

## Right brained thinking— how mothers and babies think, and why this matters

*Understanding how mother's intuitive responses  
help their infants regulate state, mood and affect*

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### Declaration and Disclosure

I have an affiliation with one or more persons or entities that could be perceived as having a bearing on my presentation of this subject.

- Geddes Productions

#### Affiliation

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## Objectives

The participant will:

1. List five ways the hormone oxytocin helps promote infant survival.
2. Explain how a mother's innate intuitive right-brained interactions with her infant help her baby organize for learning, handle emotional stress, and adapt to his changing environment.
3. Explain how an understanding of right brained processes can help health care providers better communicate with post-partum mothers.

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## THREE take-home messages

1. **Oxytocin has simultaneous affects on mother and baby which aid their mutual communication.**
2. **A mother's instinctive maternal interactions with her infant help her infant adapt to his environment, with both short-term and long-term consequences.**
3. **Oxytocin and other neurophysiologic factors affect the way the postpartum mother processes information. This has important implications for how the health care provider communicates with mothers.**

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## This lecture's structure

- A brief nod to the previous lecture, and then we take a little look at how oxytocin affects mothers.
- Half-way thru we'll take a very superficial look at neuroanatomy, specifically, the different roles of the left and right brains, with attention to the amygdala and hypothalamus.
- From there, we get slightly deeper into how the mother's intuitive interactions with her baby allow her right brain to connect with her baby's right brain, and why that matters.

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## Infant "self-attachment"

### Observations in the literature

Early expression of the rooting reflex: Odent, 1977

"Self-attachment"

on the first day of life

- Widström, 1987, *Acta Pædiatr Scand.*
- Righard & Alade, 1990 *the Lancet*

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## “Laid back breastfeeding”

Mother semi-reclined      Baby in full body contact

Instructions get in the way of mother’s natural instincts

Baby’s instinctive behaviors bring out mother’s instinctive behavior

Colson SD, Meek JH, Hawdon JM. Optimal positions for the release of primitive neonatal reflexes stimulating breastfeeding, *Early Hum Dev* 2008, 84(7):441-9

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## “Liberated Motor Activity”

Claudine Amiel-Tison and Albert Grenier

- Touch and stroke infant
- Neck support eliminates reflex response to uncontrolled movements
- Talk to infant, eye contact
- “Communicative state”
  - *Infant appears “charmed”*

Amiel-Tison C, Grenier A, transl by Steichen J, Steichen-Asch P, Braun CP. Expression of liberated motor activity (LMA) following manual immobilization of the head. *Neurologic Evaluation of the Newborn and the Infant*. New York NY: Masson Publishing USA, Inc.; 1983:87–109

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## The baby uses her cheeks to search

**Learning to breastfeed:**

**What’s going on?**

**How does this work?**

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## The key to seeing infant competence

What any mother knows

- Observe the baby in *interaction* with another
- Calm infant, alert, communicative state

Donald Winnicott:

“There is no such thing as a baby, there is a baby and someone.”

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## Many more pieces to the puzzle The work from the Karolinska Institute

*Kerstin Uvnäs-Moberg, MD, PhD,*

*Ann-Marie Widström, et al*

### **Oxytocin** and other hormones

Multiple effects on

- Mothers
  - Babies
  - Maternal-infant interactions
  - Short-term, long-term consequences for mother and baby
- From neurochemistry to behavior to personality

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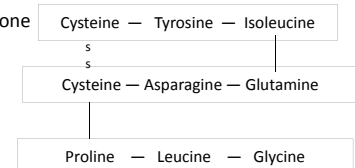
## Oxytocin

Very ancient mammalian nonapeptide

Differs from vasopressin by two amino acids

Acts as BOTH

- A neurotransmitter
- A peripheral hormone



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## Oxytocin

**NOT** just “love, labor & lactation”  
(orgasm, uterine contractions & milk ejection)

**ALSO**

- A wide variety of physiologic and behavioral responses
- **All promote lactation and infant survival**

## Oxytocin

**Mother** has it

- Nipple stimulation, skin to skin, and other neurosensory cues

**Baby** does too

- Suckling, skin to skin, and other neurosensory cues

**Everyone** has it, male or female

- Get it from warmth, touch, and other neurosensory cues

## Oxytocin

**Promotes infant survival**

- Uterine contractions
- Milk ejection
- Gastrointestinal effects
- Cardiovascular effects
- Affiliation, affection
- Anti-stress effects
- Maternal behaviors

**Varied effects**

**Released as**

- Hormone to the circulation
- Neurotransmitter to the brain

**Differing effects because**

- At different sites
  - Central or peripheral
- Different receptors respond to
  - Basal levels, or
  - Pulsatile release, or
  - Peak levels, or?

## Oxytocin

Oxytocin does **not just** cause

- Uterine contractions & milk ejection

**Also causes**

- A wide variety of **physiologic and behavioral** responses in **BOTH mother AND BABY**
  - Anti-stress: calms both
  - Releases digestive hormones: mobilize nutrients
  - Increases blood circulation to breast
  - Encourages interaction and bonding

## Oxytocin: The “affective” hormone

Everyone has it, male or female

- Get it from warmth, touch, neurosensory cues
- Affection, relationship, feeding
- Affiliation
- And hence infant survival

**Affiliation**

**Gastrointestinal relationship**  
both to release, and to effects

## Oxytocin’s effects on maternal behaviors

Under the influence of oxytocin, the mother:

- Seeks more time with infant
- More breastfeeding
- Increased stroking, calming
- Increased tolerance of monotony

