


The Origins and Development of Early Mental Health

Dr. Chaya Kulkarni (BAA, M. Ed, Ed. D)
Director of Infant Mental Health Promotion at the Hospital
for Sick Children
Best Start Resource Conference 2015





The Fable



Myth #1

Infants don't have mental health.

- Do infants show emotions?
- Do infants, even young infants, respond to comfort?
- Do infants respond to people?



Myth #2

Infants will only form an attachment to caregivers who are consistently responsive and loving.



Quality of Attachment Counts

“A child attaches to the caregiver regardless of the quality of care received, even if the caregiver is abusive and neglectful. While a neural system that ensures attachment regardless of the quality of care has immediate benefits, this attachment comes with a high cost. Traumatic experiences interact with genetics to change the structure and function of the brain, compromising emotional and cognitive development and initiating a pathway to pathology.”

Sullivan, R.M. (2012). *Hastings Law Journal*. Volume 63:1553





Bonding & Attachment

Are not the same thing

<p>Bonding is the connection that starts to form between caregivers and their babies early in life. When caregivers engage with their children, play with their children etc...the bond strengthens over time</p>	<p>Attachment requires the caregiver to be aware of their infant/child and to respond to their child's distress.</p> <p>Attachment refers to a child's emotional connection with a primary caregiver that usually begins at birth. The child initiates interactions with the caregiver, including verbal and nonverbal cues to get their needs met.</p> <p>Also known as serve and return</p>
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Caregiver initiatedChild initiated

Adapted from Best Start 2015, in Press

- For infants, insensitive or unresponsive parenting has been found to be among the strongest predictor of insecure attachment (e.g. Egeland & Farber, 1984) and infants difficulty in establishing effective self-regulation skills (e.g. Tronick & Gianio, 1986)

Adapted from Best Start 2015, in Press

Which is better?

Adapted from Best Start 2015, in Press

Myth #3

Infants won't remember the negative experiences they have early in life including the emotional ones.



Do Young Children Remember?

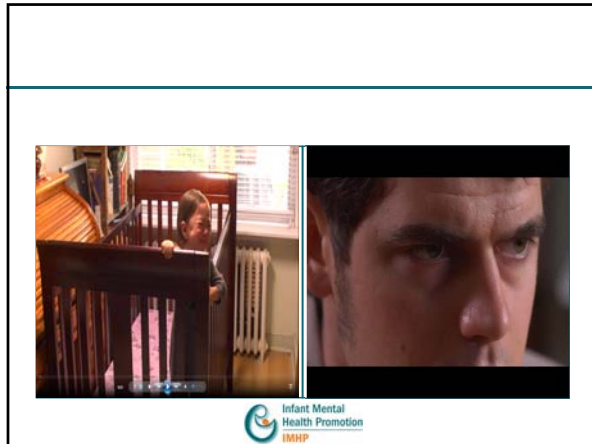
- Implicit (subconscious) versus explicit (verbal) memory
- After acquiring language, children describe pre-verbal experiences
- Memory is not static: It is constantly being recreated
- Children may misunderstand events that they remember



PSA

- Not only does a child remember, these experiences will influence a child's development, especially when they are recurring





Myth #4



Infants are resilient and will easily recover from early persistent stress and/or adversity.



Myth #5

Early experiences don't really count – it's what happens when they start school that really matters.

All I really need to know I learned in kindergarten



Myth #6

It is not possible to recognize poor mental health during infancy.



Developmental Consequences for Trauma Exposure

- | | |
|--|---|
| Sleep problems | Anxiety |
| Eating problems "Re-experiencing" or playing out memories of the event | PTSD |
| Toileting problems | Relationship problems – including poor attachment or attachment disorders |
| Withdrawal | Depression |
| Increased clinginess/separation | Dysregulation of stress system |
| Unresponsive | Low self-esteem |
| Verbal or language difficulties | Preoccupation with the traumatic event such as bringing up the episode repeatedly or uncontrollably |
| Developmental regression | |
| Onset of new fears | |
| Aggressive outbursts or increased activity level | |



Myth #7

Infants and toddlers who experience neglect and/or abuse are getting the help they need to address their mental health needs.



Myth #8

Infants and toddlers cannot learn to regulate emotion and behavior until they are in school and guided by a teacher.



Myth #9

It is easier to address behavior problems once children enter school.





Myth #10

Poor mental health can only be detected once children enter the formal school system.




Where's Waldo?

- It's a little bit of **Where's Waldo** when it comes to finding anyone paying attention to infant mental health



We looked....and looked

- We reviewed government documents – federal, provincial, municipal – no mention of infants and their mental health
- We even asked our national commission on mental health and they admitted babies and toddlers had been left out (to their credit they are trying to correct this now)
- We scanned the papers for months and the only evidence of a baby who may have been suffering from poor mental health was when that baby had died
- A recently announced conference on mental health and the law again failed to have a speaker about infants and toddler mental health when the baby or toddler is involved with family courts and/or child welfare



The images we do see are:

- Perfect babies in perfect families
- Babies of colour in other countries far away who are suffering
- References to children that exclude babies



What is being ignored...

- Many of these children are those who end up in our agencies
- They are babies and toddlers who have experienced trauma and neglect and have not had the supports necessary to recover
- They are unable to speak, unable to tell you what they have experienced and what they are feeling
- However, to think that the trauma they have experienced has not impacted their mental health is naive



Your Context....

- **Many of you deal with the most vulnerable people** within Canada – those most vulnerable to poor mental health
- **They have no voice**
- **They are dependent** on those around them to protect them from harm and meet their basic needs
- **They are at HIGH risk** for a life time of poor outcomes physically, emotionally and cognitively



Your Context...

- Often, speech and language delays are picked up by a parent or another practitioner
- In some cases, such a delay may be occurring in conjunction with a mental health issue
- The mental health issue could be with the parent, the child, or both



You have set an example

- Communities are identifying speech and language concerns earlier
- Communities, with the leadership of speech and language clinicians, have established pathways to service
- However, increased demand can lead to increased wait times
- If the speech delay is connected to a mental health issue, repair must begin immediately



***Today (regardless of your role)
I hope you will***

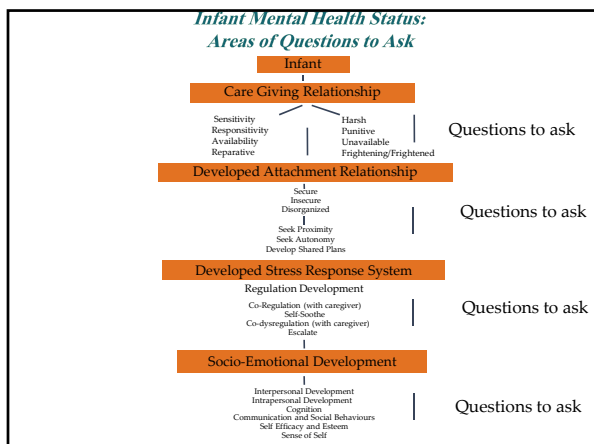
- **See yourself as a leader in the promotion of infant mental health**
- **Create knowledge and seek knowledge**
- **Inspire and be inspired by the opportunities science is showing us exist**
- **Truly believe that you will make a difference**



