

Safe Infant Sleep? Who Decides? On What Evidence?

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.

or

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



For more information about how to keep your child safe, please call 311 in New York City and ask for a safe sleeping brochure or go to www.nyc.gov/acs; throughout New York State, call 800-345-KIDS, or go to www.ocfs.state.ny.us.



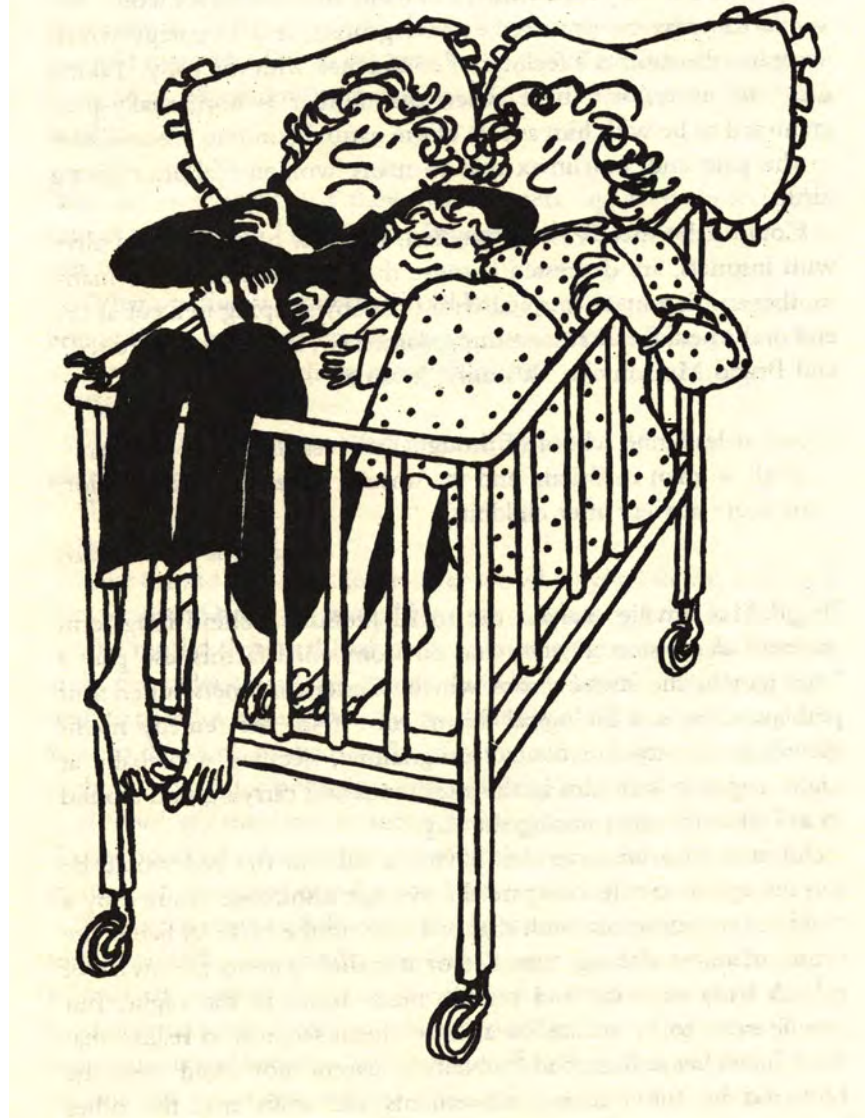
New York State
Office of Children
& Family
Services

David A. Paterson, Governor, New York State
Michael R. Bloomberg, Mayor
Claudia Carnice, Commissioner,
NY State Office of Children and Family Services
John B. Marringh, Commissioner, Children's Services

Babies Sleep Safest Alone



Making
everyone
safe and
happy?



Lecture Organization:

1. A cultural mindset..the rise of dangerous rhetoric and why it must be challenged;
2. What do we know? What exactly is “cosleeping” ?
Definitions matter
3. Where did our thinking come from (a lot of history..the SIDS-SUDI conundrum);
4. Does a biological/ evolutionary/ecological perspective, rather than exclusively a cultural perspective help?

Part 2. Recalling human evolution (biology) as a fundamental beginning point....does it matter?

1. Bipedalism required neonatal neurological immaturity, with delayed development making human infants extero-gestates;
2. Human breast milk composition requires frequent breastfeeding and a specific system *of delivery facilitating mother-infant sensory exchanges promoting neurological stability and growth;*
3. Documented ancient, underlying neuro-biological bases of parental motivations to respond to infant behavioral signals, cues, responses, needs;
4. Documented physiologically-based responses by infants to parental contact..physiological regulation (*that's why co-sleeping makes babies, ahh happy i.e. it sin their bes biological best interest and why they will never get the AAP memo...*)

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.

Cosleeping Tombstone (for headboard)



City of Milwaukee: Anti- bedsharing Campaign. Anne Benton: “Bedsharing is dangerous...as far as we are concerned there is no debate...”

Implication: a good parent would never take their baby to bed with them..A responsible parent would never do this..which means only irresponsible parents would and should therefore be subject to prosecution and/or having their infant removed by child protective services.

Nothing illustrates the philosophical differences better than this:

Following the tragic death of a bedsharing infant whose teen mother drank **18 cans of beer before retiring to bed with her infant,**

Then President of a national SIDS organization wrote to the Editor of the San Antonio Tribune, 2000, saying:

- **“Sharing an adult bed with an infant is not cool, nor is it an indicator of educated parenting.”**
- **No mention of the 18 can so beer! Judging parents as ‘uneducated’ who sleep with their babies and implying they sleep with their babies because they want to be “cool”**

“Safe Infant Sleep” campaign rhetoric has become vitriolic, threatening, dismissive of parental civil liberties, or input, and of legitimate alternative public health messages and any empirically-based scientific challenges;

“Safe infant sleep” has become practically synonymous with ‘*babies sleeping alone*’ in the absence of their mothers (*breastfeeding or not*)

see L.T. Gettler and J.J.McKenna (2010): *Never Sleep With Baby? Or Keep Me Close But Keep Me Safe. Current Pediatric Reviews (2010)*

American Academy Of Pediatrics New SIDS Prevention Recommendations (I served as an ad hoc expert member)

***proximate but separate sleep for baby;

i.e. parent-infant co-sleeping!

breastfeed

no side position sleeping;

cuddling but no bedsharing

pacifiers for sleeping infants, after breast feeding is
established;

more holding and carrying

(but no bedsharing, described as hazardous)

What Makes Infant Sleep Safer

- Supine sleep position;
- Maternal/Paternal presence; **infants should never sleep alone!**
- Exclusive breastfeeding; (it changes everything about sleep)
- Absence of maternal smoking during pregnancy and after;
- Parental knowledge of safe crib and co-sleeping environments;
- no children co-sleeping with infant;
- If routinely bedsharing, pull frame off of bed, center in middle of room on floor;
- If bottle feeding, or a smoker, avoid bedsharing, place crib or bassinet next to bed, separate surface co-sleeping;
- **Adhere to routine practice;**
- **Avoid co-sleeping on couches, armchairs, recliners, or waterbeds;**
- **Avoid indifferent attitude; if bedsharing, agree that each adult has responsibility for monitoring presence of baby;**
- **If bedsharing, do so enthusiastically with both partners agreeing committing to infant care and concern;**

BTW...What is “roomsharing”?
Why is it protective? What is protective?

