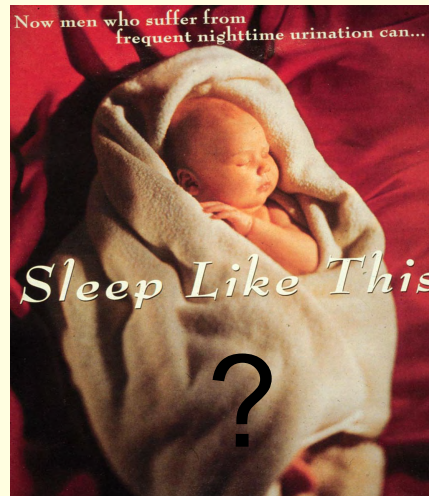


Human Infant Biology And Its Relationship To Parental Caregiving: *Western Constraints On Creating a “Fairest Love” ?*

“Don’ t sleep with your baby or put the baby down in an adult bed. The only safe place for a baby to sleep is in a crib that meets current safety standards and has a firm tight-fitting mattress.”

Ann Brown September 29, 1999 to US Media Press Conference.



The Research From: *Sleep, Pediatrics, Archives Dis Child., Acta.Pedatrica, Ear. Human Development, Jour Beh Med., Ped Resp. Reviews, Inf Child Dev.,*

Pediatric Review

Infant-Parent Co-Sleeping in an Evolutionary Perspective: Implications for Understanding Infant Sleep Development and the Sudden Infant Death Syndrome¹

*James J. McKenna, †Evelyn B. Thoman, ‡Thomas F. Anders, §Abraham Sadeh, ¶Vicki L. Schechtman and **Steven F. Glotzbach

Sleep, 16(3):263-282
© 1993 American Sleep Disorders Association and Sleep Research Society

Maternal Sleep and Arousals During Bedsharing With Infants

S. Mosko, C. Richard and J. McKenna *Sleep*, 20(2):142-150
© 1997 American Sleep Disorders Association and Sleep Research Society

Bedsharing Promotes Breastfeeding

James J. McKenna, PhD^{*}; Sarah S. Mosko, PhD[†]; and Christopher A. Richard, PhD[‡]

PEDIATRICS Vol. 100 No. 5 November 1997

New knowledge, new insights, and new recommendations

P Fleming, P Blair, J McKenna

Scientific controversy and media hype in unexpected infant deaths
www.sidsdidi.com

EVOLUTION AND THE SUDDEN INFANT DEATH SYNDROME (SIDS) Part III: Infant Arousal and Parent-Infant Co-Sleeping

James J. McKenna
Pomona College

Sarah Mosko
University of California, Irvine

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Human Nature, Vol. 1, No. 3, pp. 291-330.

Infant Arousals During Mother-Infant Bed Sharing: Implications for Infant Sleep and Sudden Infant Death Syndrome Research

Sarah Mosko, PhD^{*}; Christopher Richard, PhD^{*}; and James McKenna, PhD[†]

PEDIATRICS Vol. 100 No. 2 August 1997



YEARBOOK OF PHYSICAL ANTHROPOLOGY 40:100-101 (2007)

Mother-Infant Cosleeping, Breastfeeding and Sudden Infant Death Syndrome: What Biological Anthropology Has Discovered About Normal Infant Sleep and Pediatric Sleep Medicine

James J. McKenna,^{1*} Haien L. Bell,² and Lee T. Gettler^{1,2}

PEDIATRIC RESPIRATORY REVIEWS (2002) 6, 129-132



Paediatric
Respiratory Reviews

REVIEW

Why babies should never sleep alone: A review of the co-sleeping controversy in relation to SIDS, bedsharing and breast feeding

James J. McKenna^{*} and Thomas McDade

Experimental studies of infant-parent co-sleeping: mutual physiological and behavioral influences and their relevance to SIDS (sudden infant death syndrome)

James McKenna^{*,a}, Sarah Mosko^b, Christopher Richard^b, Sean Drummond^b, Lynn Hunt^b, Mindy B. Cetel^b, Joseph Arpaia^b

Early Human Development 38 (1994) 187-201

Acta Paediatr Suppl 389: 31-8, 1993

Evolution and infant sleep: an experimental study of infant-parent co-sleeping and its implications for SIDS

James J McKenna^{1,2} and Sarah Mosko¹

Department of Sociology and Anthropology¹, Pomona College, Department of Neurology², University of California School of Medicine, Irvine and Department of Neurology², University of California, Irvine School of Medicine, California, USA

Infant and Child Development
Inf. Child Dev. 14: 359-385 (2007)
Published online in Wiley InterScience
(www.interscience.wiley.com) DOI: 10.1002/icd.525



Sleeping With Baby: An Internet-Based Sampling of Parental Experiences, Choices, Perceptions, and Interpretations in a Western Industrialized Context

J. J. McKenna^{*} and L. E. Volpe
Department of Anthropology, University of Notre Dame, USA

The “fairest” love ...?

the most selfless love we will ever
know..?

*that of our **mothers..***

and fathers

Until recent historic periods in the western industrialized world

- *No human infants were ever separated from their caregivers...*
 - *most human infants know only constant contact, exclusive breastfeeding and proximity, made necessary by the infants extreme neurological immaturity, lack of ambulatory abilities, and need for frequent breastfeeding both day and night;*

•For the human infant its “fairest love” begins through its bodily-sensory experiences....

with its capacity to experience love encountered first through external regulation by the mother of its fundamental physiology..feelings and sensations that provide the *scaffolding* of all that will become meaningful socially...cognitively, emotionally, and psychologically....

For the human infantcontact with another body IS love..in the most profound and scientific sense..nutrition, transportation, immunity, body warmth, calorie absorption, hormonal levels, heart rate, sleep architecture, neuronal proliferation

DOES THE HUMAN INFANT EVEN EXIST APART FROM ITS MOTHER?

- *“There is no such thing as a baby, there is a baby and someone”. D.Winnecutt ?*
- *“For species such as primates the mother IS the environment.” Sarah Blaffer Hrdy.?*

Until recent, western historic periods, no human parents ever asked:

Where will my baby sleep, how will I lay my baby down to sleep, and how will I feed my baby?

How will I care for my baby?

(most human parents still don't!)

And, yet.....

- Culture by way of values and ideologies... **changes much faster** than does human infant biology and the caregiving practices thought best to serve the contemporary, western infant well..in fact.....

Although the biology of infancy is universal in historic time, human perceptions of infancy and what is required to care for them are socially constructed and subject to historical change (*after Sussman 1982*)

cultural influences on infant touching

- *“ In the western world it is perhaps a great advantage for an infant to have a sensitive skin or diaper rash or some other dermatological disorder, for then, at least, it can be assured of receiving something resembling an adequate amount of cutaneous stimulation” (Montagu :1986:247)*

Maternal- Infant Micro-environment exchanging
heat, touch, sound, movement, CO₂, smells



HERE
MOTHER
AND BABY

FACE EACH
OTHER
(FEO), AS IS
TYPICAL

Now men who suffer from
frequent nighttime urination can...

The western infant is
disarticulated from the
mother's body... What are
the deleterious
consequences? Does it
help to explain SIDS?

No touch;

No smells;

No
sounds

No

movement;

No body heat'

No breath
exchange

No maternal physiological
regulation



Sleep Like This



Changing concepts related to where babies can or should sleep..the beat goes on...