Social History

Understand a infant or toddlers social history can provide much insight
 Ask questions about that child's relationships
 Learn how that child is responded to when stressed
 Ensure any developmental services a child needs are identified and accessed immediately – wait times can derail development






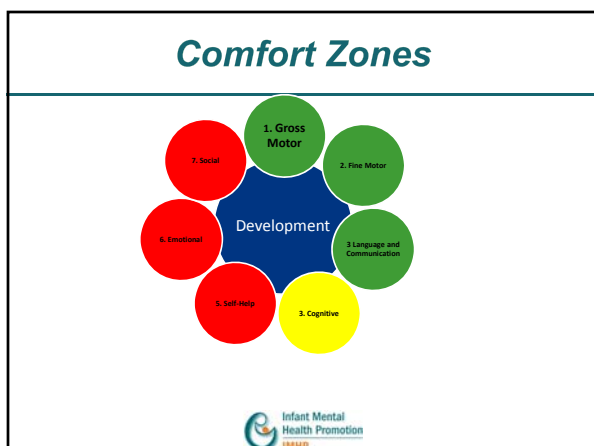
In a Pilot Study

- Training for practitioners on early mental health and the immediate development and implementation of developmental support plans resulted in:
- Significant change in practitioner knowledge and capacity to support the child and family
- Improved scores on developmental screen
- Those children who did not receive a support plan did not improve when rescreened

Anecdotally:

- Judges at both Jarvis and Sheppard Courts are beginning to ask for DSPs
- Wait times for additional services are reduced when developmental screening scores are available





Assessment Process



Family Interview:

- Implicit concerns
- Explicit concerns

Working Alliance:

- Develop shared goals

Understand Reason for Referral:


- Problem
- Duration
- Adjustment strengths

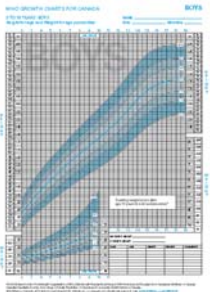
Developmental History:


- Early days
- Temperament
- Prenatal, perinatal, postnatal complications
- Behavioural organization: sleep, eat, alertness



Child health is about more than growth charts







All Children Could & Should be Doing Better







It's Not Just What's on the Outside that Counts






What is infant mental health?

Infant mental health is the social, emotional & cognitive well being of infants and toddlers
It refers to:

- How an infant experiences, expresses, and regulates emotions, as well as recovers from dysregulation of these emotions
- How an infant learns to establish trusting relationships and repair conflict within them
- How an infant explores and learns from her environment, managing and mastering fear and trepidation when they arise

Zero to Three, 2002



Infant mental health begins before a baby is born

- Stress in pregnancy is associated with:
 - Smaller birth weight
 - Increased basal HPA activity up to age 10 years
 - Unsociable and inconsiderate behaviours
 - ADHD
 - Sleep disturbances
 - Depressive symptoms
 - Drug abuse
 - Mood and anxiety disorders

All of these can be thought of as failures of regulation



Developmental Framework

Age	Stage of Development	Behaviors
0-12 months	Attachment	-regulation -recognizable states -attachment -communication
12-30 months	Autonomy & Self Development	-differentiates between self and others; real and make believe -self control; rules
30 months-7 years	Establishing Peer Relations	-empathy -gender differences -identification of friends -interest in other children

(Cicchetti, 1993)

Outcomes of Positive Early Mental Health

- Form Secure Attachment
- Emerging capacity to experience, regulate and express emotion
- Explore the environment and learn
- Optimal Brain Development


Infant Mental Health & Development are Intertwined

Infant mental health = healthy social & emotional development that includes the infant's capacity to:

- Experience, regulate, & express emotions
- Form close interpersonal relationships
 - Explore the environment & learn


Early childhood experiences set the body for later health

- Early childhood neglect and abuse increased risk for CVS disease 7X and for mental health problems 10X. (Lundberg 1993)
- Increased duration of neglect associated with increased dysfunction to the HPA system and the less the HPA system recovered when conditions improved. (Gunnar & Cheatham 2003)
- Earlier age of maltreatment and longer duration of maltreatment associated with smaller brain (De Bellis et al. 1999)
- Socioeconomic gradients in health can be detected by age three (Case 2002)
- Evidence that intrauterine stress may predispose to lifelong vulnerability to stress and disease (Gluckman and Hanson 2004, Seckl 2004, Phillips, 2000).



Outcomes of Positive Early Mental Health

- Secure Attachment
- Capacity for Self-Regulation
- Resilience
- Optimal Brain Development




Adverse Childhood Experiences Can Last A Lifetime

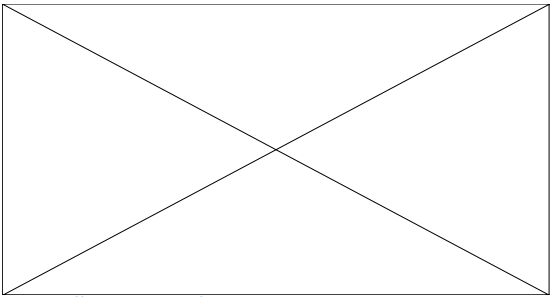
- Emotional, physical or sexual abuse
- Domestic violence against the mother
- Household member with mental illness
- Household member with substance abuse
- Household member ever imprisoned
- Absence of one or both parents
- Physical or emotional neglect

Can predict the 10 leading causes of adult death/disability


(ACE Study, Felitti et al. 1998)



Christian the Lion




<http://www.youtube.com/watch?v=rqhljwUjKX8>




Convergence of Fields

- Findings from neuroscience, developmental psychology, molecular biology, economics and program evaluation MUST influence our practice....

But first we need to be aware of what these findings are!



What Promotes and What Derails Early Mental Health




Why do we need to be so concerned?

- Not paying attention to mental health in the early years can have lasting long term implications

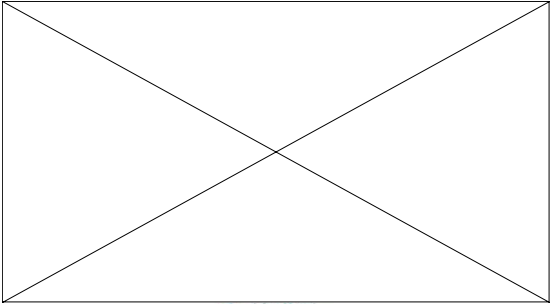


Why do you need to be so concerned


- Sometimes the speech and language issue is what presents
- However, the underlying cause of a speech delay (aside from those related to a medical condition) may be vulnerability in terms of social emotional health of the child
- This could include neglect, maltreatment, abuse, parental mental health, etc.