Roomsharing is a form of co-sleeping!
It is not the inert walls of the room that are shared, or what is protective of the infant.

Room sharing is parent sharing...involving the sensory exchanges occurring between the parent and infant..changing the infant's physiology through interactions, parental monitoring and intervention.

Just published: *Pediatrics*.... Oct 18, 2010 (P.Blair, J. Heron and P.Fleming: **Population-Based Analysis Relationship Between Bed Sharing and Breastfeeding: Longitudinal, Population-Based Study**

“Given the likely beneficial effects of bed sharing on breastfeeding rates and duration, risk reduction messages to prevent sudden infant deaths would be targeted more appropriately to un- safe infant care practices such as sleeping on sofas, bed sharing after the use of alcohol or drugs, or bed sharing by parents who smoke” (Blair, Heron and Fleming 2010:1125).

DOI: 10.1542/peds.2010-1277 published online Oct 18, 2010; *Pediatrics* Peter S. Blair, Jon Heron and Peter J. Fleming

What are those risks of not breastfeeding?

Breastfeeding increased protection against SIDS!!

“Infants who are formula fed are twice as likely to die of SIDS than breastfed infants.”

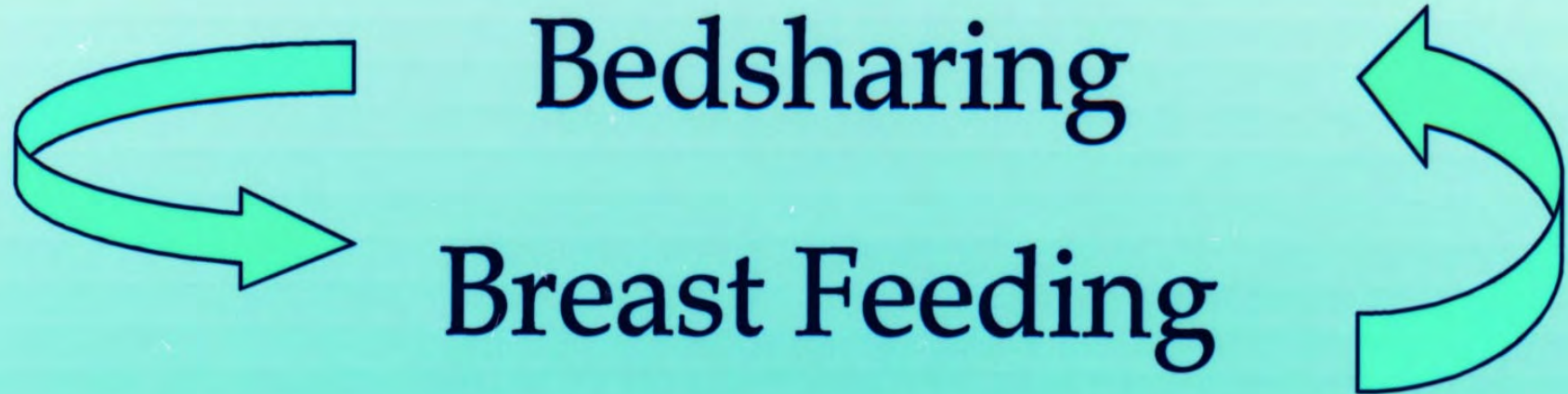
Case control study of 333 cases of SIDS matched against 998 age -matched controls in Germany, from 1998-2001

Vennemann MM, Bajanowski T, Jorch G, Mitchell EA. *Does Breastfeeding reduce the Risk of Sudden Infant Death Syndrome?* *Pediatrics* Vol.123, March 2009, pp e406-410

“Breast Feeding and the Risk of Post-neonatal Death In the United States”

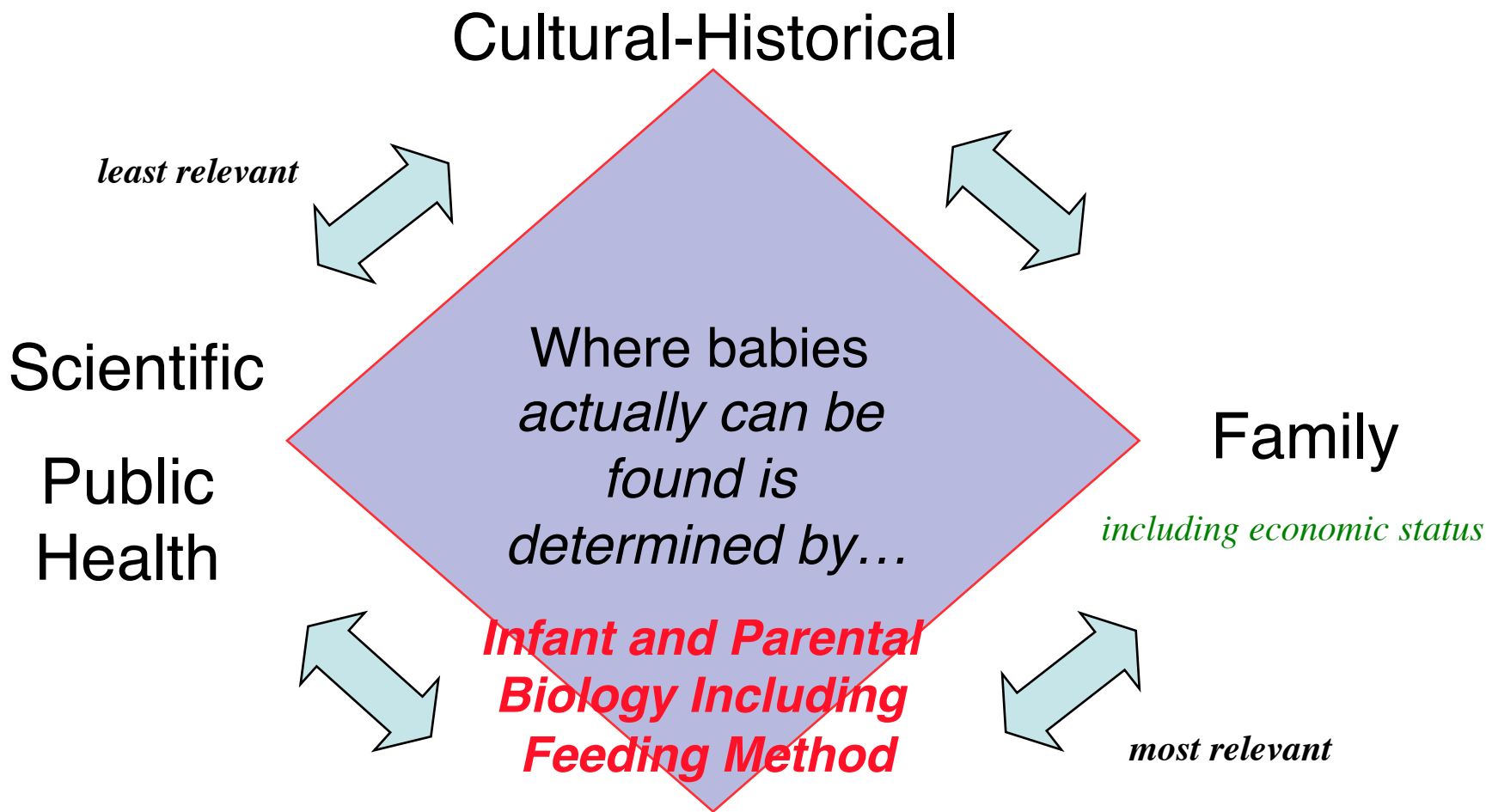
- Studied 1204 infants who died between 28 days and 1 year from causes other than congenital anomaly/tumor.and (7740 children who lived at 1 year) (controls);
- Calculated odds specific odd ratios for ever/never breast feeding amongst all children ...race-birth weight specific analysis--and duration-response effects;
- Longer breast feeding associated with lower risk: odds ratio range from:
 - .59 95% CI 0.38-0.94 for injuries to 0.84% (95%CI:.67-1.05) for **sudden infant death syndrome (SIDS); (Amin Chen and Walter J.Rogan)**
 - “Breast feeding has the potential to save or delay ~720 post=neonatal deaths in the United States each year
 - Pediatrics (2004) 113: E435-439...url:<http://www.pediatrics.org/cgi/content/full/113/e435>