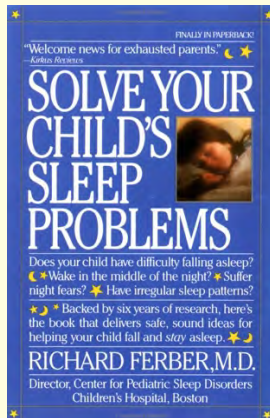
(1976, 1999)

“...Sleeping in your bed can make an infant confused and anxious rather than relaxed and reassured. Even a toddler may find this repeated experience overly stimulating”

(2006)

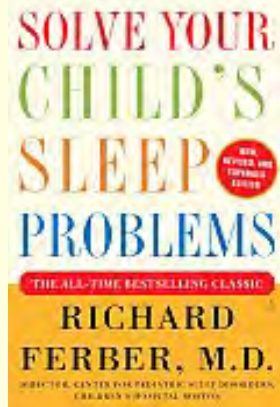
“Children do not grow up insecure just because they sleep alone or with other siblings, away from their parents; and they are not prevented from learning to separate, or from developing their own sense of individuality simply because they sleep with their parents” (Ferber 2006:41).

Dr. Richard Ferber “changes his mind”..?? *But the larger and more important question is...What is it about our culture that makes us care, or makes it important what someone who has no familiarity with our baby or our family thinks about this very personal issue?*



1976

- “If you find that you actually prefer to to sleep with your baby you should consider your own feelings very carefully”.



2006

- “Whatever you want to do , whatever you feel comfortable doing, is the right thing to do, as long as it works..... most problems can be solved regardless of the philosophical approach chosen” (Ferber: 2006: 41)

CHANGING PERCEPTIONS OF WHAT INFANTS NEED...

THE MOTHERHOOD BOOK (1935)

“Babies should be trained from their earliest days to sleep regularly and should never be woken in the night for feeding....”

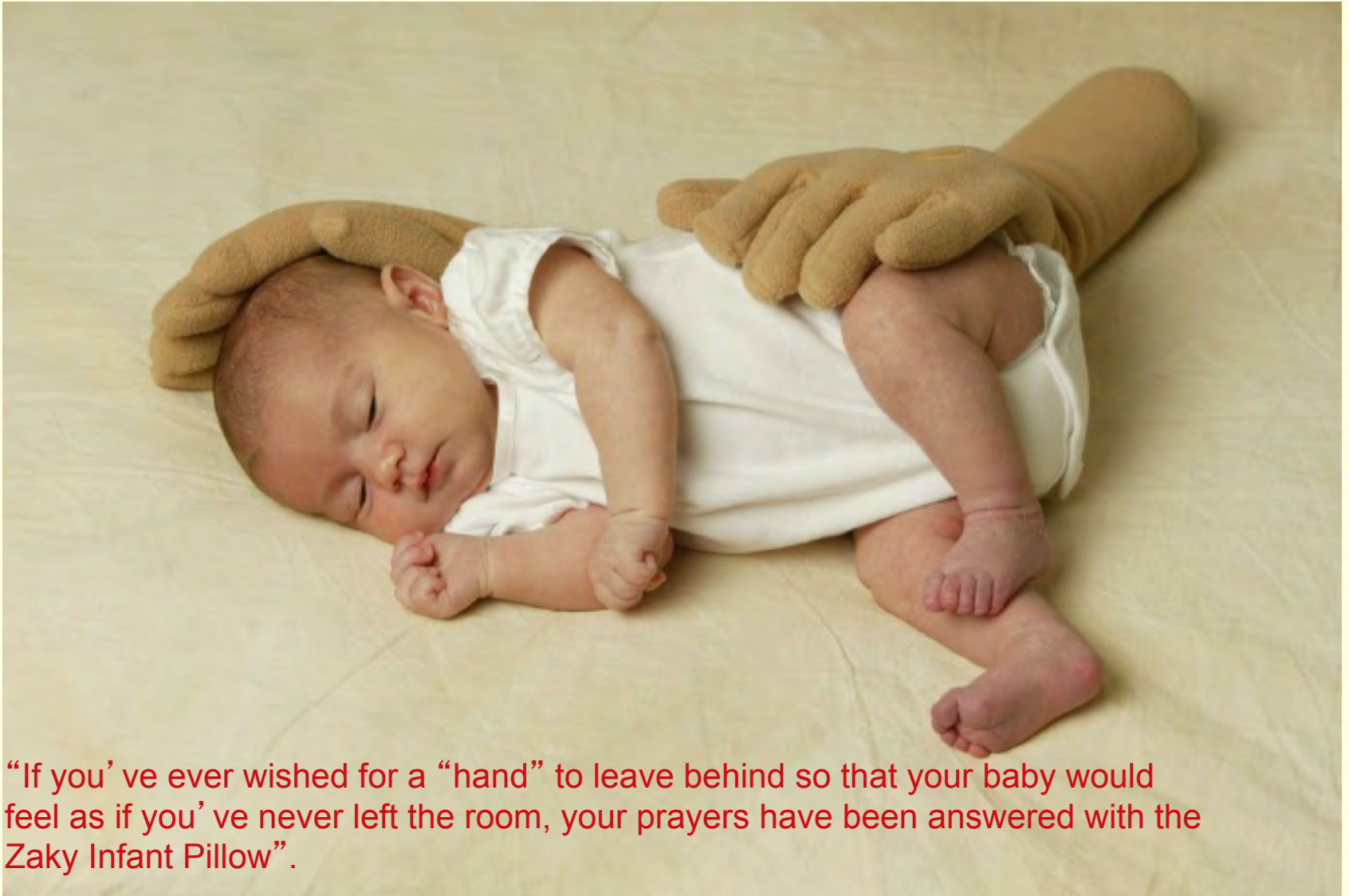
“Baby should be given his own bedroom from the very beginning. he should never be brought into the living room at night”

Changing perceptions....of what's good for baby...

“The constant handling of an infant is not good for him. The less he is lifted, held and passed from one pair of hands to another, the better, as while he is young his bones are soft and constant handling does not tend to improve their development nor the shapeliness of his little body. the newborn infant should spend the greater portion of his life on the bed”

**FROM: THE BABY
MARIANNA WHEELER 1901
HARPER BROS: NEW YPRK LONDON**

And the most bizarre...*touchless* care



“If you’ ve ever wished for a “hand” to leave behind so that your baby would feel as if you’ ve never left the room, your prayers have been answered with the Zaky Infant Pillow”.

Present medical-cultural milieu:

warn mothers about what their their bodies can do TO their infants, rather than FOR their babies, to protect and nurture them.

- “Babies Sleep Safest Alone.”
 - New York State Public Health Campaign
- “For you to rest easy, your baby must rest alone.”
 - Philadelphia Public Health Campaign.
- “We know the value of holding your child, cuddling your child, loving your child. But if you take the baby to bed with you and fall asleep, you are committing a potentially lethal act”
 - Deanne Tilton Durfee, Director of the Los Angeles County Inter-Agency Council on Child Abuse and Neglect. Los Angeles Times 4/24/08.

Historical Forces Effected Western Infancy and How We Conceptualize Infant Development

- rise of child care experts replace maternal confidence
- emphasis on technology, rather than on bodies to nurture;
- emphasis on “average expectable outcomes” per any given behavioral parenting strategy..one-size-should- fit all;
- emphasis on social values and ideologies (not biology) to guide research and conclusions..medical care of infants;
- social constructions of infancy, not /biological evolutionary; inortance of individualis, autonomy, separation, self-sufficiency
- “Science” of infant feeding (bottle-formula feeding) and sleep pediatrics became one and the same with...
- mutually reinforcing moral ideas about who infant *should* be, or become, rather than who they are...and how husbands and wives *should* relate vis a vis distance, authority and separation from children...also, touch =sex?