Building Adult Capabilities – Harvard Video



http://www.youtube.com/watch?v=urU-a_Fs5Y



What Makes Some Kids Vulnerable?

Poor mental health in the early years can happen for many reasons:

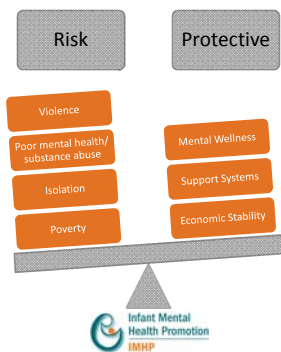
1. Vulnerability due to trauma exposure
2. Vulnerability due to multiple risks
3. Vulnerability due to other (i.e. biological)



Risk and Protective Factors in the parent child relationship



Risk and Protective Factors in the parent child relationship



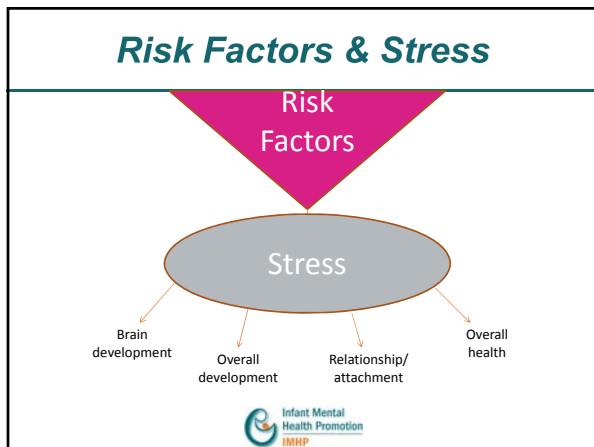
Frequent Traumatic Stressors in Early Childhood

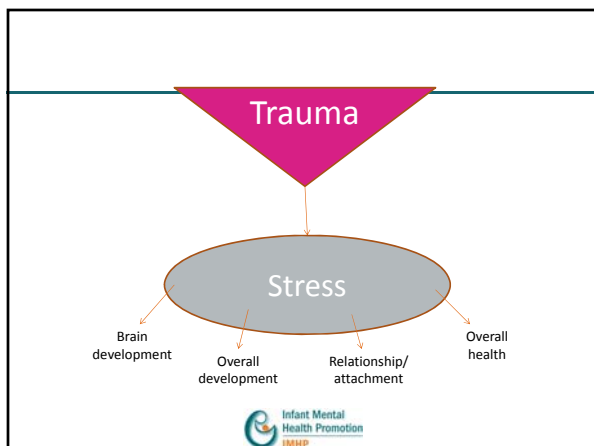
- Exposure to violence
 - Child Abuse
 - Domestic Violence
 - Community Violence
- Accidents
 - Car crashes
 - Near drowning
 - Dog bites
 - Burns

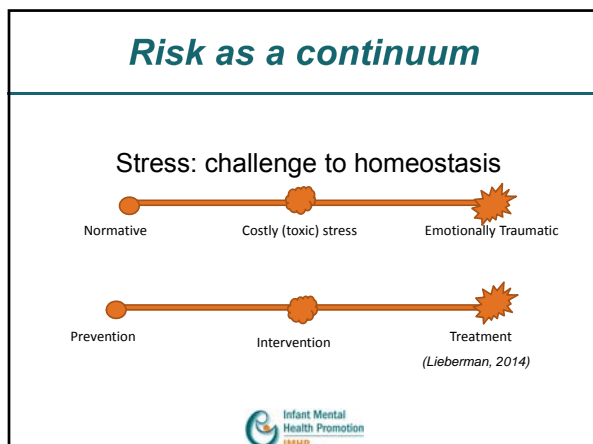


(Lieberman, 2014)









Risk Factors...



Exposure to toxins
Stability of housing



Parental mental health
Substance abuse

Risk Factors continued...






Family Violence
Unemployment
Level of education
Single parenthood


Developmental Consequences for Trauma Exposure

Sleep problems	Anxiety
Eating problems "Re-experiencing" or playing out memories of the event	PTSD
Toileting problems	Relationship problems – including poor attachment or attachment disorders
Withdrawal	Depression
Increased clinginess/separation	Dysregulation of stress system
Unresponsive	Low self-esteem
Verbal or language difficulties	Preoccupation with the traumatic event such as bringing up the episode repeatedly or uncontrollably
Developmental regression	
Onset of new fears	
Aggressive outbursts or increased activity level	



Neurobiological Effects Of Early Childhood Trauma

- Structural Effects: Larger lateral ventricles; smaller intracranial volume (De Bellis, Keshavan, et al., 1999)
- Chemical effects: Dysregulation of stress hormones (De Bellis, Chrousos, et al., 1994; Hart, Gunnar, & Cicchetti, 1996; Kroupina et al., 1997; Tarullo & Gunnar, 2006)
- Neuropsychological effects: Higher neurological sensitivity to angry visual and auditory stimuli (Pollak, Cicchetti, Klorman, & Brumaghim, 1997; Shackman, Shackman, & Pollak, 2007)
- Chromosomal Effects: Telomere erosion; shorter telomere length (O'Donovan et al., 2011; Shalev et al., 2012) (Lieberman, 2014)




What is the impact of early trauma?

Early trauma:

- Affects a young child's overall development, brain development, behaviour and relationships, and language development
- When undetected and untreated, will impact short and long term mental and physical health outcomes
- Is much harder to recover from the longer it continues undetected and untreated
- Often leads to prolonged and frequent stress for the child

For these reasons, early detection and early intervention are critical for young children



Trauma Interventions that Work

- Encouraging motivation
 - Cultural attunement: readiness to learn
 - Focus on relationships: with others, with self
 - Developmental guidance
 - Emotional support
 - Trauma focus: Traumatic triggers, perceptual distortions
 - Relevant past experiences: ghosts and angels
 - Home visits: accessible but not intrusive
- (Olds, 1997, 1999; Heinicke et al. 2003, in press; Lieberman, 1991; Lieberman et al., 2005, 2006; van den Boom, 1994)

(Lieberman, 2014)



Maladaptive Caregiving Behaviours

- | | |
|-------------|--------------------------------|
| Rejecting | Inconsistent |
| Punitive | Intrusive |
| Withdrawn | Over-promoting attachment cues |
| Frightening | Role reversal |
| Frightened | Dissociative |



Isolation



- Toxic to infants
- Absence of social emotional buffers



Indifference



- Toxic to infant
- Clued in but not great at it is better than indifference or isolation