Infant-Parent Cosleeping with Breast Feeding: An Integrated Adaptive System



A mutual re-enforcing system

AT 4:17 am... what factors/processes determine where a baby really sleeps?



References:

Ball 2007; Baddock et al.2007; McCoy et al. 2007; McKenna and Volpe 2006

What Is Co-sleeping?

*“When my two
lovely daughters
are sleeping at
the same time”*

Robert Hahn, Ph.D.

(Center for Disease Control)

*Bobby Bowdin...Florida State
University Head Football Coach*

*“I slept in the same bed with my
grand daddy..and then in the
same bed with my four cousins..I
never slept alone t’il I got
married”!*

South Bend Tribune.. 9/29/2000

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

USA National Percentages of Full or Part-Time Bedsharing Mothers

- **Willinger et al. 2003...as high as 50% (part of night, sometimes)**
 - **Since 1990, from 5 to 12.2 % routine bedsharing..**
- **McCoy et al.(2000) 22% (always), to 50% (sometimes);**
- **More recently, Lahr et al. 2006 73% of Oregon mothers bedshare for some or part of night;**
- **National Prams data set..show minority of US infants never bedshare...**

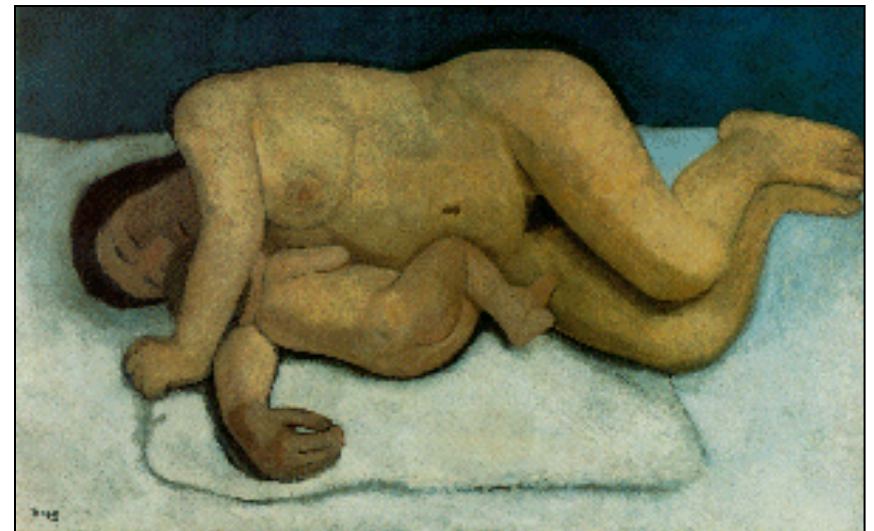
Percent Parents Who Bedshare (USA)

Source: National Center For Health Statistics 1999

• Almost Always...	Sometimes.....	Never
• Alaska 38.5	39	22.5
• Alabama 32	38	31.4
• Colorado 14.4	48	37.5
• Oregon 34.4	41	23.4
• West Va. 20.4	37	42.5

A minority of our mothers do not bedshare at some time with their infants!!!

Home Studies (Dr.Helen Ball) Durham, England



What Does *Human* Co-sleeping Look Like?

Diversity of Co-sleeping *(requires taxonomic distinctions)*



Co-bedding twins



partial, mixed



(within sensory range)



bedsharing with Dad

born to breastfeed...contact, co-sleeping, engagement

Life, as we know it...a visually rich, ethnographic study?

*From: "The Science of Shared Sleep." Mothering Magazine (2009)
Lee T. Gettler and James J. McKenna*



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





In all it's forms....

Koala



Maori, New Zealand



napping desert Aborigine



recliner co-sleeping (unsafe)

To be fair... Solitary Sleep



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

The western infant is
disarticulated from the
mother's body...

No touch;

No smells;

No sounds

No movement (of
others) to respond to;

No body heat
exchange

No breath
exchange;

No parental
inspections..physiological
regulation

A newborn baby is shown wrapped in a white, textured blanket, lying on a red surface. The baby's face is visible, and they appear to be sleeping peacefully. The background is a solid red color.

Sleep Like This

Formula and cow's
milk made it possible to
“*Sleep Like This*”

In contrast....

- Hofer' s “physiological regulatory effects.”
- Human infants need and expect proximity and contact from caregivers.
- *Social care for human infants is synonymous with physiological regulation...*



What explains this way of thinking ?

*A little cultural history..,
out of what historical context
did present ways of thinking
emerge*

*Western Values favoring: individualism
autonomy, specialness of conjugal pair,
notion of romantic love, sexual privacy,
adoption of bottle feeding and others...*

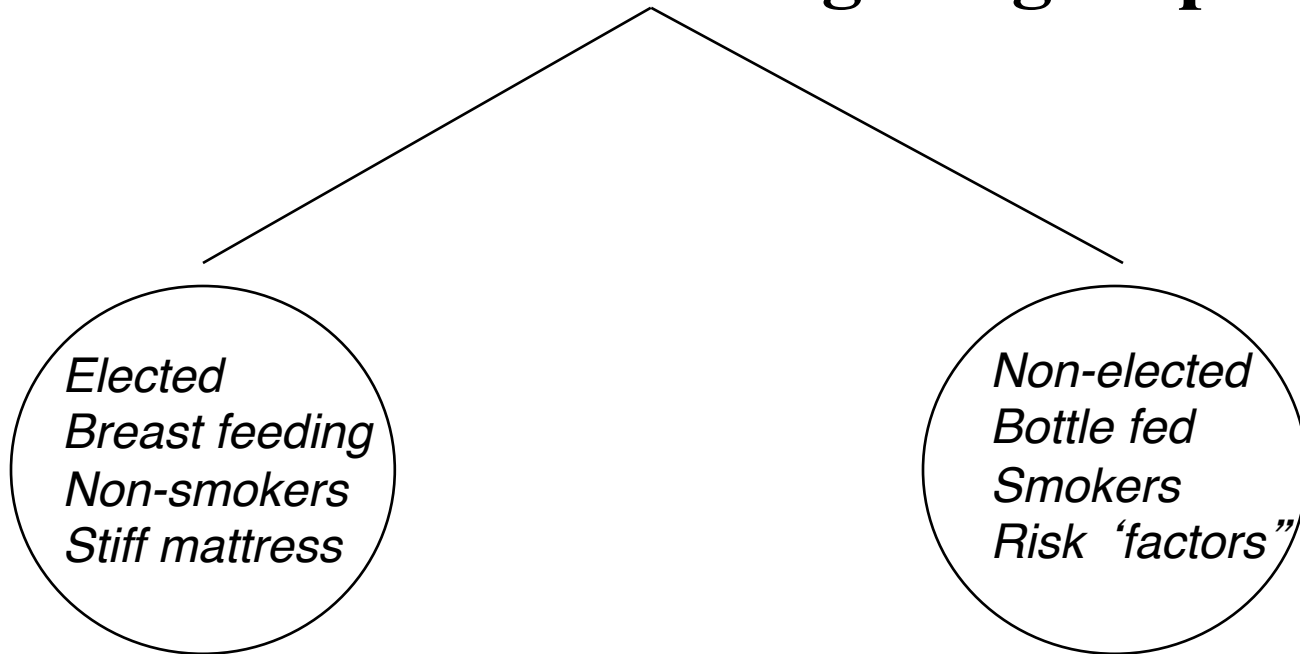
Until recent historic periods in the western industrialized world