Technology vs. Human Body



*Slippage from perceived
medical-health “good”--to
perceived moral good..*

if...sleeping alone, through the
night is “good” for babies

then “good” babies, do
so?

When up, is not up, and when down is not down.. i.e. when what is biologically “good” for infants is conceptualized as “bad”, what is “normal” is considered “abnormal”, when infant “adaptive” responses are interpreted as “deficiencies”

Solitary Infant
sleep
(separation and
autonomy) is
“good”



Social, infant “co-
sleeping”
(interdependence)
is bad

Love You Forever

by Robert Munsch

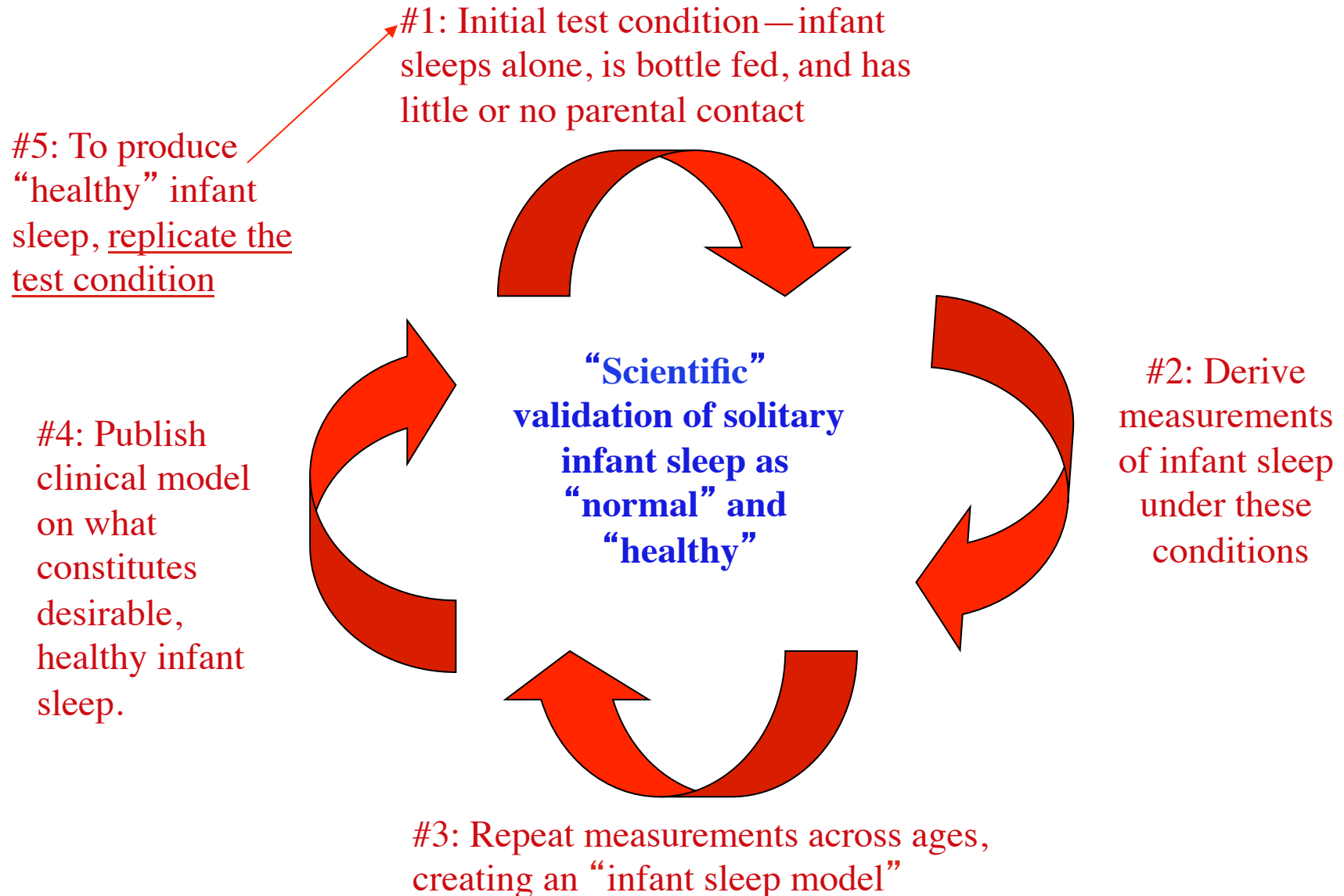
*A mother held her new baby and
very slowly rocked him back and
forth, back and forth, back and
forth. And while she held him, she
sang;*

*I' ll love you forever
I' ll like you for always,
As long as I' m living
My baby you' ll be.*

...But at night when that teenager was asleep, the mother opened the door to his room, crawled across the floor and looked up over the side of the bed. If he was really asleep she picked up that great big boy and rocked him back and forth, back and forth, back and forth. While she rocked him she sang”

*I' ll love you forever,
I' ll like you for always,
As long as I' m living
My baby you' ll be*

Culture Producing Science Producing Culture: How A Folk Myth Achieved Scientific Validation



*Who needs
Biology?
Does It Matter*

*is this what we
mean when we
say.....*



*“a good taste
in art” ?*

Babies And Mothers Sleeping and Breastfeeding (Together)



- Lighter sleep
- Diverse Sleep
- Longer Sleep In Minutes
- Enriched with Much Breastfeeding
- Sensory Exchanges
- Fragrances
- Movements
- Vocalizations
- Physiological Unpredictability For Both
- Looking at Each Other
- Positioning In relationship To Each Other
- Arousing and Sleeping in Syncchorny
- Less crying, More Maternal Interventions

Ventral-Ventral mother-infant contact is biologically normative, as is the co-sleeping micro-environment



Courtesy of Dr. Helen Ball

The parent-infant dyad

- Hofer's "hidden physiological regulatory effects."
- Human infants need and expect proximity and contact from caregivers.



American Academy of Pediatrics “Guide To Infant Sleep” Recommends

- “Never let an infant fall asleep at the breast” ..
 - Really?

The very context within which an infant’s falling asleep evolved...!

(and besides, just try to prevent an infant from falling asleep at the breast!!)

The “dyad” IS the unit of study

Human infant (parental)
social care is synonymous
with
physiological regulation

“For species such as primates,
the mother IS the environment.”