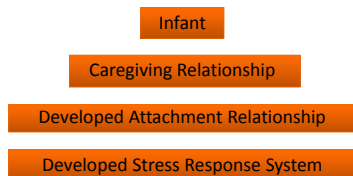
Neglect



- Withdrawn
- Rejecting
- Frightened/frightening
- Punitive
- Inconsistent



Infant Mental Health Status




- Regulation development
- Co-regulation (with caregiver)
- Self-soothe
- Co-dysregulation (with caregiver)
- Escalate




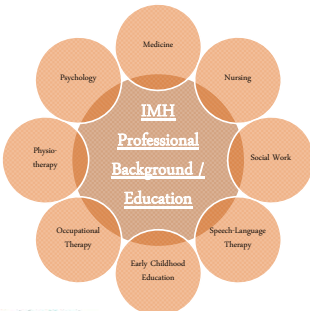
Our Reality in Canada

- In most provinces and territories, we do not have a degree that makes someone an Infant Mental Health Specialist
- Consequently, we need to embed infant mental health expertise into the variety of professionals working with this population




The Interdisciplinary Nature of IMH

Practitioners in the field of infant mental health (IMH) come from diverse educational backgrounds



What Infants Need

- All infants need to know that they have a “champion” – someone who will:
 - Protect them from harm
 - Respond to their needs – especially when they are distressed



Trauma and Protective Factors

- When a child is vulnerable to continued exposure to any of these experiences they are more likely to be traumatized
- At the time of the trauma the protective factors surrounding a child may help a child overcome and recover from the event
- But for too many infants and toddlers those factors are not consistently present in their lives



The Evidence is Mounting

- Early Childhood Investments Substantially Boost Adult Health, 2014. Campbell, F; Conti, G; Heckman, J.J; Moon, S.H; Pinto, R; Pungello, E; Pan, Y. www.sciencemag.org.
- Royal Society of Canada & The Canadian Academy of Health Sciences Expert Panel – Early Childhood Development, 2012. Boivin, M; Hertzman, C; Barr, R.G; Boyce, W.T; Fleming, A; McMillan, H; Odgers, C; Sokolowski, M.B; Trocmé, N. https://rsc-src.ca/sites/default/files/pdf/ECD%20Report_0.pdf



The Strength of a Foundation

“...early experiences create a foundation for lifelong learning, behaviour, and both physical and mental health. A strong foundation in the early years increases the probability of positive outcomes and a weak foundation increases the odds of later difficulties.”

The Science of Early Childhood Development, Centre of the Developing Child, Harvard University, 2007



“Dramatic new discoveries about the impact of adversity on critical periods of development underscore the need for more urgent attention to the infant/toddler periods for the most disadvantaged children.”
- Shonkoff, 2014, NTI



***Research Overview:
What Influences Early
Mental Health and Later
Health Outcomes***

***If Mental Health Were as Obvious
as Physical Health***



Lung Cancer Cells



The Greatest Challenges

- Babies don't speak – how do we begin to understand their journey?
- They can be difficult to find – I think of the multi-story buildings in cities
- Babies experience trauma and neglect very differently to adults



Insert & Embed the Science

- Into practice with caregivers
- Into discussions with teams
- Into policies
- Into reports
- Into court proceedings

When the science is left out the impact is less obvious



Ethically....

- Would we be okay if:
 - Our physician did not stay abreast of science
 - Our dentist did not stay abreast of science
 - If those who fix our cars were not current with the technology
 - If those who design our homes were not fluent in fundamental scientific principles of construction



Concept 1

Unresponsive Care is Neglect for an Infant

- Occasional inattention – diminished attention in an otherwise responsive environment
- Chronic Under-stimulation – ongoing diminished child-focused responsiveness
- Severe neglect – ongoing absence of responsive care – failure to provide basics
- Severe institutional neglect – warehouse conditions

National Scientific Council on the Developing Child (2012). The Science of neglect: The Persistent Absence of Responsive Care Disrupts the Developing Brain: Working Paper 12 <http://www.developingchild.harvard.edu>



Neglect Derails Development

- Neglect can be a greater threat to development than abuse
- The impact of neglect will be different depending on the child's age
- For infants and toddlers, we see delays in their ability to understand and manage emotions, cognitive delays, impairments in executive functioning and stress response
- Just removing a child from an environment of severe neglect is not a guarantee of positive outcomes

National Scientific Council on the Developing Child (2012). The Science of neglect: The Persistent Absence of Responsive Care Disrupts the Developing Brain: Working Paper 12 <http://www.developingchild.harvard.edu>



Faces



A.N.Meltzoff & M.K.Moore 1977
Science 1977 198 75-78



A Citizen and Competent from Birth




Amazing Talents of the Newborn |
Johnson & Johnson Infant Mental Health Institute



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Apply the Science: Recognize Responsive Care as a Basic Necessity for Infants and Toddlers


If you ask these questions	Your plan of action may change
When assessing a protection concern am I considering the absence of responsive care? How can I assess responsive care?	Observe the interaction between caregiver and child. How does the caregiver respond to distress? Familiarize yourself with observation tools such as the Piccolo that are not diagnostic but can help understand the quality of the caregiving relationship Model responsive care Engage in conversations



Concept 2

Brains and skills are built over time right from conception.

The experiences of the early years will influence both the brain and the genes – often referred to as the architecture and or the foundation for all learning to come



The Developing Brain

<http://www.youtube.com/watch?v=mMDPP-Wy3sl>

Critical Periods

Critical periods of brain development are times of significant opportunity.
 Experiences that occur during critical periods have an extraordinary power to shape brain development.
 These periods tend to occur early in life, making early experiences important to understand.
 Based on the instructions received from the system, the brain may adapt to optimize the expectation of a similar experience in the future

Brain Development

700 new neural connections are made every second in the first three years of life – but environment and experience can change that for a baby

This period of brain growth devours more calories than any other phase of development


Data source: C. Nelson (2005). Graph courtesy of the Center on the Developing Child at Harvard University

Types of Brain Development


According to the late William Greenough-Psychologist

TWO TYPES OF DEVELOPMENT THAT OCCUR IN THE BRAIN

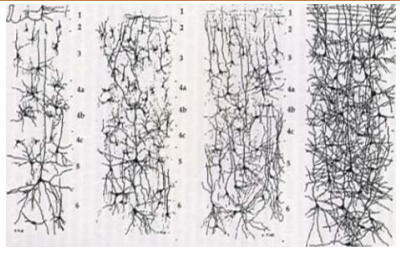
- 1. Experience Expectant** - The Brain Expects to receive specific types of experience during a defined period. (SENSITIVE PERIOD)
- 2. Experience Dependent** - Development which occurs due to interaction with the child's environment