These effects are aided by oxytocin’s  
anti-stress and cardiovascular effects

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## Corpus Callosum

### In adults

- Left and right brains always work together
- One might be more dominant
  - At different times
  - In different circumstances
- Simultaneously use verbal and nonverbal language
- Understand both words and nuance
- Can be both creative and analytical

## Differences

### Physicians & health care providers

- Scientific, evidence based
- “Art” of medicine more intuitive

### Mothers

- Foggy, confused, post partum  
Eidelman AI, Hoffmann NW, Kaitz M. Cognitive deficits in women after childbirth. *Obstet Gynecol.* 1993 May;81(5 ( Pt 1)):764-7.
- “Cognitive deficit” = Left brain deficit
- Oxytocin: Right brain strong:  
Kaitz, M., Lapidot, P., Bronner, M., & Eidelman, A. I. (1992) Parturient women can recognize their infants by touch. *Developmental Psychology*, 28(1), 35–39.
- Insecurity—sometimes wish for left brain “rules”  
Books, authorities provide those rules

## Mothers?

### Left Brain *a bit foggy*

To compensate, she:  
Watches the clock  
Keeps a feeding log  
In milliliters  
And number of minutes  
Does she understand  
“cross cradle hold”?  
Writes down what you say

### Right Brain *active*

*Loses track of time*  
*No clue when baby fed last*  
EMOTIONAL  
*“That makes sense”*  
*Remembers words associated with strong emotion*  
*Attends to body language*

## Communication

### Infants

Almost no left brained activity until age 3 years  
Right brain dominant

### Mothers

Foggy post partum  
LEFT BRAINED  
“cognitive deficit”  
Right brain dominance helps!  
Mother-baby right-brain to right- brain communication

## The work of Allan Schore

### Multidisciplinary model

- Neurosciences
- Behavioral pediatrics
- Psychology, psychiatry
- Attachment theory

### Right brain to right brain communication

- The concept of “affective synchrony”

### How mothers help their infants cope with stress

- How babies learn to handle stress

## Allan Schore

### Concept of “affective synchrony”

### Mother-baby interactions (Innate intuitive behaviors)

- Eye to eye contact
- Vocalization
- Responsive interactions

### Neural right brain to right brain interactions via

- **Hypothalamus**  
(coordinates nerves & hormonal communication)
- **Amygdala**  
(emotions and memory)

Maternal infant synchrony between right brains links activity

- in their limbic systems
- helps infant regulate emotions and behavior

## Allan Schore

### Through their “affective synchrony”

The **infant's immature** and developing internal homeostatic systems are **co-regulated** by the caregiver's more mature and differentiated nervous system.

- Helps infant organize for new learning
- Allows infant capacity to adapt to a rapidly changing environment
- Mediates infant's stress-coping capacities

## Allan Schore

### Concept of “affective synchrony”

Just by her intuitive interaction with her baby, the mother co-regulates her baby's nervous system.

- Mother's nervous system is mature and well developed
- Baby's is immature and still developing

So mother's intuitive responses

- Help baby organize for new learning
- Allow baby to adapt to rapid changes around him
- Help the baby cope with stress
- Lay down brain pathways

*A mother doesn't have to know any of this stuff about the right brain—she does this all intuitively, because she loves her baby.*

## Allan Schore: Concept of “affective synchrony”

Let's watch this baby

Was it surprising to see this baby stop crying so suddenly?

Let's watch again

And another mom, the head bob...

## Allan Schore

### Affective synchrony not perfect

- Separation, breaks in synchrony
  - Helps infant learn distress can be resolved
- *Lays down neural pathways for infants own coping capacities*
  - First mother helps infant learn to cope with stress
  - Then the older infant learns to self soothe from these encounters
  - Allows infant to adapt to changing environment

## Putting it all together

Schore's model of maternal co-regulation of infant state

- Fits with Amiel-Tison and Grenier's liberated neck
- Fits with role of oxytocin + vagal actions
- Basics of attachment

## The mother-baby dance: Maternal infant interaction

### The mother-baby dance: Maternal infant interaction

Single biological system—

Two people, interacting

Direct right-brain to right-brain connection

State regulation very immature at birth

- Baby needs mother to help regulate state

## Putting it all together

### The maternal right brain

- Dominant so she can communicate with baby
- Emotions and learning
- Emotions and memory

### Basics of right-brained communication

- Between mothers and babies
- Between mothers and health care providers

## Communication

### Left brain    Right brain

|                             |                                 |
|-----------------------------|---------------------------------|
| Uses verbal language        | Connects nonverbally            |
| Gives specific instructions | Shows, demonstrates             |
| Follows directions          | Learns by <i>feeling, doing</i> |
| Decides on logic, analysis  | Decides on "gut" feelings       |

## Implications for health care providers

### Attend to mother's state, baby's state

- Watch emotional content
- Model positive interactions
- Model responsive interactions
- Support mother as model for her response to infant

## Implications for health care providers

### Take care with left brained instructions

- Some mothers may need them
- Reinforce with touch, tone of voice, modeling
- Beware of that "cognitive deficit"
  - Explain in "intuitive" ways
  - Careful written instructions to reinforce any verbal instructions
  - Beware of how you may be misunderstood
- Allow room for intuitive adjustment to plan

## Implications for health care providers

### Facilitate right-brained "affective synchrony"

- Use touch, tone of voice, body language

### Model patience and calm

- Help mom feel calm, relaxed, competent
- Help baby feel calm, relaxed, competent

### Encourage mother's interactions with infant

- Demonstrate, model for mother
- Talk to baby. Show pleasure in mother and baby
- Reinforce, enjoy instinctive behaviors

## THREE take-home messages

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