<table>
<thead>
<tr>
<th>Developmental Errors</th>
<th>Behavioural Errors</th>
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<tbody>
<tr>
<td><strong>Children are trying to make the correct response</strong></td>
<td><strong>Children are trying to be disruptive</strong></td>
</tr>
<tr>
<td><strong>Errors are accidental</strong></td>
<td><strong>Errors are deliberate</strong></td>
</tr>
<tr>
<td><strong>Learning requires exploration</strong></td>
<td><strong>Children should obey</strong></td>
</tr>
<tr>
<td><strong>Children need extra support</strong></td>
<td><strong>Children need discipline</strong></td>
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Essential Life Skills

Emotional Regulation

Regulating Attention & Behaviour
  - focus & self-control
  - working memory
  - flexible thinking

Empathy Skills
  - perspective taking


Conclusions: Results suggest that self-regulation was a key process variable in the relationship between maltreatment risk and children’s development. The findings support targeting self-regulatory abilities to halt the progression of developmental difficulties often found in maltreated children.

Practice implications: The present study identified self-regulation as a mechanism for transmitting the effects of maltreatment risk to multiple domains of children’s functioning; these findings have important implications for intervention programs. Intervention programs that focus on fostering self-regulation in home and preschool settings should enhance developmental outcomes. Previous research has shown the utility of targeting self-regulation in reducing the frequency and intensity of students’ anger (Beck, R., & Fernandez, E. (1998). Cognitive-behavioral self-regulation of the frequency, duration, and intensity of anger. Journal of Psychopathology and Behavioral Assessment, 20, 217–229.). Within the context of maltreatment intervention, these programs have considerable utility. By tailoring programs to strengthen dysfunctional regulation processes common to maltreated children, cognitive and behavioral functioning should be enhanced.
Emotional Regulation: Parent to Their Emotional Age

- These are often mismatched
- Reduce expectations
- Make their world smaller: 3 foot rule
- Short, structured, supervised playdates
- Make it easier to produce the correct behaviour
- Manage the environment

Give them what they need, not what they deserve.
Children may require direct intervention to help them address areas of delay, including speech and language therapy, physical therapy, or occupational therapy.
Emotional Regulation:
Time In

- ‘Take charge’ moments
- Move closer to increase supervision
- Engage the child in a positive interaction
- Give verbal message – “I can see you are upset, I am going to help you”
- Use empathy, calm voice
Emotional Regulation: Co-regulate

- Parents can help children through joint attention and engagement
- Parents must regulate themselves first
- Touch
- Let’s take a rest!
- Respond to the need, not the cue - aspirin in the orange juice

It may be necessary for parents to address their own mental health concerns before they are able to assist their children in regulating their emotions. Families can be assisted by connecting with appropriate mental health resources. Calgary has numerous agencies with sliding scales or no fees associated. Contact ACCESS Mental Health (403–943–1500) to explore options available. If the parent is not eligible for services through Alberta Health Services they will assist you in exploring other options.
Regulating Attention & Behaviour

Practice Focus & Self Control

- Games that require attention – I Spy, Guessing Games, Musical Chairs, Simon Says
- Reading Together – start with picture stories, repetitive stories, engage the child
- Limit background noise, clutter, choices
- Be sensitive to the child’s coping ability
Regulating Attention & Behaviour

Working Memory
- Memory games, games with rules

Flexible Thinking
- Pretend play, sorting games, Opposite
  Simon Says, puppets
- Imagine if...
- Squiggle game
Building Empathy Skills

- Warm, trusting relationships build empathy skills
- Practice what you preach
- Avoid judgements, don’t condemn violent or uncomfortable themes in play
- Label feelings (good & bad)
- Play with dolls, play house, caring for younger sibs, pets
- Hostile attribution bias

Source: www.mindinthemaking.org
Building Empathy: Child-led Play

- Very effective at any age
- Simple rules
- Limit the available toys
- Limit stimulation
- Coaching


Most of the research on Child Led Play or Floortime, is by Stanley Greenspan and Serena Weider. There are several publications. Also the Collaborative Mental Health Care website has a pamphlet for parents. Additionally, Susan McDonough and Dianne Benoit, the Hinks Delcrest Institute and others have various therapies based on the concept of child led play.

There are only two rules: no breaking anything and no hurting anyone.
Most people need some coaching to avoid intrusiveness or taking over play.
Not a time for teaching colors or numbers, a time for building relationships.

A relationship-based intervention designed to facilitate affect, attachment and two-way communication between a child with special needs and an interaction partner.

Floor Time Intervention Strategy
Efficacy Rating Level #3

What is it?
Floor Time is a systematic way of working with children to help them move forward developmentally (Greenspan, 1992; Greenspan & Weider, 1997; Greenspan & Weider, 1998). It requires parent participation in the promotion of milestone mastery and involves a 20-30 minute interaction period, getting down on the floor with the child.

What are the goals?
1. To encourage & maintain intimacy and attention
2. To establish two-way communication: starting with subtle facial expressions & dialogue without words; moving to encourage dialogue that uses a child's emotions, hands, body, face, etc. to communicate
3. To encourage expression & use of feelings & ideas through drama & make-believe
4. To support logical thought as a child links ideas to feelings & connects thoughts

Key elements
1. Help child reestablish affective contact with primary caregivers; increased connection emerges from gestural/verbal interactions
2. Increases in relatedness lead to decreases in odd or stereotypic behaviors
3. Caregiver interacts with the child in ways that capitalize on the child's emotion, and follow the child's interests & motivations
4. Child can lead and play whatever captures the child's interest as long as the child interacts with the caregiver who turns isolated responses into 2-person activities

Circle of communication:
An interaction between two or more people in which one partner initiates, the second responds, and the first “closes the circle” by responding to the second. Interactions and initiations may be in the form of words, augmentative supported communication, motions, or gesture.
Circles of communication are critical components as the child learns to organize, follow, & communicate emotions.

Efficacy considerations
Greenspan & Wyer (1997) concluded the following through testimonials & chart review of 200 children:
- 58% were deemed to have “very good outcomes”: purposeful, organized problem solving interactions of greater than 50 circles of spontaneous communication
- increased trust and intimate connections with parents
- a heightened capacity for abstract thinking

Let your child lead
“OWL”

Observe
Wait
Listen

Source: www.hanen.org

See Hanen website at www.hanen.org
Observe

• What is your child interested in?
• What is in your child’s heart – what is in his/her mind?
Wait

- What are you waiting for?
- Give your child the time he/she needs to start an interaction with you
- Give your child time to respond
Listen

• **Understand your child’s message**

• **Let your child know his/her message is important**

• **If you don’t understand, guess**
Sleep

- Why do foster children have trouble sleeping?
- Change the clock
- Reassuring bedtime story
- Very predictable routines
- Co-sleeping
Food issues common in foster children include hoarding, insatiable appetite, picky eating or food refusal, food anxiety, tactile sensitivity

Dental check-up

Child ‘helper’ at mealtimes, avoid power struggles

Allow messy food play (mashed potato finger painting eg.), finger foods, etc.

Keep meals short, frequent healthy snacks

Keep food out of sight, set out small servings before seating child at table, predictable routines
(Almost) Everything I Need to Know About Being a Parent

• Always be bigger stronger wiser & kind
• Whenever possible follow your child’s need
• Whenever necessary take charge

Safe Hands Kind Voice

Source: Circle of Security
Case Examples
Acknowledgements

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• Harvard Center for the Developing Child - www.developingchild.net
• Frameworks Institute – frameworks.org
• Zero To Three - zerotothree.org
• Mind in the Making – www.mindinthemaking.org
Thank You!