Experience Expectant - Lorenz and imprinted ducklings walking after him




Brain Growth in the Early Months



newborn 1 month 3 months 6 months

www.developingchild.harvard.edu Center on the Developing Child HARVARD UNIVERSITY



BUILDING THE BRAIN

Synapse Formation and Pruning

BIRTH
6 YEARS OLD
14 YEARS OLD

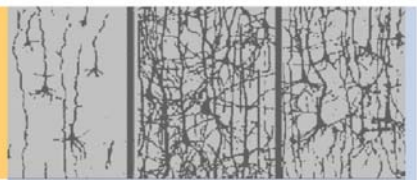


Photo: H. Chapman, from Sheer, 1997, *Rebuilding the Brain*

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Owl Brain Circuits

The Power of New Circuits

Normal After Prism Experience

Kamdev et al. 2007

Infant Mental Health Promotion
IMHP

(Cameron, 2014)

Ability to change brains decreases with age

The Brain's Ability to Change in Response to Experiences

Amount of Effort Such Change Requires

Birth 2 4 6 8 10 20 30 40 50 60 70

AGE

Infant Mental Health Promotion
IMHP

In Utero and during lactation maternal experience has a major influence on baby

Dad's behaviour ⇒ Influence Mom
⇒ Influence baby

From Lad to Dad
Stephen Giles

Infant Mental Health Promotion
IMHP

R Gibb U of Lethbridge

Brain Plasticity

Connections are formed and altered by experience

But, not done until at least age 24+years...

Infant Mental Health Promotion
IMHP

Apply the Science: Brains are Built Over Time

By asking questions...	We may change the system's response
<p>What is the system doing to build this baby's brain?</p> <p>How is system supporting this child's caregivers in learning how s/he can support this baby's brain development?</p> <p>Who else can help build this baby's brain?</p>	<p>Encourage and support serve and return throughout this child's day</p> <p>Model, recognize the strengths</p> <p>Begin to build a village to help build this child's brain</p>

Infant Mental Health Promotion
IMHP

Concept 3

Brain Architecture and Skills are Built in a « Bottom Up » Sequence

- The circuits that process basic information are wired before those that process more complex information
- Those circuits that will process more complex information will be built on the earlier circuits
- The architecture of those higher skilled circuits will be compromised if the lower level circuits are not properly wired

Infant Mental Health Promotion
IMHP

Development Counts but Who is Watching?

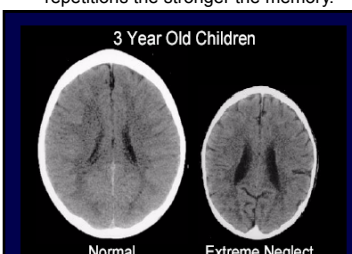
- “Developmental structures are incorporated into later developmental structures, so that early competence tends to foster later competence, and early incompetence tends to promote later incompetence” (Cicchetti & Cohen, 1995; Waters & Sroufe, 1983)



Use it or lose it!

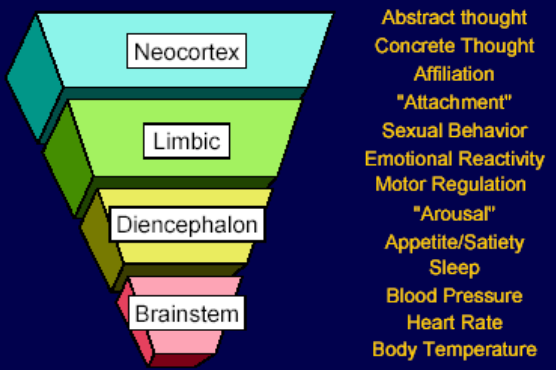
The more a system, or set of brain cells is activated, the more that system changes in response. The stronger the repetitions the stronger the memory.

3 Year Old Children



Normal Extreme Neglect

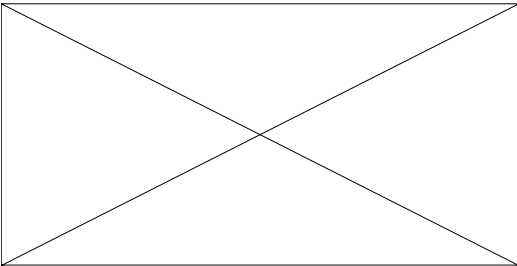
www.ChildTrauma.org All rights reserved © 2002 B.D. Perry




Neocortex	Abstract thought Concrete Thought Affiliation "Attachment"
Limbic	Sexual Behavior Emotional Reactivity Motor Regulation
Diencephalon	"Arousal" Appetite/Satiety Sleep
Brainstem	Blood Pressure Heart Rate Body Temperature

www.ChildTrauma.org 22 All rights reserved © 2002 B.D. Perry

Brain Hero – Harvard Video




http://developingchild.harvard.edu/index.php/resources/multimedia/brain_hero/



Apply the Science: Bottom Up!


If you ask the questions	How you understand a child's behaviour may change
<p>Am I familiar with the sequence of brain development?</p> <p>What are critical periods of brain development that I should know?</p> <p>Are the expectations for this child in line with the status of his/her brain development?</p>	<p>Have behaviour expectations that reflect this child's brain development</p> <p>Ensure that positive experiences occur throughout daily routines to reinforce connections in the brain</p>




Concept 4

Brain Plasticity – The Ability to Change Decreases Over Time

- Plasticity is the brain's ability to change in response to stimulation
- But, as we get older brain circuits stabilize – harder to change
- The opportunity to change exists even after the early years – the cost of remediation grows with age




What's Easier to Build?




- “It is easier to build strong children than repair broken men” (Frederick Douglas)
- Cumulative costs of special education over the lifespan exceed the costs of intervening early

(M.E.Wood, "Costs of Intervention Programs." In Corinne Garland, Nancy W. Stone, Jennie Swanson, and Geneva Woodruff, eds., Early Intervention for Children with Special Needs and Their Families" 1991)





Apply the Science: Ability to Change Decreases

If you ask the questions	What you do may change
<p>Are we making the most of this rapid period of development?</p> <p>Are we assuming that other systems such as education will “fix” this child?</p>	<p>Look carefully at a child’s daily routines and use these as opportunities to support brain development</p> <p>When you see a delay, study it, consult with others, develop a plan – do not wait for others to step in</p>



Concept 5

Serve and Return is essential to early learning, health and wellbeing

Babies are born relationship ready – their growth is dependent on the relationships they have in their daily life



Serve and return

Infants naturally reach out for interaction through babbling, facial expressions and gestures



Adults respond –this is essential for the development of healthy brain circuits



What kind of relationships do babies and toddlers need to support their mental health?