- *Until recent historic time no human (primate) infant (ancestral or modern) was ever separated from their caregivers...nocturnally, or any other time*
 - *Most human infants know only social proximity and/or contact, with someone*
 - *And nobody ever asked: where will my baby sleep, how will my baby feed, how will I lay my baby down for sleep (most still don't)*
 - ***Any study which claims to understand human infant sleep absent of mother's role, breastmilk metabolism and breastmilk delivery is at very least inaccurate, but most likely, incorrect.***

SUDI/SIDS :

benefits-risks continuum

Two distinct bedsharing subgroups



 *Less Risk (protective?)*

More Risk 

Double standard of “cause” “diagnosis” and “remedy” of crib vs. co-sleeping deaths must be challenged

- Infant dies sleeping prone in crib
 - Cause: sleeping prone...
 - Diagnosis: SIDS
 - Remedy: turn infants supine, educate and inform
- *A tragic problem to be solved*
- Infant dies sleeping prone in bed with parents
 - Cause: bedsharing
 - Diagnosis: Asphyxiation by overlay
 - Remedy: eliminate all bedsharing, retract safety information on safer bedsharing, condemn the practice;
- *A deadly practice to eliminate*

Unsafe Bedsharing Occurs Under A Variety of Social and Structural Conditions

Fluffy Beds, Infant Alone



Overcrowded



Nocturnal Lives Of Mothers and Infants

Examples:

- 1.Solitary-crib baby placed prone, face down;**
- 2. Neck-wrap, head covering, pillow, solitary, crib baby;**
- 3.Bottle-feed bedshare between pillow, teen mom ,lack of maternal response;**
- 4.Breast feeding mothers, high level of responsivity to infant;**



Mother-Baby Nocturnal Behavior Under the Cover of Darkness (or an infra red lamp)



- Dark Room Appears Bright

Real Care vs. Perception of Care (Ideal vs. Practice)



- Mother alert to SIDS safety, places infant on pillow face down.
- 47% (n=102) of young teen moms do not follow what they previously described claim is “safe sleep” procedures

Normative Nighttime Behavior

- Babies can't seem to get too close...

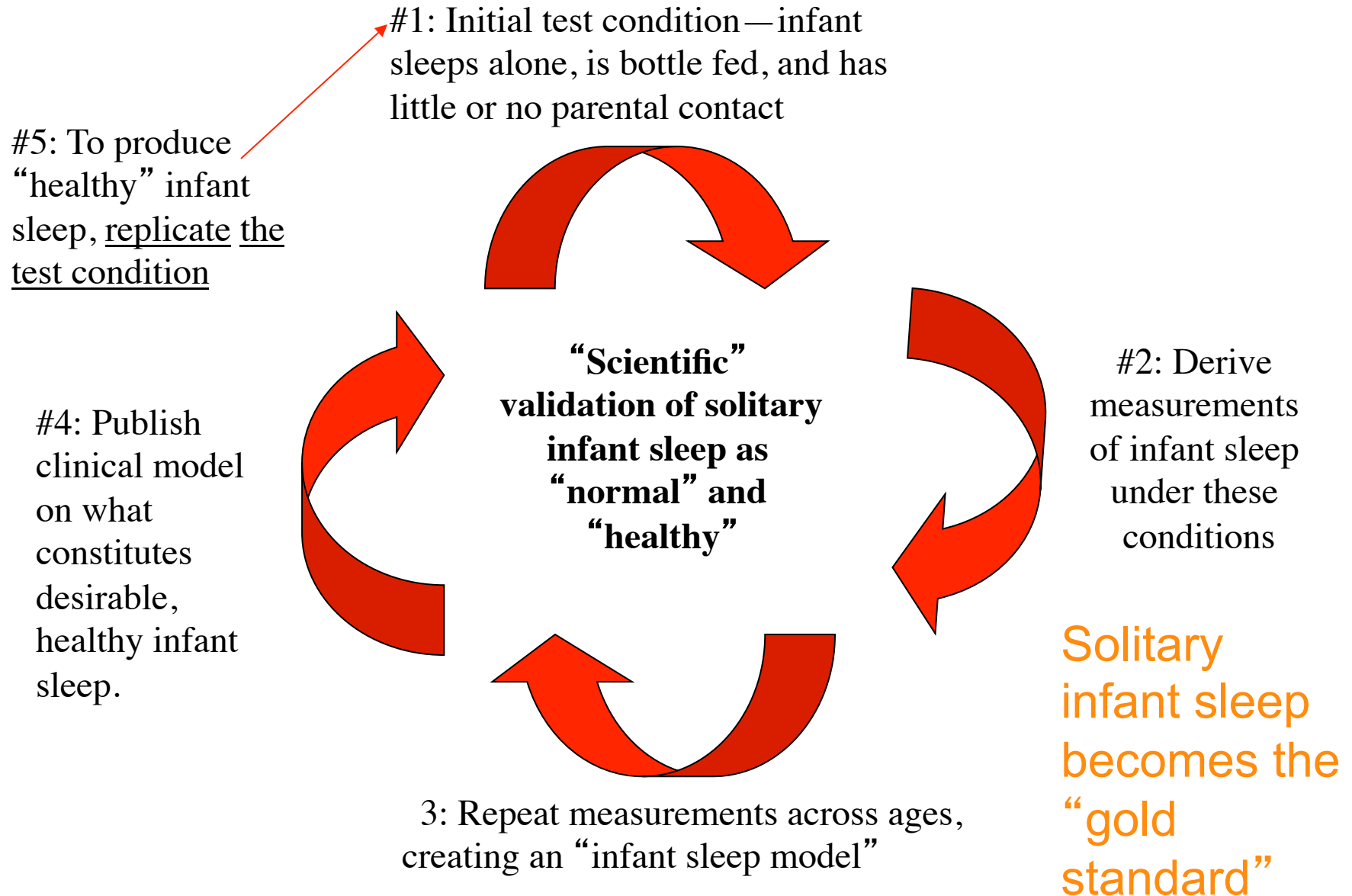


Current western infant sleep research paradigm:

Prioritizes infant “sleep consolidation” at the expense of nighttime breastfeeding!