Sarah Blaffer Hrdy, Mother Nature (1999)



Nothing an infant can or cannot do makes sense, except in light of mother's body

Biology of Mother's Milk Predicts Mothering Behavior

- **Feed and Park
Species (nested)**

- **(Ungulates)**

- High fat
- High protein
- Low carbohydrate

- High calorie = long feeding interval;

(to avoid predators nested infants *do not defecate or cry in mother's absence*)

- **Feed And Carry
Species**

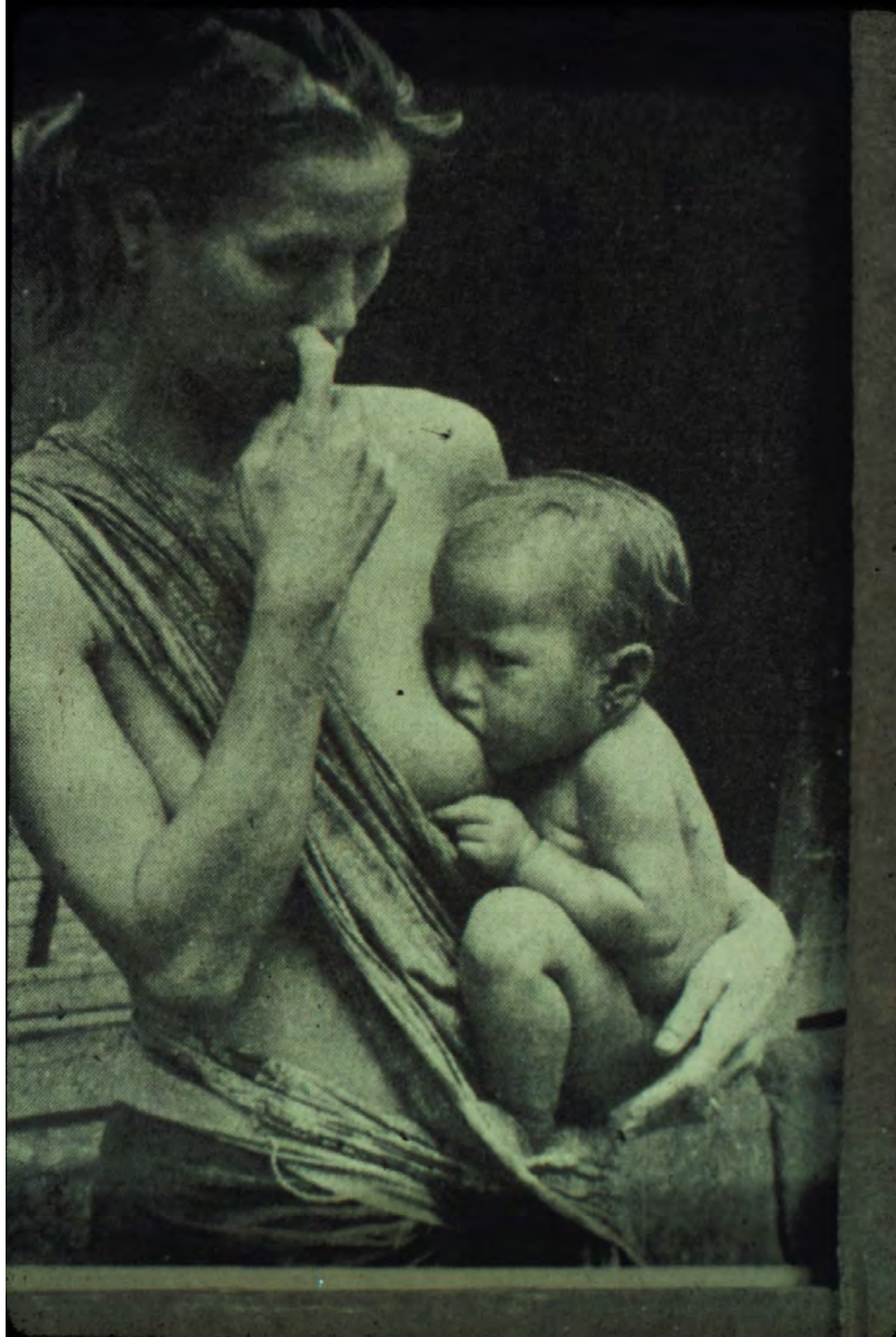
- **(Primates—Humans)**

- Low fat
- Low protein
- High carbohydrate

- Low calorie = short feeding interval;

(“carried” infants cry *in mothers absence and defecate spontaneously*)

Consider the physical intimacy of the maternal-infant relationship

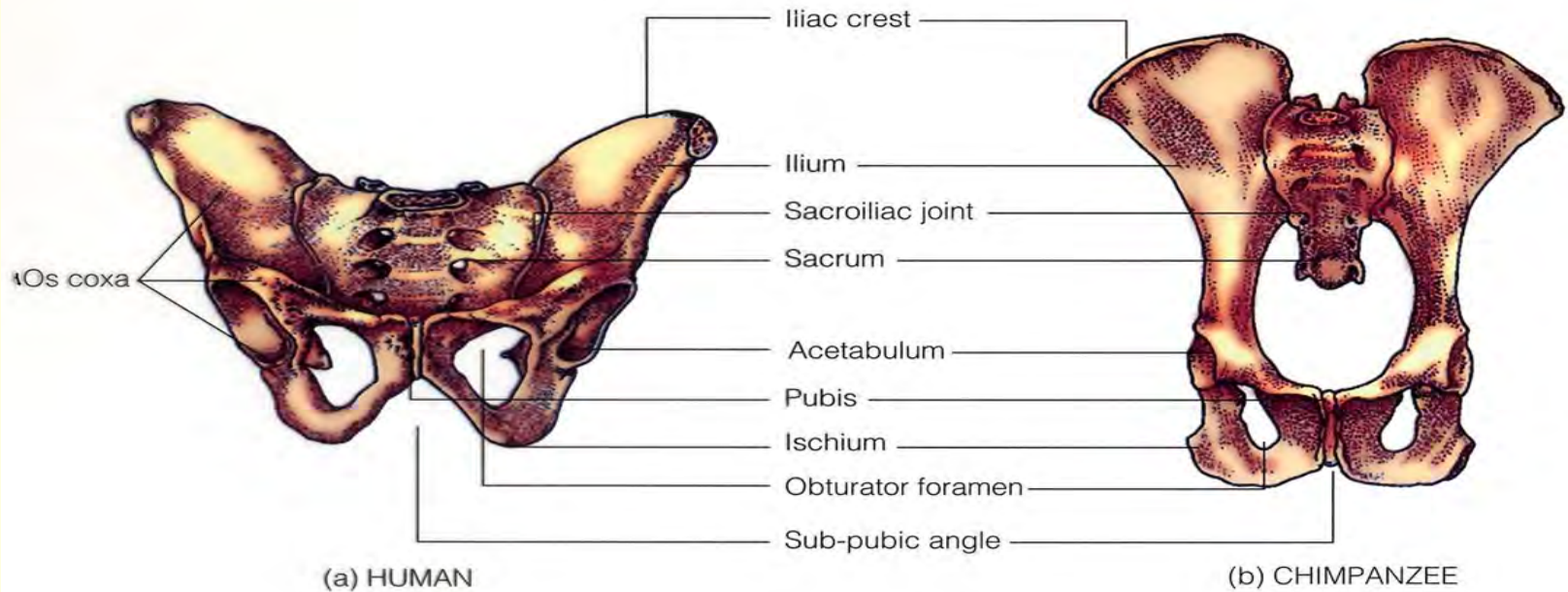


Contemporary
Balinese Mom and
Baby

...socially and
medically
obscured in
western
culture

At birth the human infant is the least neurologically mature primate of all, and the most reliant on physiological regulation by the caregiver for the longest period of time.

