

The Role of Emotion in the Development of the Brain



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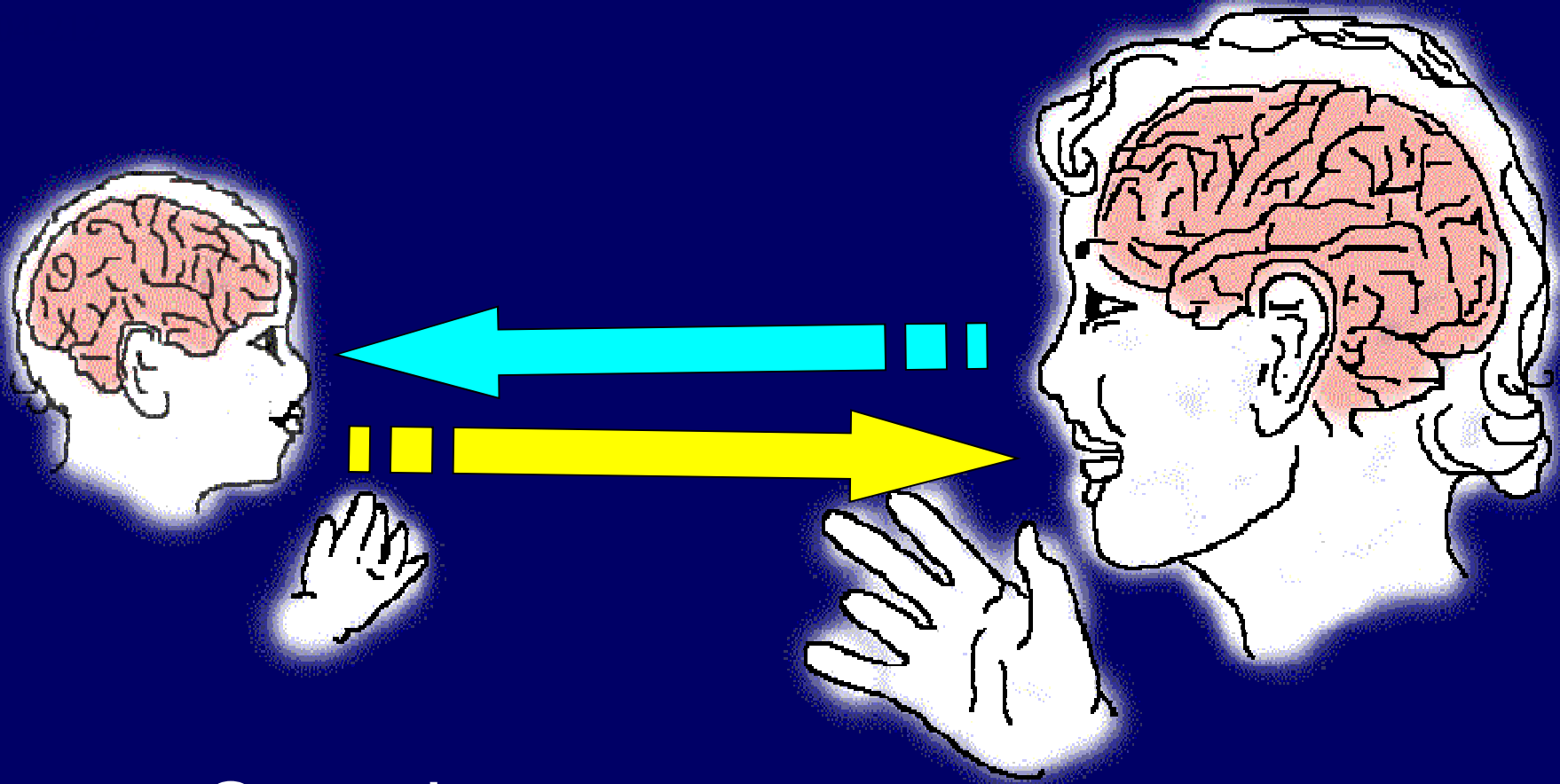
redefine THE POSSIBLE.



Secondary Altriciality



- Early plasticity enables the child's brain to be highly attuned to the environment in which she is born
- Synaptic growth in the first 2 years is massive
- There is huge over-production of synapses that, at 8 months, will start to be 'pruned' back
- Synaptic pruning is regulated by baby's emotional interactions with her caregivers



- Sound
- Vision
- Smell

- Touch
- Proprioception
- Taste

The Role of the Primary Caregiver in Early Brain Growth



- The primary caregiver serves as an ‘external brain’, regulating and stimulating the baby’s brain
- Dyadic experiences are vital for:
 - Sensory integration
 - Emotion-regulation
 - Self-Regulation

Development of Self-Regulation



- Infant is born with limited capacity to regulate her own arousal states, emotions, pay attention, control impulses, etc.
- This is performed in early months by caregiver
- Infant develops capacity to self-regulate by being regulated

The Critical Importance of Emotion



- Positive Emotion is the overarching mechanism that binds the dyad together
- The earliest emotions an infant experiences are pleasurable and aversive sensations
- She reflexively seeks out those experiences that are positive and avoids those that are aversive
 - i.e., an infant will only seek out dyadic interactions if she finds them pleasurable

Problems in Self-Regulation at Core of Many Disorders



Basic biological challenges include:

- Sensory regulation and integration
- Information processing and motor control
- Hypo- and hyper-functioning neural systems
- Child with such challenges may avoid interactions essential for development of self-regulation
- Deprivation and abuse can lead to similar result

How Pervasive are Problems in Self-regulation?



- In 2005 CMHO reported that 20% of children in Ontario have a mental illness impairing day-to-day functioning
- 2007 US Surgeon General's Mental Health Report: 30% of children 9-17 have a diagnosable mental disorder
- A large study of kindergarten teachers in the US in 2000 reported that close to half of all 6 year-olds have problems with self-regulation

Our concern is that this is still only telling a small part of the story in regards to self-regulation in children

Neither Mentally Ill nor Mentally Healthy



- How many children present behaviours similar to CMHO symptoms but not at a level that would warrant a DSM-IV diagnosis?
- Is a child getting a C- grade, with no close friends, no interests besides tv and video games, unhappy and overweight, easily bored or distracted, has trouble sticking to a task, but is not difficult to handle at home or in the classroom, *thriving*?

Key Principles



- 1. We need to identify biological and/or social problems early and intervene immediately*
- 2. We need to focus on the emotional experiences that promote strong SR*
- 3. Parents also need to continue developing SR*
- 4. The same principles that apply to the development of SR in children and parents apply to communities*

Reading



- Fogel, A, King, B & Shanker, S (2007) *Human Development in the 21st Century* (Cambridge UP)
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- McCain, M, JF Mustard & SG Shanker (2007) *Early Years Study II: Putting Science into Action.*
- Shanker, S (2008) 'In Search of the Pathways that lead to mentally healthy children', *Journal of Developmental Processes*, 3, 1: 22-33