- one-size- must- fit- all approach (dismisses heterogeneity)
- devoid of *relational-emotional* aspects including unique infant “intrinsic” factors
 - Infant sleep personality-temperament
 - How infant *articulates with unique needs of parents*
 - Devoid of underlying biology of emotions
 - Devoid of an evolutionary perspective;
- *Current models either ignore altogether the critical relationship between nighttime breastfeeding and infant sleep;*
- *or minimize its significance of breastfeeding to infant-maternal health.. seeing anything that threatens early sleep consolidation as negativetoo much breastfeeding is to be avoided or “dealt with”*

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



Babyhood.....by Paul Reiser

“Getting your child to sleep becomes a blinding obsession. I myself would often lose sight of the larger picture. What is the actual goal here? Constant sleep? No awake time? Zero consciousness?

I mean, we must accept that at some point babies have to be awake. They did not come to the planet just to sleep. Are we determined to get them asleep just so we can get a taste of what life was like before we had a kid?

Because, if we are, then why did we have a kid? Just to lie there to look soft and fuzzy? We could have gotten, say, just a peach. A St Bernard? A narcoleptic houseguest?

Or why not just a chenille bathrobe? Chenille bathrobes are fuzzy and just lie there”?

With Respect To Infant Sleep Western Parents Remain ...

the most exhausted
the least satisfied
the most obsessed
the most “well read”
the most opinionated
the most judgmental

***The cultural undermining of western maternal
knowledge and confidence***

**Benjamin Spock writing to mothers in: Baby Care
says...**

**“You know more than you think you do....
don’ t be afraid to trust your common sense.
Bringing up baby won’ t be a complicated job if you
take it easy, trust your own instincts, *and follow
the directions your doctor gives you!*”**

cited by tina thenevin,1993, mothering and fathering

John Watson...*believed no child could get too little affection*

“Never hug and kiss them.....Never let them sit in your lap. If you must, kiss them once on the forehead when they say goodnight. Shake hands with them in the morning. Give them a pat on the head if they have made and extremely good job of a difficult task”

(Watson, 1928, quoted by Hardyment, 1983, p. 175).

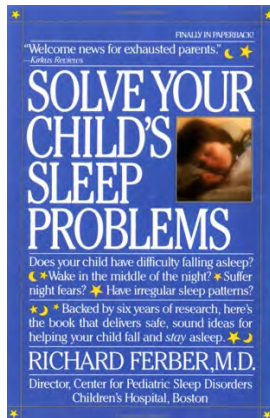
Watson's Model ?



The dis-embodied infant?

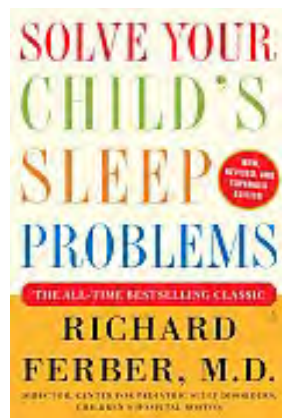
future “caretaking”
environments for
our infants?

Dr. Richard Ferber “*changes his mind*”..?? *But the larger and more important question is...What is it about our culture that makes us care so much....*



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)

Western parents often equate the infants (and parents) moral standing with infant sleep behavior i.e. confusing a perceived medical “good” with a moral “good”, that is,

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

then don't “good” babies do
so,?

*Culture changes faster than than
infant or parental biology*

*“Although the biology of infancy is
universal in historic time human
perception of infants and what are
required to care for them are
socially constructed and subject to
historical change.”*

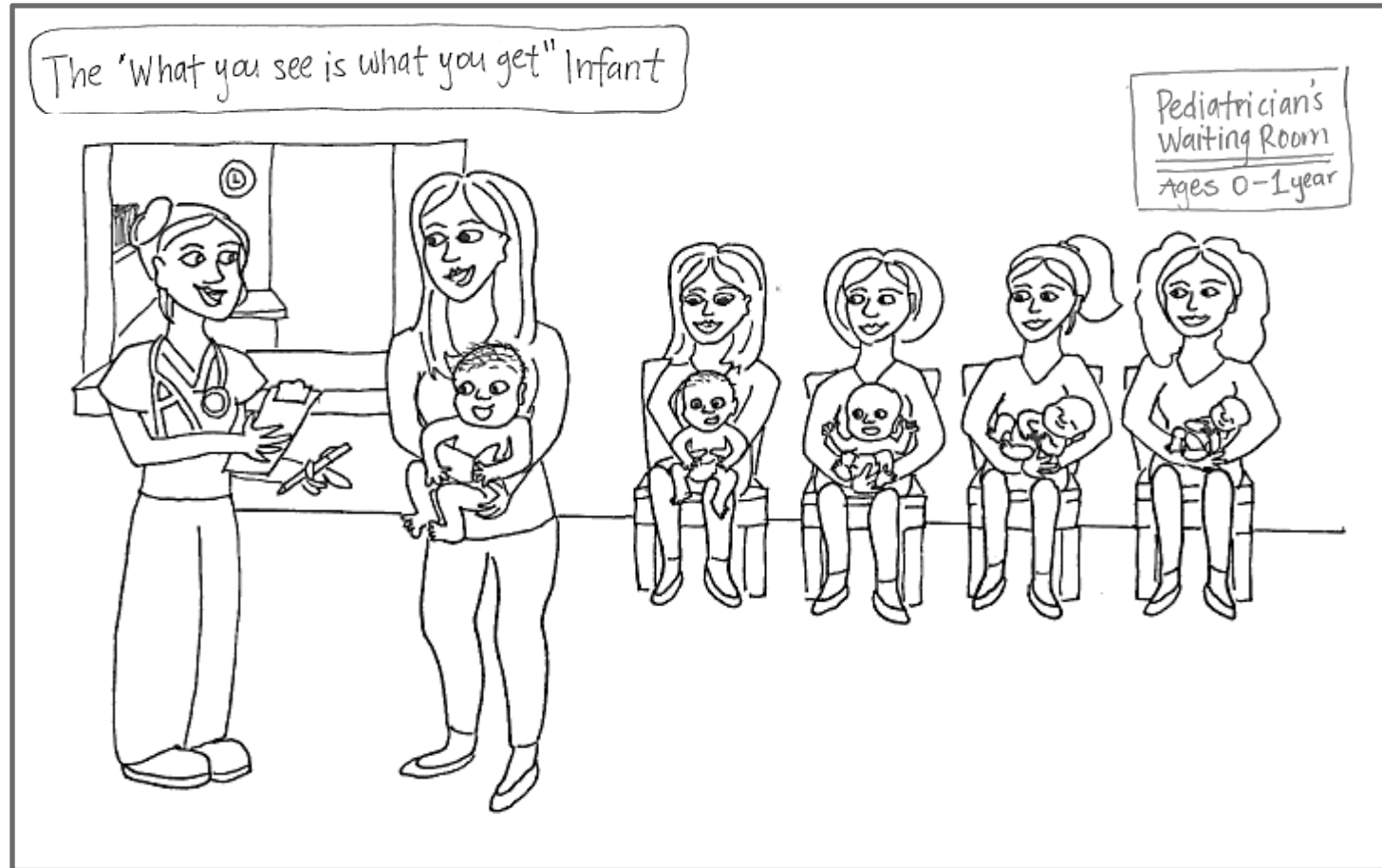
(Sussman 1982)