Responsive

– I am here to meet your needs, comfort you and protect you

Engaged

– I want to be with you, play with you, watch you grow and be a big part of your world as you are a big part of my world

Present


– I am here in body, mind and soul, you have my full attention and my love



Emotional Development Consequences

- Meta-analyses → consistent associations between PPD and insecure attachment
(Martins and Gaffan, 2000; Atkinson et al., 2000; Campbell et al., 2004)
- For infants insensitive or unresponsive parenting has been found to be among the strongest predictor of insecure attachment
(e.g., Egeland & Farber 1984) and infants' difficulty in establishing effective self-regulation skills
(e.g., Tronick & Gianio 1986)


(Dennis, 2015)



Two types of parenting education:

- 1) Providing parents with information or encouraging parental involvement with the ECE program
- 2) Modeling and providing parents opportunities to practice developmentally appropriate adult/child interactions

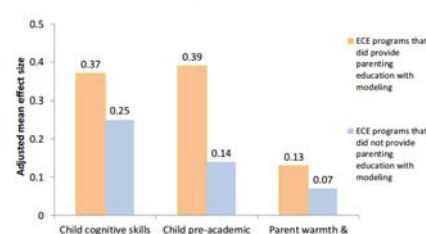
• (Shonkoff, 2014)



Parent Engagement Makes a Difference!


When you add a parent education component AND a coaching component, there is a significant change in a child's skills.

RQ#2: Adjusted mean effect sizes for ECE programs that did and did not offer parenting education with modeling:




Category	ECE programs that did provide parenting education with modeling	ECE programs that did not provide parenting education with modeling
Child cognitive skills	0.37	0.25
Child pre-academic skills	0.39	0.14
Parent warmth & skills	0.13	0.07

(Grinda, Bowne, Yoshikawa, Schindler, Duncan, Magnuson, & Shonkoff, 2013)




The Difference that Makes a Difference


- Enjoy more happiness with their parents
- Feel less anger at their parents
- Turn to their parents for help when in trouble
- Solve problems on their own
- Get along better with friends
- Have lasting friendships
- Know how to be kind to those around them
- Solve problems with friends
- Have better relationships with brothers and sisters
- Have higher self-esteem
- Know that most problems will have an answer
- Trust that good things will come their way
- Trust the people they love

 Infant Mental Health Promotion
1 Circle of Security © 1999 For copyright information go to www.circleofsecurity.net

All Settings Count




Its important to note that systems that support the quality of relationships in early care settings such as foster care and daycare, communities and homes, also support the development of sturdy brain architecture

 Infant Mental Health Promotion

Apply the Science: Serve & Return


If you ask these questions	What you do may change
What does serve and return look like for this baby? Is every caregiver of this baby providing positive serve and return Are the serve and return experiences positive or negative? Do positive serve and return experiences describe most of this child's day? If not why not?	With caregivers, talk about their baby's feelings – "what do you think she feels when you smile at her? Or when you don't respond to her cries?" Coach and model positive serve and return during access visits. Connect a child and family to services where positive serve and return will happen frequently (OEYC)

 Infant Mental Health Promotion

Concept 6


We Influence Gene Expression

- Epigenetics
 - Experiences influence gene expression
 - The expression of genes will influence brain development



EPIGENETICS

- ~~Nature vs. Nurture~~
- ~~Nature and Nurture~~
- 'Nature dancing with nurture over time'




Early Experiences Alter Gene Expression & Shape Development

Epigenetics:


- A molecular approach to studying the influence of early life experiences.
- Changes in gene expression caused by mechanisms other than the underlying DNA
- Modern advances in our understanding of factors that control gene activity

• (Champagne, 2014)



Epigenetics

When a baby interacts with her environment that experience can leave a chemical signature on a baby's genes



This can potentially mute some genes and amplify the expression of others.


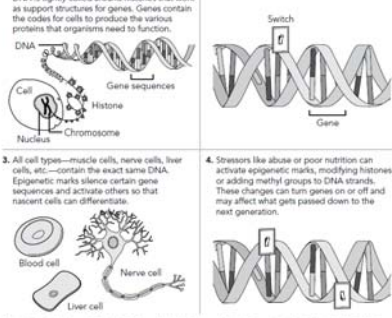


FIGURE 2.1 Cells and genes

- The human body has trillions of cells, each one with a nucleus, its command centre. The nucleus of each cell contains chromosomes. Within the chromosomes, long, double-helix strands of DNA are made up of specific segments of genetic code, known as genes. DNA is tightly coiled around histones that work as support structures for genes. Genes contain the codes for cells to produce the various proteins that organisms need to function.
- Experiences leave a chemical "signature," or epigenetic mark, that sits atop the genes, which determines whether and how the genes are expressed—or switched on or off. Collectively, these signatures are called epigenome.
- All cell types—muscle cells, nerve cells, liver cells, etc.—contain the exact same DNA. Epigenetic marks silence certain gene sequences and activate others so that nascent cells can differentiate.
- Stressors like abuse or poor nutrition can activate epigenetic marks, modifying histones or adding methyl groups to DNA strands. These changes can turn genes on or off and may affect what gets passed down to the next generation.




Adapted from Gluckman, P., Beal, A. & Hanson, M. (2007). National Scientific Council on the Developing Child (2012). Solovick, M. (2011).

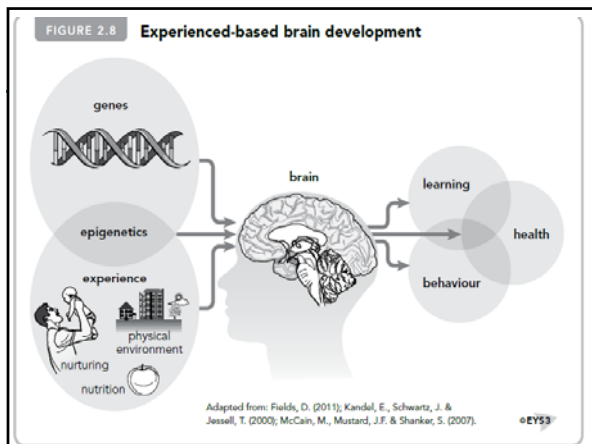
Genes and the social environment

Map of human genome in 2001 was heralded as a triumph of biological science

“...evidence suggests that the social environment has a profound impact upon the function of one's genes, providing the context and stimulus for the variable expression of an inherited code.”




Derberg, AE, Daneman D. Pasca's Wager: From science to policy on early childhood development. Can J Public Health 2010;101(3):235-36.

