The Neuropsychological Effects of Sleep Training and Its Impact on Breastfeeding

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In Westernized cultures, infants often sleep alone. Parents often resort to behavioral extinction to teach an infant to do this.

Blunden et al. 2011, Sleep Med Reviews, 15, 327-334

Is night waking a problem?

Middlemiss et al. 2013, J Amer Assoc Nurse Practitioners, 10.1002/2327-6924.12159

Night waking

Maternal stress, depression, and anxiety

Middlemiss et al. 2011, Early Hum Dev, doi: 10.1016/j.earlhumdev.2011.08.010

Could this be an appropriate intervention for exhausted new parents?

Study finds controlled crying safe for babies

A landmark study by Melbourne researchers has found controlled crying poses no long-term risk to the health of babies and infants.

Price et al. 2012, Pediatrics, 130(4), 643-651

Controlled crying intervention for parents of infants 8-10 months. Follow-up at 5 years

• "No apparent harm"
• No apparent benefits either
• Practitioners can "confidently recommend" this approach to parents
Techniques to extinguish infant crying

- Gradual withdrawal ("Camping Out")
- Extinction method ("Cry-it-Out")
- Graduated extinction ("Controlled Crying")

Blunden et al. 2011, Sleep Med Reviews, 15, 327-334

Concerns

- Cortisol and the developing brain
- Attachment
- Breastfeeding

Childrearing is both biological and cultural

Dettwyler 1995, Breastfeeding: Biocultural perspectives, 39-74

Childrearing is modified by beliefs about (the):

- Nature of human infancy
- "Proper" relationship between mother and child
- Personal autonomy and independence

Dettwyler 1995, Breastfeeding: Biocultural perspectives, 39-74

"Science as Savior"
• Elimination of “old wives’ tales”
  • Male experts and authorities

Approaches developed to “improve on nature”
• Elimination of “useless organs”
• “Formula” to replace breast milk

Medicalization of Childbirth
• Outlaw midwifery

Behaviorism & Scientific Mothering

John B. Watson, president of the American Psychological Association in 1928, led the charge against maternal affection

Discouraged the study of beliefs or emotions—any internal processes
Disparaged the importance of love and attachment

Too much kindness to a baby would result in a whiney, dependent, failed human being
You must train children to be independent and not inconvenience their parents with their needs

Scheduled and timed feedings
Early independence
Sleeping separate from parents

Complete disaster for breastfeeding

The Competing Paradigm

Attachment Theory
Attachment Theory

- Emotional attachment between mother and child
- Essential to survival above and beyond food and shelter

John Bowlby

Harry Harlow

Contact comfort vs. food

Developed a paradigm to measure attachment

Mary Ainsworth and the Strange Situation

Proximity and maternal/caregiver responsiveness promotes attachment

Crying, sucking, smiling, clinging, and following promotes proximity

Ainsworth & Bowlby 1991, Amer Psychologist, 46, 333-341
Separation activates these behaviors

Ainsworth & Bowlby 1991, Amer Psychologist, 46, 333-341

Non response is stressful for babies

Still-Faced Mother Paradigm
According to Behaviorism, ignoring cries will lead to less crying.

“Adult disease prevention begins with reducing early toxic stress”
• The opposite to be true
• Responding leads to less crying and more secure attachments

Ainsworth & Bowlby 1991, Amer Psychologist, 46, 333-341

5-day residential program in NZ for infants referred for sleep problems (25 mother-infant dyads)

Program designed to extinguish infant signaling during transition to sleep and encourage self-soothing

Middlemiss et al. 2011, Early Hum Dev, doi: 10.1016/j.earlhumdev.2011.08.010

• Day 1 cortisol elevated for both mother and baby
• By Day 3, babies stopped crying, but still had elevated cortisol

Middlemiss et al. 2011, Early Hum Dev, doi: 10.1016/j.earlhumdev.2011.08.010

• Mothers’ cortisol dropped on day 3; babies’ did not
• Asynchrony with baby
• Associated with insecure attachment

Middlemiss et al. 2011, Early Hum Dev, doi: 10.1016/j.earlhumdev.2011.08.010

“… the mother and child ... are a symbiotic unit that make each other healthier and happier in mutual responsiveness”


Cortisol levels rise when infants experience long and repeated incidents of being ignored when they cry

Cortisol is toxic to neurons
• Infant brains are highly susceptible to the effects of toxic stress


There are many long-term effects of “need-neglect” in babies


• Stress reactivity can become a pattern for life
• Self-regulation is undermined


Infant sleep interventions the first 6 months do not:
• Reduce infant crying
• Prevent sleep and behavioral problems in later childhood
• Prevent PPD

Douglas & Hill 2013, J Dev Behav Pediatr, 34, 497-507

Review of 43 studies, UK National Institute of Health Research

Infant sleep interventions the first 6 months do not:
• Reduce infant crying
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Douglas & Hill 2013, J Dev Behav Pediatr, 34, 497-507

Unintended consequences include
• Increased problem crying
• Premature cessation of breastfeeding
• Worsened maternal anxiety
• SIDS

Douglas & Hill 2013, J Dev Behav Pediatr, 34, 497-507

“An evidence-based approach to sleep problems in the first 6 months avoids behavioral interventions, including extinction and graduated extinction; feed-play-sleep cycles; and education about “tired cues,” sleep algorithms, and “overstimulation”

Douglas & Hill 2013, J Dev Behav Pediatr, 34(7), 497-507
The Effect of Feeding Method

Hours Baby Sleeps at Longest Stretch

- Breastfed: 5.49
- Mixed: 7.04
- Formula: 7.69

Nighttime Awakenings

- Breastfed: 2.52
- Mixed: 1.71
- Formula: 1.39

Hours Mothers Sleep

- Breastfeeding: 6.61
- Mixed: 6.41
- Formula: 6.3

Mothers’ Depression

- Breastfeeding: 0.85
- Mixed: 1.04
- Formula: 1.28

A closer look at Price et al. (2012)
• Intervention
  • Graduated extinction
  • “Camping out”

• Control
  • No specific instruction


5-year follow-up with 225 families

No adverse effect
  • Parent-child bond
  • Mother’s depression
  • Child’s level of adjustment
  • Child’s cortisol level at 5 years old

Price et al. 2012 Pediatrics, 130(4), 643-651

• 31% of the original sample was lost to follow-up
• Most of these families were identified as “high disadvantage”


• No information on “dose”
  • How long did babies cry?
  • How many months?
  • What else was going on in family?

Price et al. 2012 Pediatrics, 130(4), 643-651

• Hawthorne Effect
  • Any intervention made things “better”
  • No adequate control group

Price et al. 2012 Pediatrics, 130(4), 643-651

Lack of elevated cortisol at age 5 does NOT prove “no harm”

Price et al. 2012, Pediatrics, 130(4), 643-651
Conclusions

• Sleep training offers no long-term benefit
• It is a hold-over from a refuted parenting style
• It will likely interfere with breastfeeding
• Current studies supporting it have a number of methodological weaknesses
• Non-response to infant cries raises cortisol levels, which is toxic to infants’ developing brains
• May not be harmful if short-term and in a generally warm and responsive family
• But given its drawbacks, it is not a technique we should recommend

Resources

• Special issue of Clinical Lactation on sleep training (Vol 4-2). www.ClinicalLactation.org
• www.PraeclarusPress.com
• www.UppityScienceChick.com
• www.BreastfeedingMadeSimple.com