In understanding and explaining human infant behavior and needs...John Bowlby (attachment theory) maintained:

- *not sufficient to refer only to contemporary “proximate” factors or present socio-cultural (developmental) contexts*
- *Rather, the ‘original environment’ within which infantile emotions and survival strategies co-evolved...alongside parental responses must be referenced*

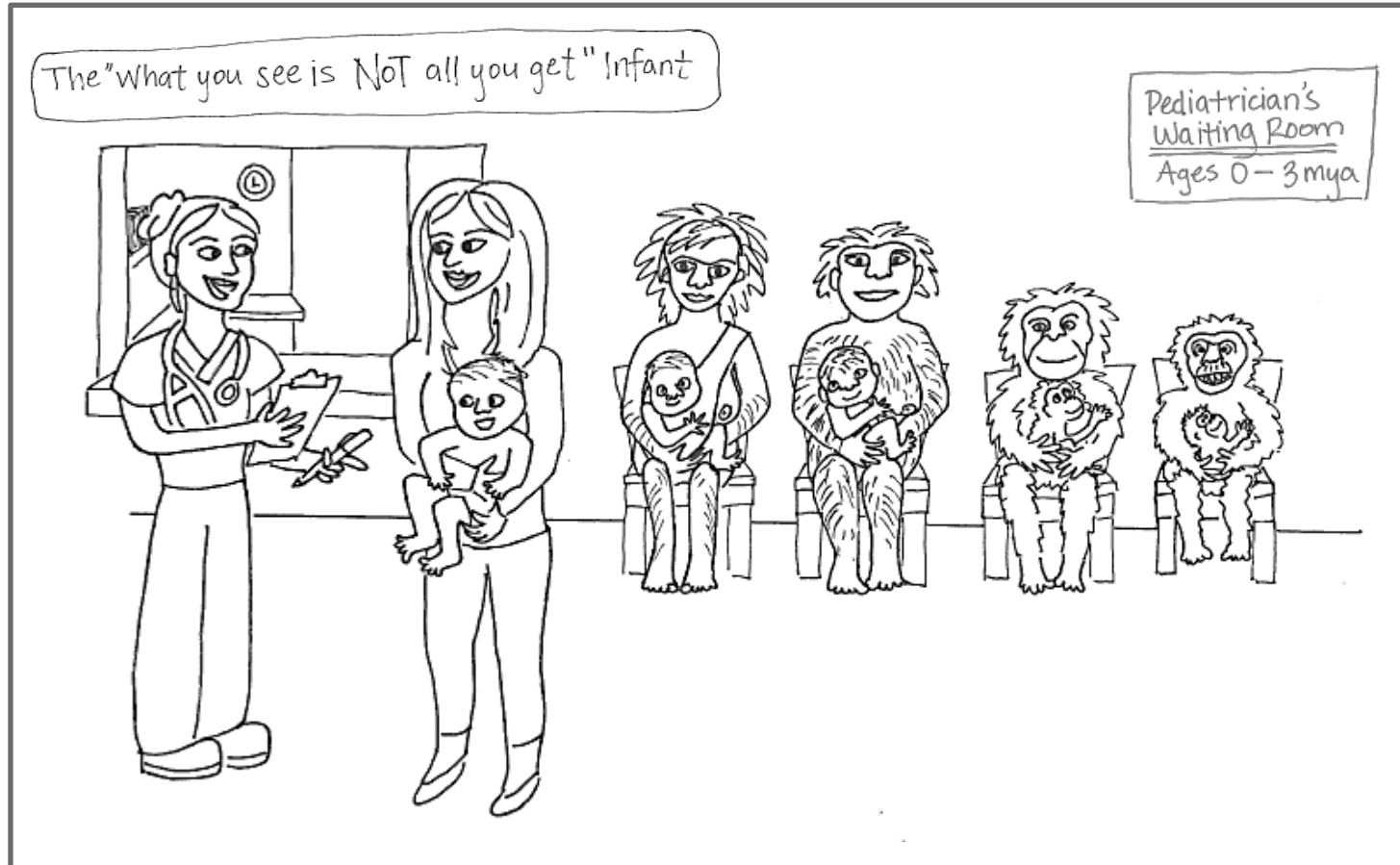
Two conceptualizations of the human infant: Model #1

The 2010 (Pre Bowlby) baby....no continuities, no prehistory...



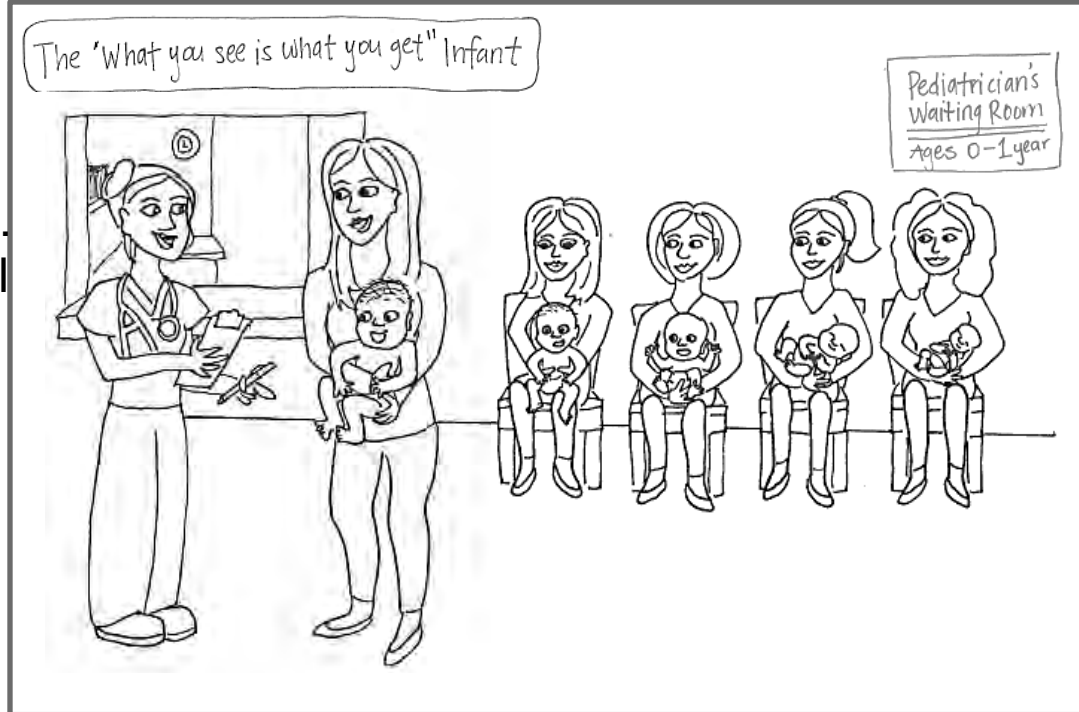
...each infant assessed only in terms of (immediate) age-based expectations in present cultural milieu

Model #2 Infant with a *prehistoric* past...the tip of a human evolutionary iceberg...(Post- Bowlby)



As suggested by the mother-infant ancestral pairs changing as they descend back 3 million years in the waiting room, this physician keeps in mind the long-term evolutionary-based adaptations this '2010' baby brings with him into her office—adaptations not subject to cultural nullification..babies ready to rock and roll...