Pelvic Girdles

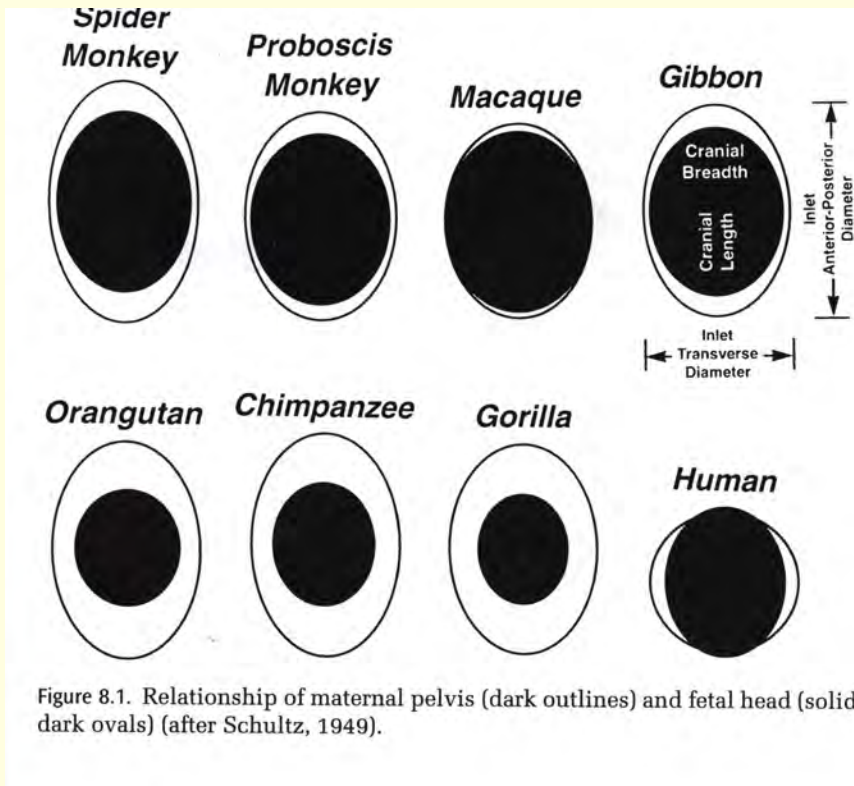


Acetate 37 (Figure A-6)

© 1997 Wadsworth Publishing Company

- **Rotation of ilium (hip bones) forward and shortening of ischium to support bipedalism**
- **Concurrent with increased fetal head size to accommodate learning and social dependence**
- **Results in the human “obstetrical dilemma”**

Enter...*MORE* human biology...



- The human “obstetrical dilemma”;
- Human Fetal Head Size Exceeds Outlet Dimensions *With Emergence of Bipedalism*

Percentage of Adult Brain Size:

Chimpanzee Infant Human Infant

<u>At Birth</u>	45	25	
3 months	50	35	
6	60	45	
9	65	50	
1 year	70	60	
2	75	70	
4	85	80	
8-9	100	95	*(100% at 14-17 years)

Massaged Babies

- gained weight 47% faster (per day),
- were more alert,
- left hospital 6 days earlier than non-treated babies (Field et al 1987) ..
- touch stimulates the vagus nerve (to stimulate the gastro-intestinal tract making digestion more efficient;
- facilitates endorphin release reducing stress..
Stress cortisol levels

Negative Effects of Shortterm Mother-Infant Separation (Nonhuman primates)

- immunological compromises (depressed antibody count);
- increased ACTH stress hormones
- cardiac arrhythmias
- breathing irregularities
- depressed body temperature
- sleep patterns disrupted
- behavioral abnormalities (excessive self-stimulation, hyperactivity, anaclitic depression)

Benefits of Contact (Skin-to-Skin) Newborns

- axillary and skin temperatures significantly higher
- blood glucose levels higher; oxygen saturation increased
- less frequent crying, shorter average duration
- preserve glycogen stores
- nursing established earlier, more firmly
- accelerated weight gain
- Sources: Barr 1993, Field et al. 1988, Christensson et al. 1993, Acolet et al 1989

A major basis of maternal-infant attachment is “contact-comfort” (rather than satiation)...*Harry Harlow*

“Attachment”:

Unfolding, discriminating bond between parent and infant; genetically-based.....

Immediate survival and protection from predators is main outcome;



Maternal behavior among primates extends throughout an extremely long infant and juvenile period, with prolonged periods of physical contact.



Orang-Utan



3-day separation:
induces
physiological
changes (immune,
system, heart
rate,
sleep, cortisol,
loss of
body
temperature..

*anaclitic
depression:*
• *hyperactivity*
• *conservation-
withdrawal;*
• *death or
recovery*



FIGURE 11 Depressed pigtail infant showing characteristic posture and dejected facies. (From I.C. Kaufman and L.A. Rosenblum, The reaction to separation in infant monkeys: anaclitic depression and conservation-withdrawal. *Psychosom. Med.* 29 (1967), 648-75)

