Right-brained thinking

How mothers and babies think, and why this matters

Christina M. Smillie, MD, FAAP, IBCLC, FABM, Stratford, Connecticut, USA

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 lactation consultants and other health care providers better communicate with post-partum mothers.

Video: Widström, 1987 Breastfeeding is Baby’s Choice

Video: Widström, 1987 Breastfeeding is Baby’s Choice
Video 1995: Richard & Frantz, Delivery Self-Attachment, Geddes Productions

Many ways to see this competent infant behavior

Infant self-attachment
Richard & Frantz, 1995 & 2005
DVD@ www.GeddesProduction.com

Breast crawl
UNICEF India http://breastcrawl.org
Video; text gives good review of the neurobehavioural background

Baby-led breastfeeding: the mother-baby dance
DVD@ www.GeddesProduction.com

Semi-reclined “laid back” positions to facilitate breastseeking behaviours:
DVD@ www.GeddesProduction.com
Colson SD, Meek JH, Hawdon JM. Optimal position for the release of primitive neonatal reflexes stimulation breastfeeding. Early Hum Dev 2008; 84(7):441-44

Maternal infant interaction

The “motherbaby”
A single psychoneurobiological system

Two people, interacting
Communication between them
Feedback between them
Physical proximity & contact
But how does this interaction work?
What is the neurophysiology?
Facilitating infant competence
• Neck support
• Touch and stroke infant
• Talk to infant, eye contact
• "Communicative state"  
  — Infant appears "charmed"


From the neurologists:
How to charm a baby...

Liberated Motor Activity

Used with permission of the author and Masson Publishing USA.

Keys to competent infant behavior

What any mother knows

Mother helps steady the baby—keeps the baby calm and secure.

1. Emotionally
She calms and steadies the baby with her voice, and her intuitive responses to her baby’s behavior.

2. Physically
She steadies the baby, keeping his body feeling snug and secure.

Facilitating infant competence
• Neck support
• Touch and stroke infant
• Talk to infant, eye contact
• "Communicative state"  
  — Infant appears "charmed"

From the researchers, a bit about Oxytocin

Oxytocin promotes infant survival...

Cardiac effects — lowers heart rate and blood pressure
Anti-stress — lowers ACTH, cortisol, symptoms of stress
Gastrointestinal — mobilizes nutrients for growth, milk production.

Promotes digestion.
Affiliation, bonding, affection, relationship

Oxytocin: The “affective” hormone

Everyone has it, male or female
  — Get it from warmth, touch, neurosensory cues
  — Affection, relationship, eating, chewing
  — Affiliation... And hence infant survival

Illustrations credits:
1. Labeled for reuse: http://layered.typepad.com/antidote_to_burnout
2. Chocolat, Wikimedia commons/vickbossGNU Free Documentation License
3. © Katherine Standish 2009

Oxytocin: It’s all about affiliation, and it’s all about food (GI)

The amazing skin of the chest

Oxytocin’s effects on maternal behaviors

Affection
Anti-stress
Maternal behaviors
Temperature regulation
Immune function

Where do we hold a baby when we say “skin on skin”?  

Illustrations credits:
  Public domain: wikimedia commons
  Public domain: wikimedia commons
3. Several pictures Labeled for reuse: http://layered.typepad.com/antidote_to_burnout
4. Creative commons/Beatrice Murch

Maternal “instincts”  
Videos © C M Smillie, not for redistribution
**Infant’s oxytocin**

Stimulated by suckling, palate, oral mucosa  
Touch, skin to skin, warmth  
Promotes  
- Digestion  
- Choecystokinin ("CCK")—satiation  
- Suckling—Calming  
- Bonding

**Oxytocin’s simultaneous effects**

On both mother and infant  
- Promotes affiliation, bonding  
- Synchrony of state and mood  
- Maternal calm helps baby calm

**Before we go any further...**  
A little bit about left brains & right brains

<table>
<thead>
<tr>
<th>Left Brain</th>
<th>Right Brain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical</td>
<td>Intuitive</td>
</tr>
<tr>
<td>Sequential</td>
<td>Holistic</td>
</tr>
<tr>
<td>Rational</td>
<td>Emotional</td>
</tr>
<tr>
<td>Analytical</td>
<td>Subjective</td>
</tr>
<tr>
<td>Objective</td>
<td>Looks at wholes</td>
</tr>
<tr>
<td>Looks at parts</td>
<td>Body language</td>
</tr>
</tbody>
</table>

**Communication & Decision-Making**

<table>
<thead>
<tr>
<th>Left brain</th>
<th>Right brain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses verbal language</td>
<td>Attends to body language</td>
</tr>
<tr>
<td>Gives specific instructions</td>
<td>Shows, demonstrates</td>
</tr>
<tr>
<td>Follows directions</td>
<td>Learns by feeling, doing</td>
</tr>
<tr>
<td>Decides on logic, analysis</td>
<td>Decides on &quot;gut&quot; feelings</td>
</tr>
<tr>
<td>Past &amp; Future</td>
<td>Lives in the moment; &quot;zen&quot;</td>
</tr>
<tr>
<td>Concerned with tomorrow</td>
<td>Now feels like forever....</td>
</tr>
</tbody>
</table>

**The corpus callosum**

Left and right communicate  
Don’t really work alone

Images in the public domain; from 1918 Gray’s Anatomy  

**Differences**

Physicians & health care providers  
- Scientific, evidence based  
- Art of medicine more intuitive

Mothers  
- Foggy, confused, post partum  
- "Cognitive deficit"
Health care providers

Left Brain strong

Wants information, facts.
- When and how often did baby feed?
- How many wet diapers yesterday?
- How long does the baby sleep?

Explains with details.
- Gives specific instructions
  - Plans for next week, month

Mothers?

Left brain back seat

Has trouble with memory for facts and numbers

Might try to compensate:
- Watch the clock
- Keep a (confusing) log
- Write down what you say

Confused by long explanations.
- Confused by instructions
- Next week seems far away

Infants

Almost no left brained activity first 3 years
- Right brain dominant

Mothers

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

From neuropsychology

The concept of ‘affective synchrony’

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

Neural right brain to right brain interactions via
- Hypothalamus (coordinates nerves & hormonal communication)
- Amygdala (emotions and memory)

That synchrony links activity
- in their limbic systems
- helps infant regulate emotions and behavior

Allan Schore

Concept of “affective synchrony”
Neural right brain to right brain interactions via

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

That synchrony links activity

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

Allan Schore
Concept of “affective synchrony”

From video, www.GeddesProduction.com

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
• 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 (OR oxytocin made her do it).

Let’s watch this baby

Video © CMSmile; not for redistribution

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

Let’s watch again, this time with sound

Video © CMSmile; not for redistribution

Allan Schore
Concept of “affective synchrony”

Yes, you already knew this...

Your right brain already knew it...

Now, we’ve explained it to your left!

Allan Schore
Concept of “affective synchrony”

The head bob...

Video © CMSmile

Used with permission of the mother

Strong neck control

As baby bobs head, watch his mother...

Mirror neurons??

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

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

Model patience and calm
— Help mom feel calm, relaxed, competent
— Help baby feel calm, relaxed, competent

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

Encourage mother’s interactions with infant
— Demonstrate, model for mother
— Talk to baby.
— Show pleasure in mother and baby

THREE Take-home messages

1. Oxytocin has simultaneous effects 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 how the postpartum mother processes information. This has important implications for how the health care provider communicates with mothers.