Model #1
Zero to One
year old babies.
(Developmental
age alone is all
this physician
needs.)



Model #2
How did human
evolution, the
physician ponders,
influence how this
baby will respond
to what I
recommend?

Present medical-cultural milieu:

warn mothers about what their their bodies can do TO their infants, rather than FOR their babies ...

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 - Deanne Tilton Durfee, Director of the Los Angeles County Inter-Agency Council on Child Abuse and Neglect. Los Angeles Times 4/24/08.
 - Mothers sleeping body is conceptualized as a potential lethal weapon against which she and her baby need protection...

So what exactly is our present scientific
and political predicament as regards
“sleeping with baby”...?

is the mother's (or father's)
sleeping body lethal weapon
against which infants need
protection..

A best public health strategy regarding bedsharing..? *Why not begin by asking those most effected.*

- OBJECTIVE: To understand parents' motivations for bed sharing with their infants aged 1-6 months, their beliefs about safety concerns, and their attitudes about bed-sharing advice.
- METHODS: Researchers conducted 4 focus groups with primary caregivers of infants ages 1-6 months who regularly shared beds with their infants.
- Recruited participants from an inner-city primary care center in Pittsburgh, serving primarily African American families who received medical assistance.
- Chianese J, Ploof D, Trovato C, Chang JC Inner-city caregivers' perspectives on bed sharing with their infants Acad Pediatr. 2009 Jan-Feb;9(1):26-32 Department of Pediatrics, University of Pittsburgh School of Medicine, Pittsburgh, PA 15213, USA.

Conclusion..Consistent with predictions the emerge when *human biology and not a priori ideologies are front and center.*

- “Parents' motivation to bed share outweighed the concerns and the warnings of others. An understanding of parents' perspectives on bed sharing should inform counseling to promote safe sleeping practices.”

Biology of Mother-Infant Co-sleeping In Relationship to Breastfeeding and the SIDS/SUDI Conundrum

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.

or

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



For more information about how to keep your child safe, please call 311 in New York City and ask for a safe sleeping brochure or go to www.nyc.gov/acs; throughout New York State, call 800-345-KIDS, or go to www.ocfs.state.ny.us.

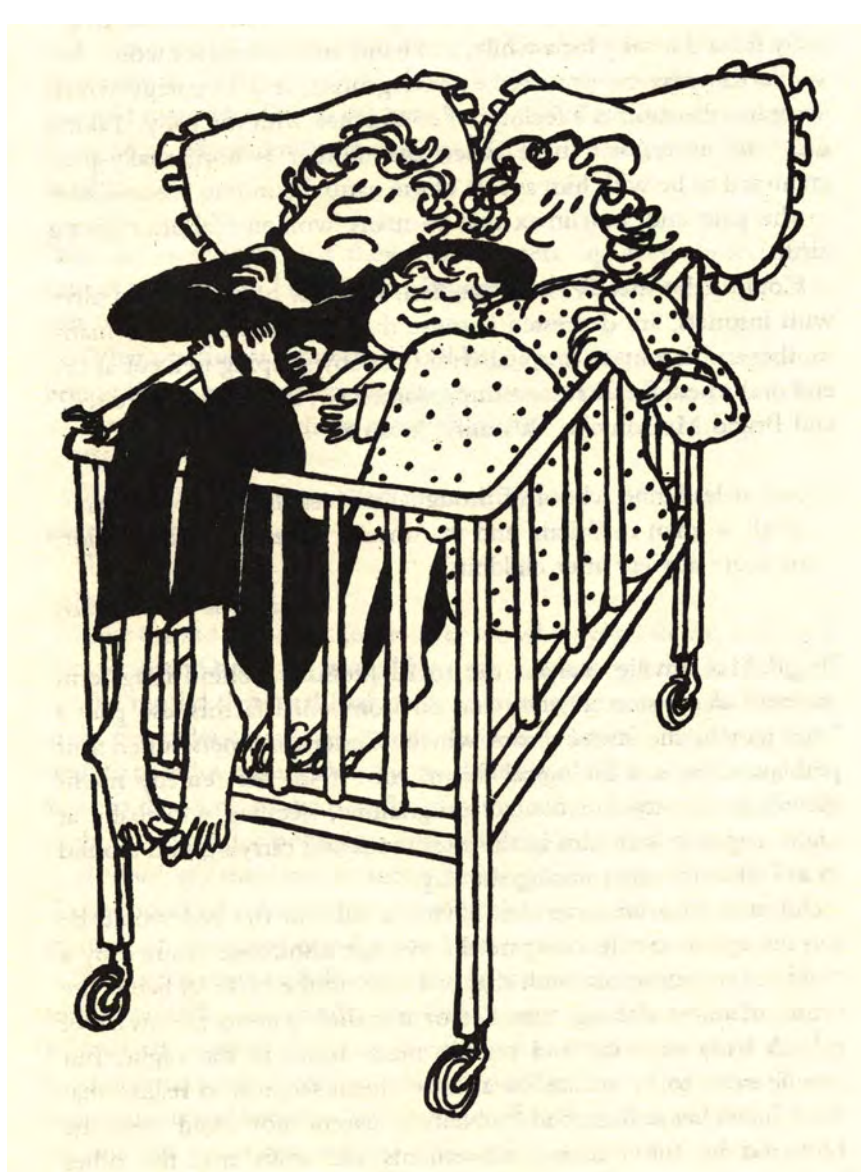
NYC Children's Services New York State Office of Children & Family Services

David A. Paterson, Governor, New York State
Michael R. Bloomberg, Mayor
Claire's Carnice, Commissioner,
NY State Office of Children and Family Services
John B. Mattingh, Commissioner, Children's Services

Babies Sleep Safest Alone



Making everyone safe and happy?



Lecture Organization:

1. Introduction
2. Infant Sleep and Breastfeeding In Evolutionary Perspective
3. What Science Tells About Co-sleeping?
4. Cultural History of Infant Sleep.
5. SIDS and SUDI Conundrum: Can It Be Resolved?

*Evolutionary Perspectives on
the Breastfeeding and Infant
Sleep: A little (anthropological)
corrective ...*

*perhaps as not as an end point leading
directly to answers, solutions or
recommendations but to a more
comprehensive beginning point for
explanation and discussion ?*

The *Prehistoric*
Constancy of
Infant Biology..
(a little biology)