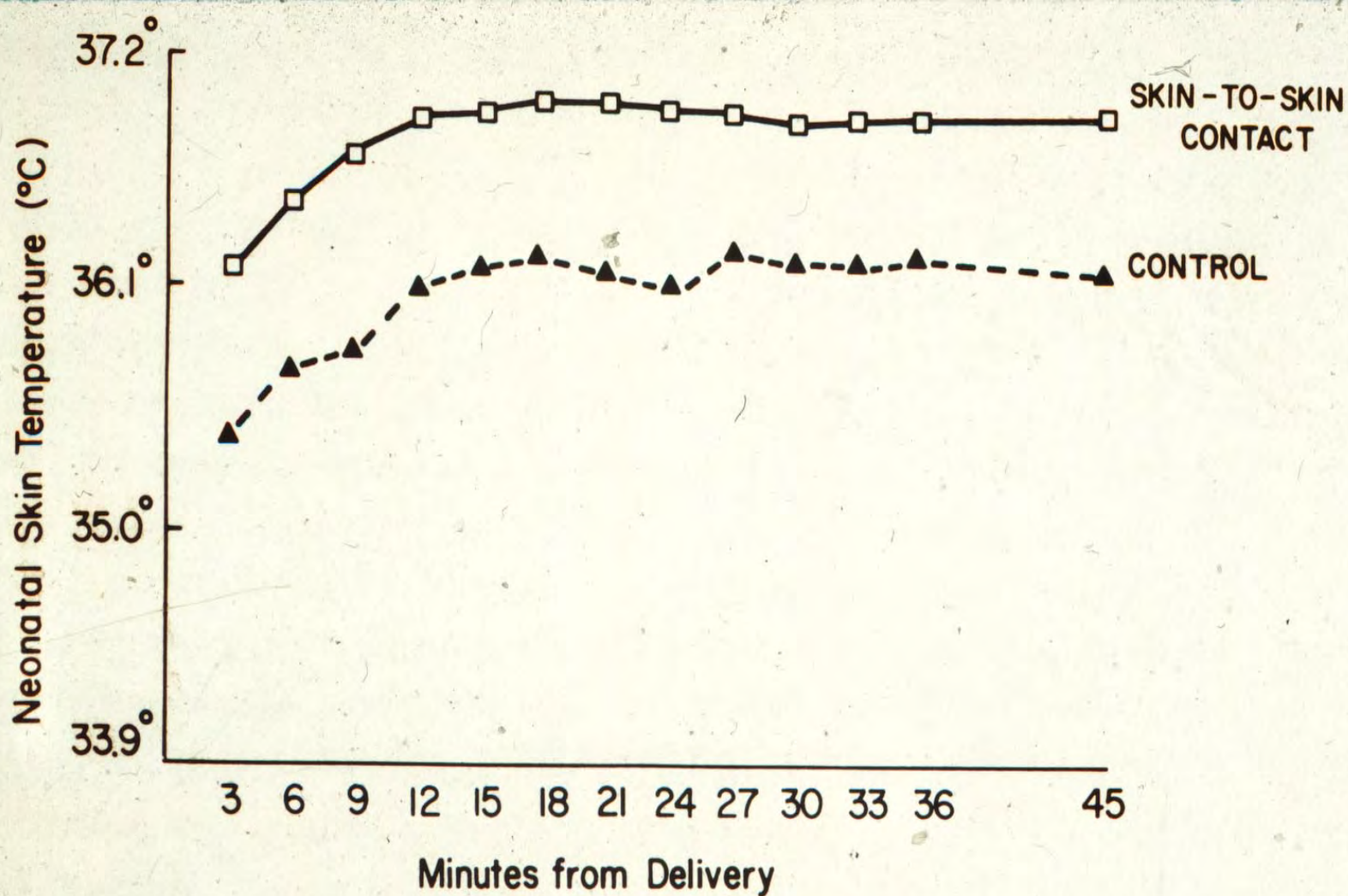


Figure 7. Mean skin temperature (abdomen) of human neonates given immediate maternal-infant contact (placed on mother's bare chest after cutting the umbilicus) and control neonates (placed in a radiant-heated Kreiselman crib) as a function of time after delivery. Data are replotted from Färdig (1980).

*As presented in Schwartz
and Rosenblum 1983.*

Breathing
mechanical
Teddy Bear!

(reduces
infant
apneas by
60%)

(Evelyn
Thoman
1985)



David Barash: *The Tortoise and The Hare* (1987)

“ ...There would be little if any difficulty exchanging a Cro-Magnon and a modern infant, but great incongruity in making the same switch amongst adults of both cultures.”

*Well that mother got older and older. She got
older and older. One day she called up her
son and said. "you better come see me because
I' m very old and sick." When he came in
the door she tried to sing the song. She sang:*

I' ll love you forever,

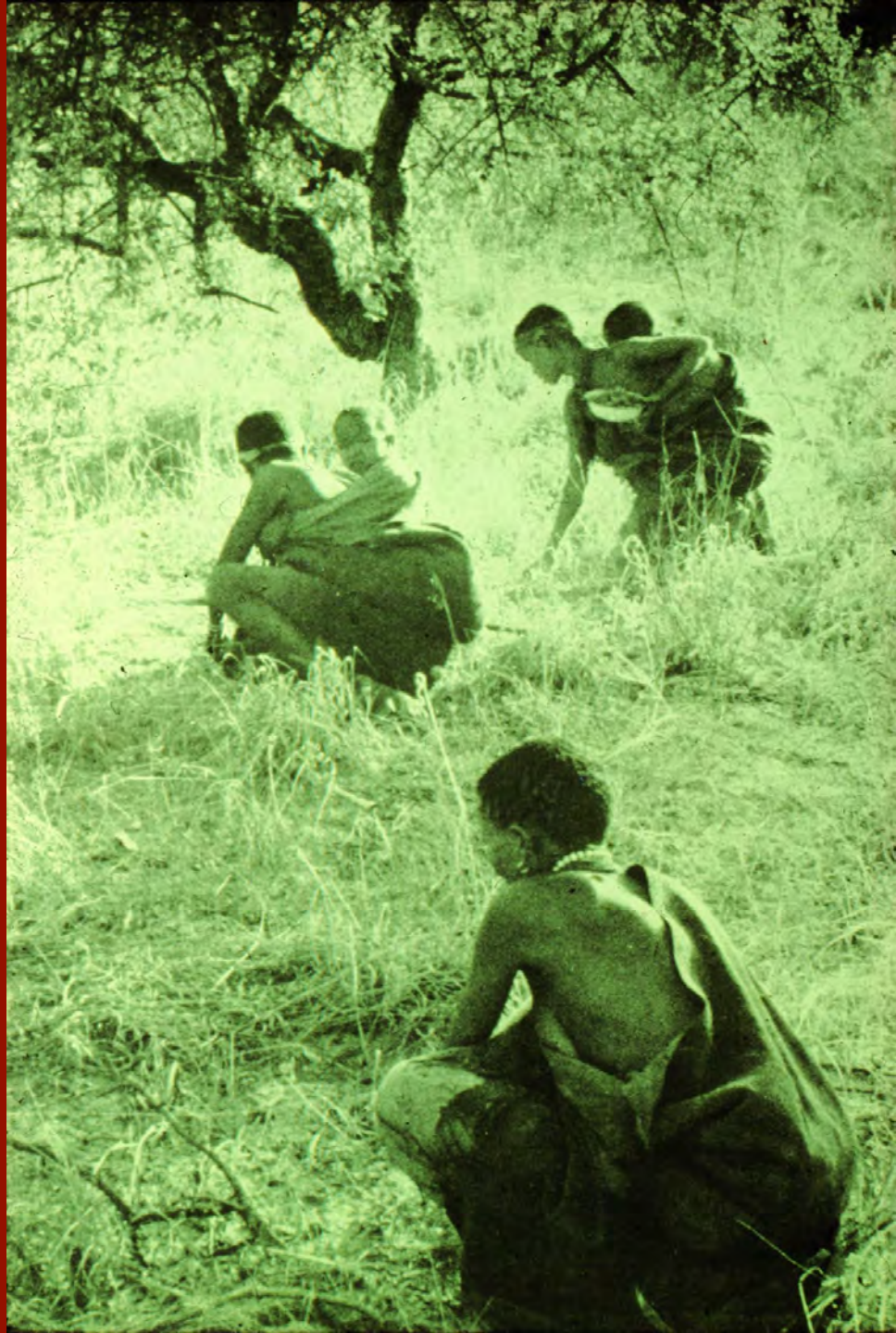
I' ll like you for always..

*But she could not finish because she
was too old and sick*

And the fairest loved,
becomes the fairest love..

*“The son went to his mother. He picked her up
and rocked her back and forth, back and
forth, back and forth.
-And he sang this song;*

*I' ll love you forever, I' ll like you for always,
As long as I' m living,
My Mommy you' ll be”*



First Kangaroo
(Human) Mom: Drs.
Rey and Martinez,
Bogota, Columbia
1972



Fig 2—A 1400-g, 32-week gestation “kangaroo” baby.

Infant-parent cosleeping

a generic concept referring to the *diverse ways* in which a primary caregiver usually the mother sleeps within close proximity (arms reach) of the infant permitting each to detect and respond to a variety of sensory stimuli (sound, movement, smells, sight etc..) emitted by the other

cosleeping is the universal (species-wide) sleeping arrangement

Diversity of Mother-Infant Cosleeping

Filipino



Nigerian

Pakistani



cosleeping:: the universal context of infant sleep development...a generic sleeping arrangement in which mother and infant exchange and have access to each other's sensory modalities (within arms reach)

Now men who suffer from
frequent nighttime urination can...

1. Dis-articulated
from mother...

No touch;

No smells;

No

sounds

No

movement;

No body
heat'

No breadth
exchange



Sleep Like This



Diversity of Co-sleeping (requires taxonomic distinctions)



Co-bedding
twins



(within sensory range)



partial,
mixed



bedsharing with Dad

Parent -infant co-sleeping is biologically and psychologically expectable, if not inevitable.