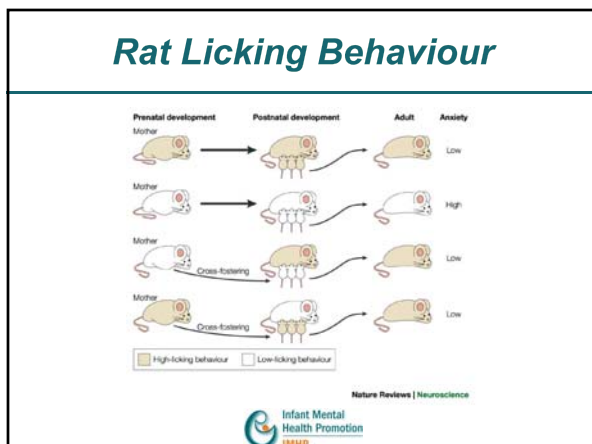


Experience & Heredity

- Research now shows that many capacities thought to be fixed at birth are actually dependent on a sequence of experiences combined with heredity. Both factors are essential for optimum development of the human brain

(Shonkoff and Phillips, 2000)




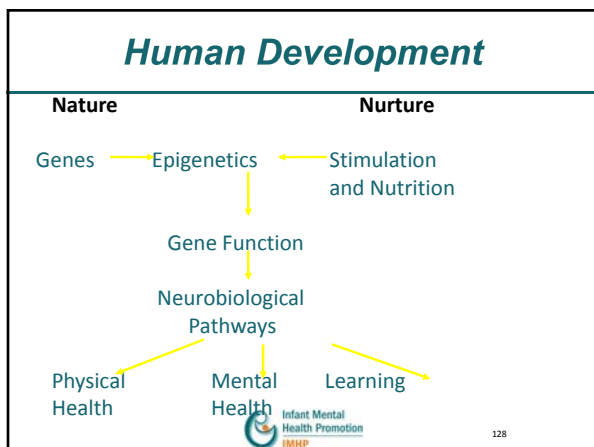


Familial Transmission

- Epigenetics is helping us understand how maternal care is transmitted across generations
- Through epigenetics, we are gaining an understanding how parents shape the future parental behaviour of their children
- Epigenetics helps us to understand the pathways environmental experiences take to become embedded internally within genes and ultimately brain architecture

(Champagne, 2014)





Science in Seconds: Epigenetics


- <http://www.albertafamilywellness.org/resources/video/science-seconds-epigenetics>



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Apply the Science: We Influence Gene Expression


If you ask the questions	The caregiver may see her role differently
<p>What experiences is this child given that positively influence gene expression?</p> <p>What are the negative experiences a child is having that may negatively influence gene expression?</p>	<p>Remind the caregiver that s/he is this baby's favourite toy</p> <p>Talk about the idea that a child is born relationship ready and their development after birth is in fact, dependent on relationships</p> <p>Talk about how positive experiences are more likely to support positive gene expression and negative experiences more likely to support poor expression</p>



Concept 7

Toxic Stress Derails Development

- Can be experienced by infants, toddlers and preschoolers
- For infants, the existence of such stress occurs within the primary caregiving relationship




Toxic Stress Can be Real for a Baby

- Infants can experience levels of stress that are toxic to their development
- The impact of toxic stress on the development of a young child can alter development profoundly



What is Stress to a Baby?

- Takes place in the caregiver relationship
- Not a specific event but chronic stress that impairs development
- The repetitive & sustained failure to help infant manage distress
- When caregivers are extraordinarily inconsistent, frightening, intrusive or neglectful




Levels of Stress

Positive stress – Brief increase in heart rate, mild elevations in stress hormone levels


Tolerable stress – serious, temporary stress responses, buffered by supportive relationships

Toxic Stress – prolonged activation of stress response in the absence of protective relationships



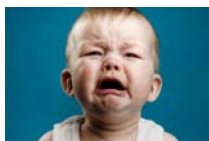
Toxic Stress & Brain Development

- Toxic stress is the frequent, prolonged activation of the stress response system
- Triggers the release of chemicals that impair brain development and functioning
- World wide data on the lifelong implications of stress in early childhood



- Early life stress accelerates the maturation of circuits such as the fear circuits.

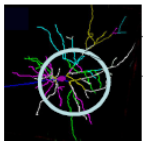
• (Shonkoff, 2014)




NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD

Toxic Stress Changes Brain Architecture

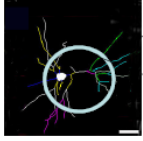
Normal




Typical neuron—many connections



Toxic stress



Damaged neuron—fewer connections



Prefrontal Cortex and Hippocampus

Sources: Radley et al. (2004)
Bock et al. (2005)

Attachment: Importance of Touch

- Preterm infant massage therapy
- Increases infant vagal activity & gastric motility that are associated with greater weight gain
 - Increases infant temperature
 - Reduces infant stress behaviors & activity
 - Reduces mothers' depressed mood & anxiety levels

Diego, Acta Paediatrica, 2007
Diego, Infant Behavior & Development, 2007
Hernandez-Reif, Infant Behavior & Development, 2007
Feijo, Infant Behavior & Development, 2006



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Newborn Development

Tactile stimulations facilitate :

“the flow of affective information from the infant to the mother”

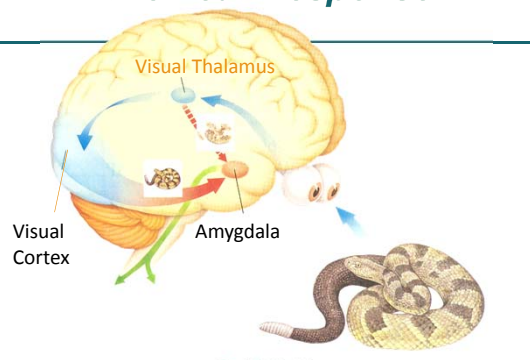
“the language of mother and infant consists of signals produced by the autonomic nervous system of both parties”.


- This is the basis of healthy development!



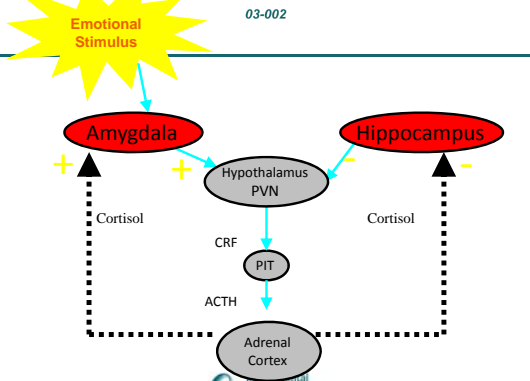
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The Fear Response




 Scientific American
 The Hidden Mind, 2002, Volume 12, Number 1

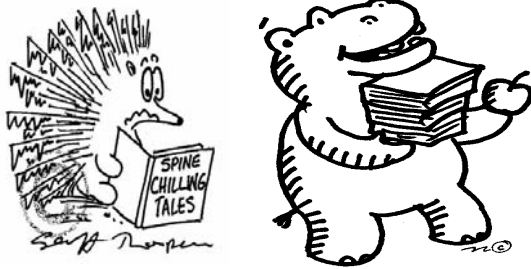
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 LeDoux, *Synaptic Self*