What Co-sleeping Looks Like

Koala



Maori, New Zealand



napping desert
Aborigine



recliner co-sleeping (unsafe)



**Mother-Baby
Behavioral Sleep
Laboratory**
At the University of Notre Dame



Sometimes babies sleep in mother-baby *sleep laboratories*



Mother-Baby Behavioral Sleep Laboratory

At the University of Notre Dame



Sleep Laboratory Lounge



Studying The Physiology and Nighttime Behavior of Breastfeeding Human Mother-Infant Pairs

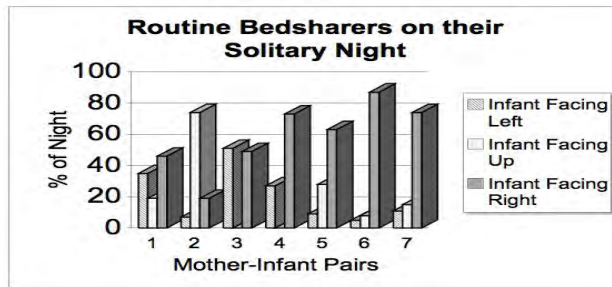


Conversing with data
across discipline cultures:
polysomnography

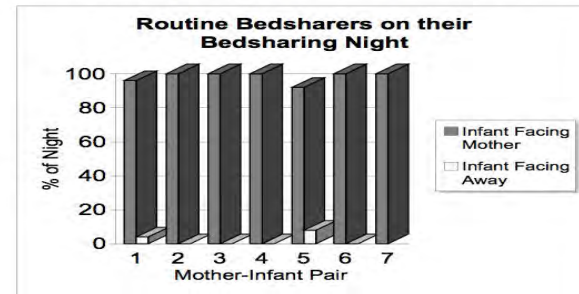
Why was the first
ever physiological
study of mothers
and infants co-
sleeping completed
by a biological
anthropologist

Where do babies look while co-sleeping and while sleeping alone

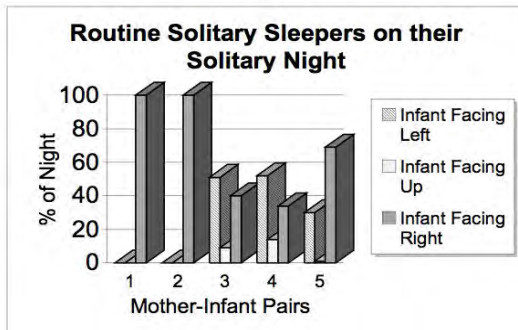
Infant facial orientation while sleeping alone



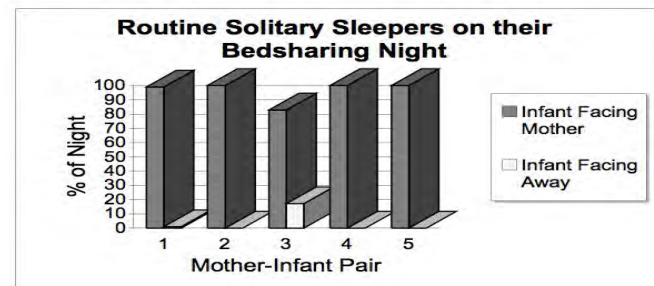
Infant facial orientation while sleeping with mother



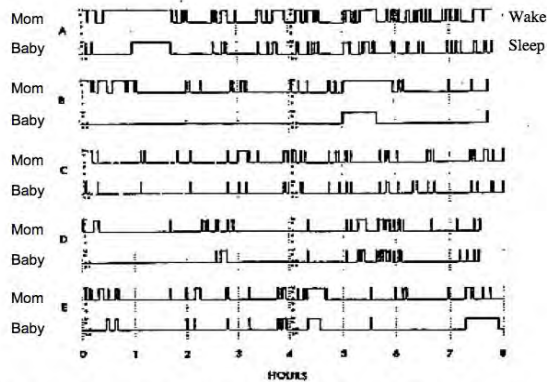
Infant facial orientation while sleeping alone



Infant facial orientation while sleeping with mother

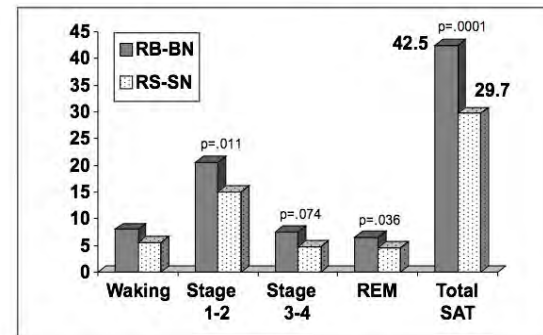


Mother-Infant Mutual Physiological Regulation

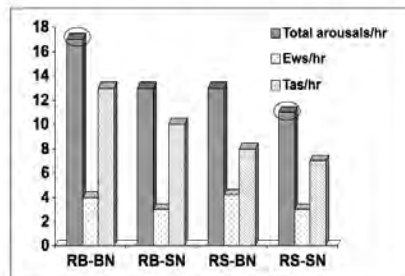


All-night sleep-wake histograms for five (A-E) cosleeping pairs. Mosko, McKenna et al (1993). Journal of Behavioral Medicine 16 (6).

Synchronicity of Mother-Infant Sleep and Wake: Percent Simultaneous Activity Time ("SAT" on routine nights)

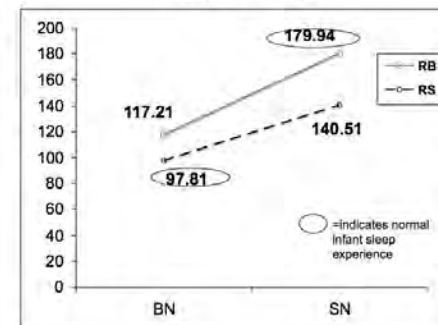


Infant Arousals Per Group Per Night

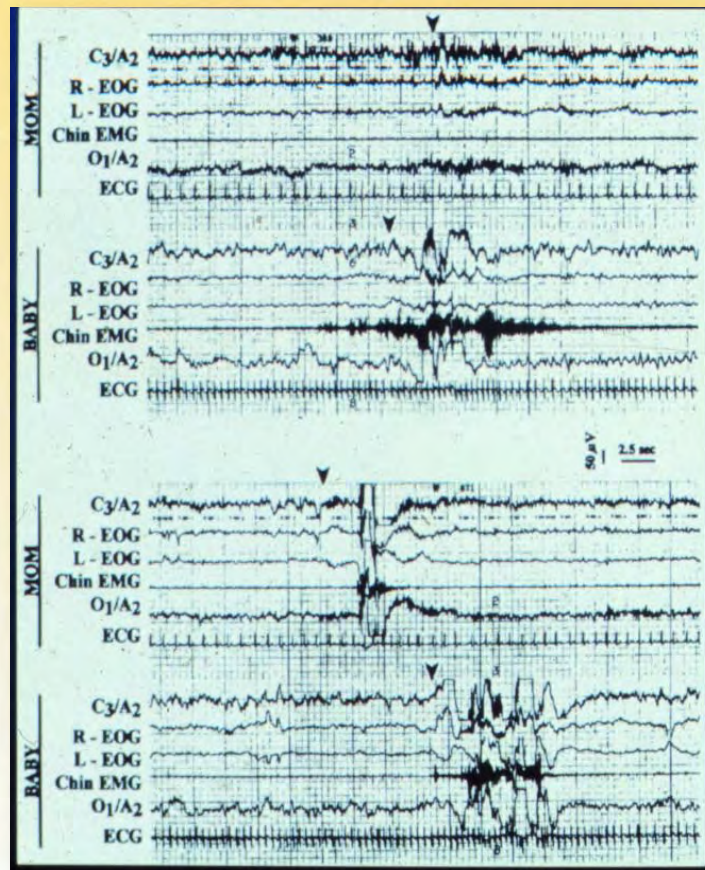


all "bedsharing night" effects are significant for both groups (p<.001)

Mean Interval Between Feeds (in min) Per Group Per Night



EEG Defined Mother and Infant Arousals

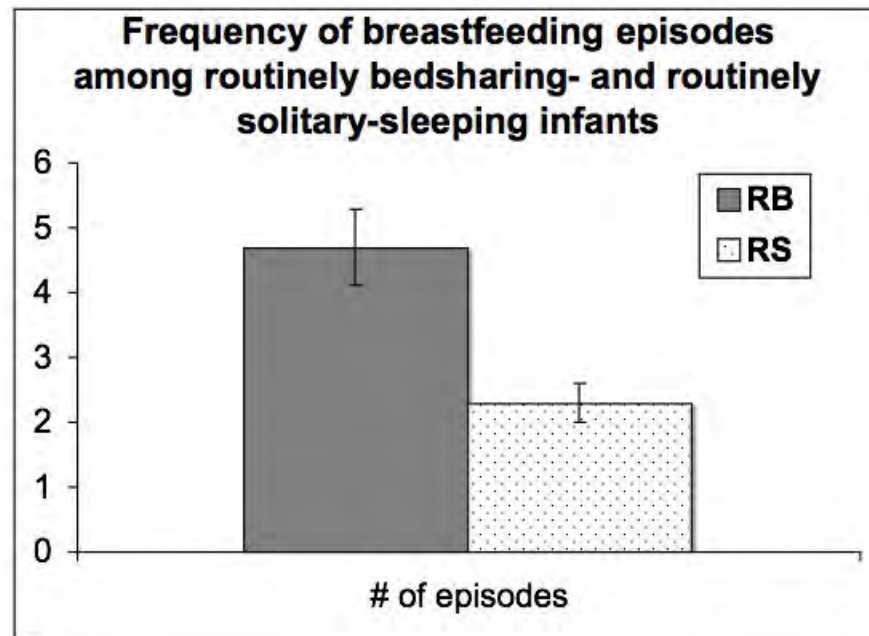


- Infant-induced maternal arousal.

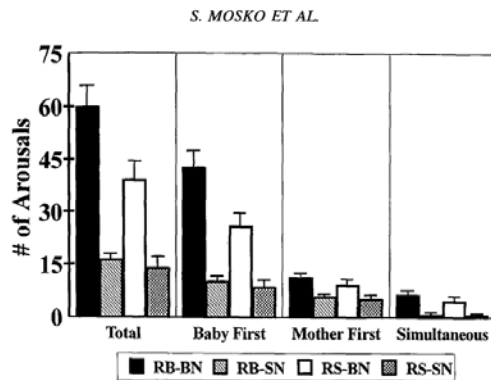
- Maternal-induced infant arousal.

All studies confirm that bedsharing improves and enhances breast feeding (McKenna et al 1997, Ball 2003, Baddock 2006, Young 1999)

Breastfeeding Behavior in Mother-Infant Dyads



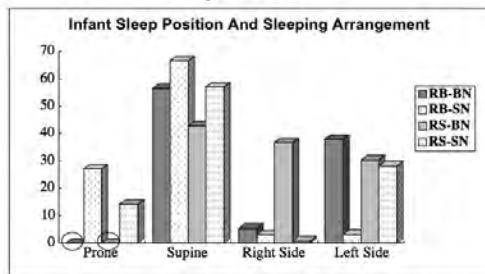
Sleep Architecture, Maternal and Infant Arousals Research



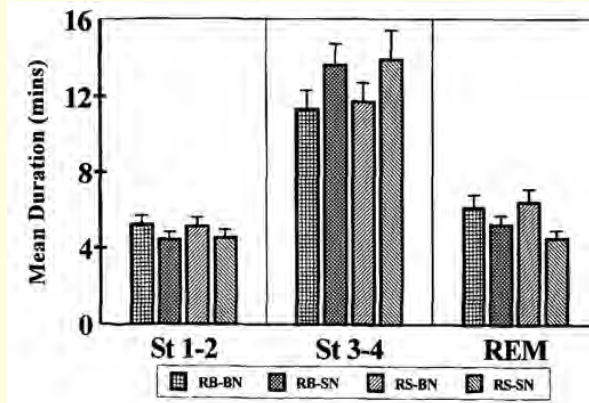
Maternal arousals

Pediatrics (1998)

Co-Sleeping with breast feeding promotes the safer supine infant sleep position

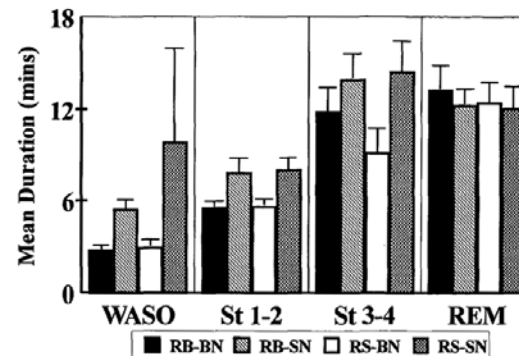


Richard et. al 1996, *Sleep*



Infant Sleep Architecture
Sleep (1997)

MATERNAL SLEEP DURING INFANT BEDSHARING



Maternal Sleep Architecture *Sleep* (1997)

Choice of child care “practice” has physiological consequences for infant development

Choice of Routine Sleeping Arrangement

Cosleeping (?)

Solitary Sleeping (?)

choice affects:

breastfeeding duration, frequency, infant sleep position, arousal patterns, sleep architecture, maternal inspections, thermal and CO₂ environment, infant crying, heart rate and breathing, emotional (interactional) expectations from parent, sensitivity to presence of “other”

Socio-cultural and Historical Factors and Forces Leading to Erroneous Scientific Understandings (Undermining Parental Confidences and Empowerment)

- rise of child care experts using moral judgments as a basis of recommending what infants “need” ..what is worth “investing in” as a infant care practice..
- belief in superiority of technology, rather than on maternal bodies to stimulate, hold and nurture; view of mothers body as lethal weapon over which neither infant or infant have control;
- emphasis on “average expectable population outcomes” rather than on individual variability or potential.. per any given behavioral parenting strategy;
- emphasis on ethnocentric social values and ideologies (not biology) to guide research and conclusions..”fallacy of medical normalcy” (G.Williams)
- improper *medicalization* of relational (caregiving) issues ..assumed to be best understood by pediatricians (who generally have no training in human social development or human evolution...)
- “Pathologizing” of normal behavior (crying when left alone) ..making infants into patients (blaming the victim for the crime) in need of correction when they fail to follow cultural scripts..”Never let a baby fall asleep at the breast” AAP Guidelines For Infant Sleep
- social constructions of infancy, not /biological- evolutionary based (influences of Freud, Klein, Watson..psychology in general);
- “Science” of infant feeding (bottle-formula feeding) and sleep pediatrics became one and the same with... mutually reinforcing moral ideas about who infant *should* be, or become, rather than who they are...and how husbands and wives *should* relate vis a vis distance, authority and separation from children...also, ideologies about the bedroom as a “sexual place..”
- Rise of romantic love. Specialness of “conjugal pair” authority of father, evils of infant original sin and manipulating infant

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**slide courtesy of Meret Keller and Wendy
Goldberg**