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Amygdala and Hippocampus



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Maternal Stress

Affects HPA axis in offspring
Can alter susceptibility to later disease/ drug taking
Affects males more than females



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Maternal style



Mothering has a lifelong influence on health of offspring
Passed on from generation to generation via epigenetics



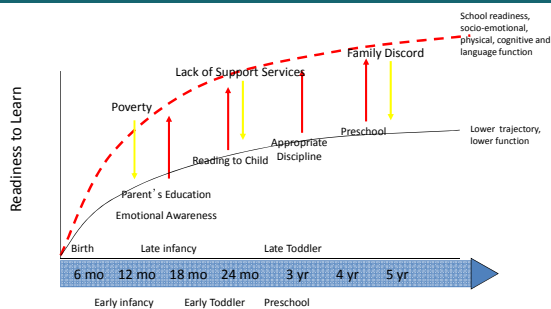
Concept 8

Watch Development – Early Identification Can be a Game Changer

- Tools are now available that enable early identification of delays even if there is not an etiologic explanation
- If young children are not provided appropriate help, emotional difficulties that emerge early in life can become more serious disorders over time



Strategies to Improve Healthy Development and School Readiness Trajectories



Adapted from Halton N, McLearn K. Families with children under 3. What we know and implications for Results and Policy. In Halton, McLearn and Shuster eds. Child Rearing in America. Challenges Facing Parents and Young Children. New York. Cambridge University Press 2002

Early Child Development and Language



Starts early – first 7 months – neurons differentiate language sounds (e.g. English, Japanese)

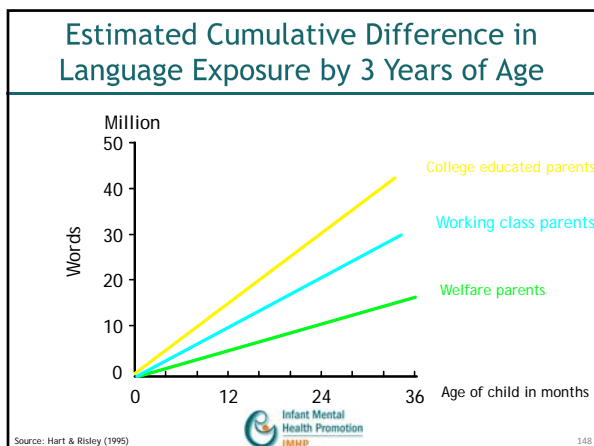
Sets capability for mastering multiple languages in early life

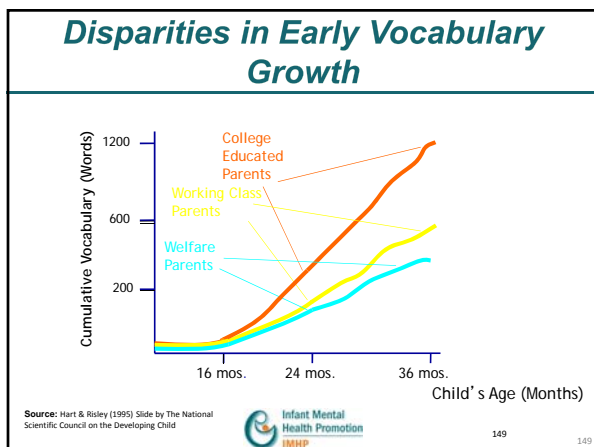
Professor April Benasich (upper right) gently covers a baby's head with sensors that reveal how babies process rapidly occurring sounds, a key factor in language development. (Credit: Image courtesy of Rutgers University)



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There is Unrecognized Complacency

- We have tools that can screen for overall development as well as social emotional development as young as age 3 months
- These tools are not diagnostic
- These tools are designed to identify which children are at risk for delays
- So why don't we use these tools?


Examples of Screening That are Not Proven – and in Some Cases Disproven

Mammograms: A recent long-term Canadian study found no correlation between early detection of breast cancer through mammograms and reduced incidences of breast cancer deaths.

Flu Shots: The U.S. Centers for Disease Control estimates the flu vaccine reduces the risk of infection by 50 to 70 percent, providing only moderate protection.


Prostate Cancer Screening: Common prostate cancer screenings showed little to no mortality benefit and should be reduced due to the potential risks involved.

EQAO Testing: The Elementary School Teachers Federation of Ontario does not support the EQAO standardized testing as it has no way of documenting the progress of students, with only scores shared with parents or students.



**Apply the Science:
Watch Development**

If you ask the questions	What you do is likely to change
Developmentally, do I understand how this child is doing compared to others his/her age?	Begin to use a developmental screening tool and combine this with observation and interviews
What experiences may have impacted this child's development?	Be a student of the child and family – learn about what experiences may have contributed
When I see a child at risk of delay, how am I documenting this?	Begin to include developmental screens in your documentation



Concept 9

Respond Early & Generously

- Early identification is most valuable when there is an immediate and generous response:


The early years present an unmatched opportunity to intervene effectively with children at risk for poor developmental delays.

National Research Council of Medicine, From Neurons to Neighborhoods (2002)

If appropriate intervention occurs very early, substantially improved functioning in cognition, attention, and memory can be achieved

Children's recovery rates are influenced by the severity, duration, and timing of the deprivation as well as by the timing and type of intervention that is provided


National Scientific Council on the Developing Child (2012) p.9



Early is Best – We Know This


Early is Essential & Can Make a BIG Difference

- There is a strong link between children’s trauma symptoms and the amount of exposure a child has had to traumatic events
- The longer and more often a child is exposed to violence, the worse off the child will be socially, emotionally, and psychologically in the long run
- Interventions and supports must address both immediate needs and long-term development and relationship issues
- The longer we wait to recognize and respond the more likely the impact on a child’s development will be negative



Apply the Science: Leverage!

If you ask these questions	The impact you have will be greater for each child
<p>When preparing reports, am I integrating the science into my notes?</p> <p>When creating a plan of care, am I providing concrete actions that can happen immediately (while a child may wait for intensive services)</p> <p>Am I sharing the science with the larger team – lawyers, other disciplines, supervisors?</p>	<p>For every conclusion you make about the risks for a child, provide the research reference to strengthen your point</p> <p>All access should be therapeutic – what do you do during access to support the parent – share the plan, review, prep for the visit, etc.</p> <p>Create a package of the “science” for the legal team and brainstorm how this can be integrated.</p> <p>Be creative – borrow creativity, beg if needed</p>



Poor Mental Health Can Impact Health Outcomes

Short and Long Term

We know that when young children experience poor mental health the impact is also on their physical health and well being

According to researchers at Harvard, children who experience poor mental health experience higher rates of illnesses throughout life