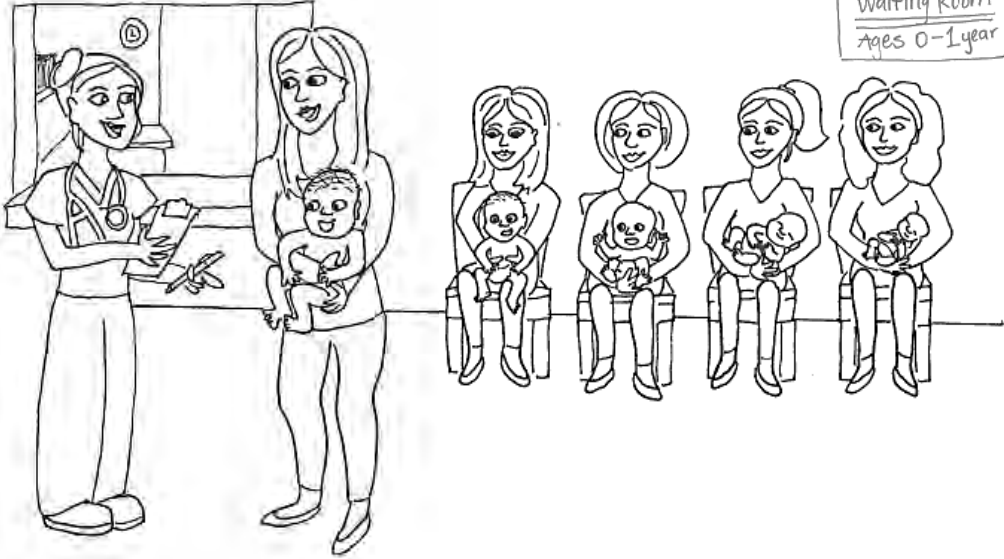
*Does Infant
Biology
Matter?*



*Apparently
so..*

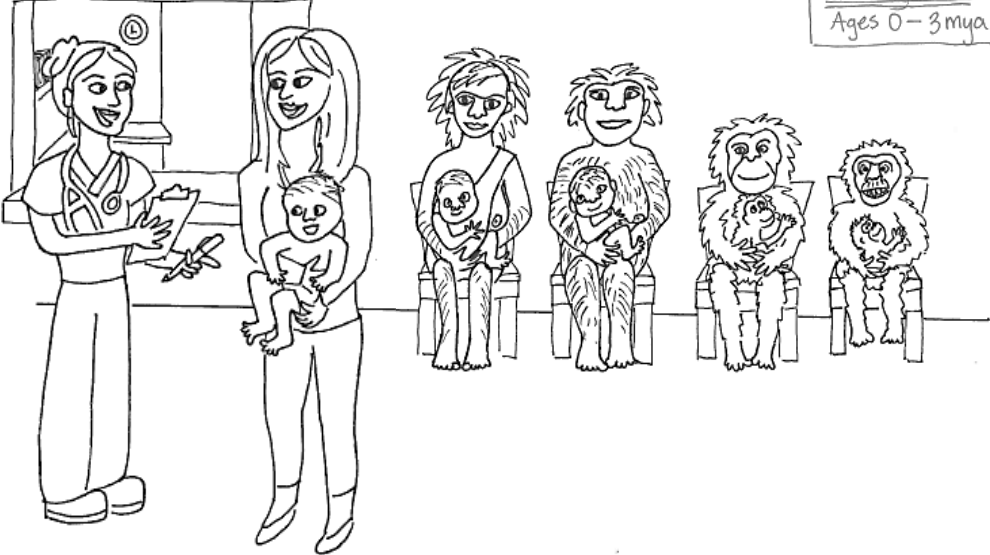
The "What you see is what you get" Infant

Pediatrician's
Waiting Room
Ages 0-1 year



The "What you see is NOT all you get" Infant

Pediatrician's
Waiting Room
Ages 0-3 mya



Model #2
How did human evolution, the physician ponders, influence how this baby will respond to what I recommend?

Recall...

Model #1
Zero to One
year old babies.
(Developmental
age alone is all
this physician
needs.)

Primate Immaturity At Birth and Slow, Prolonged Childhoods Necessitates Proximity, Contact, Cosleeping



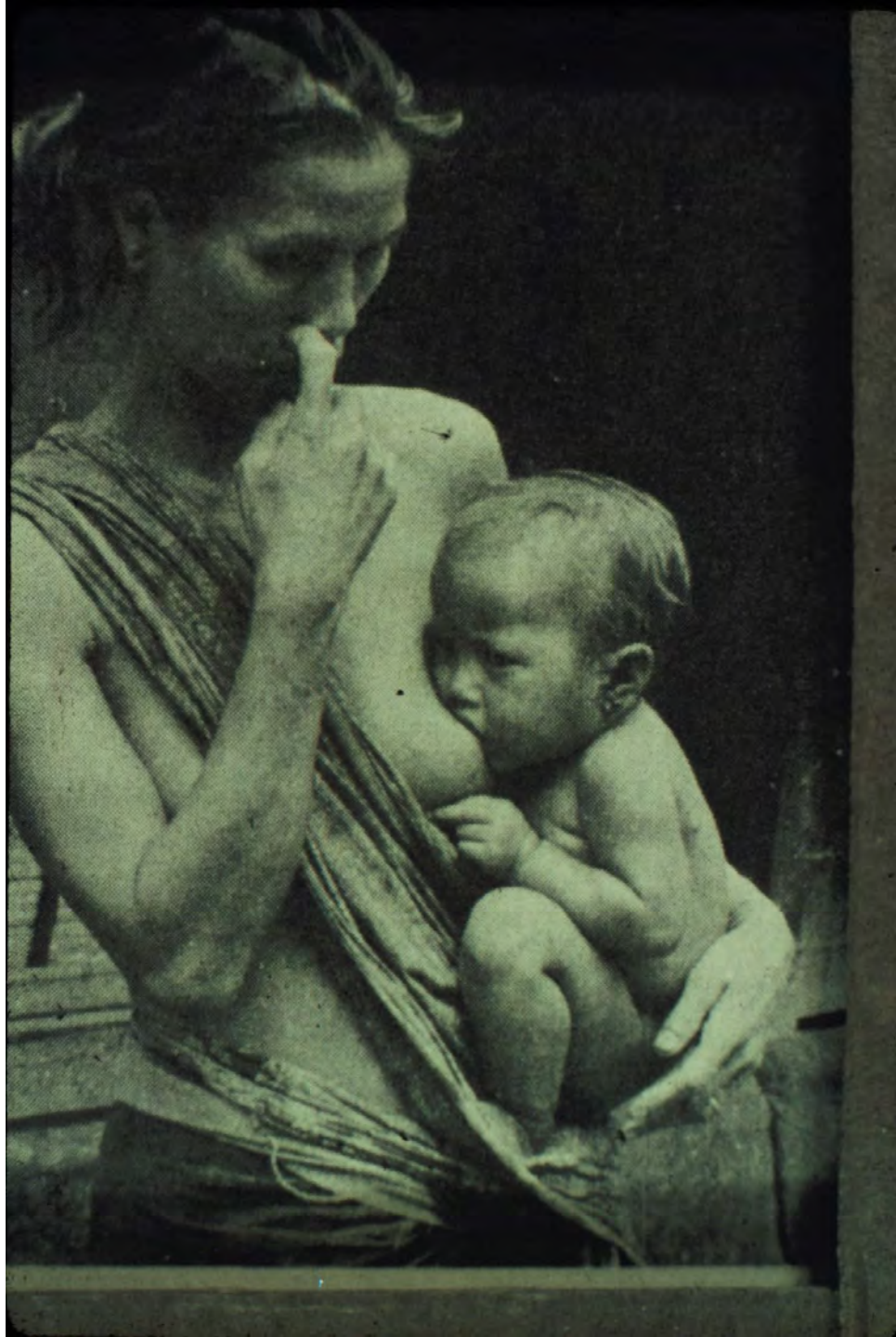
Biology of Mother's Milk Predicts Mothering Behavior

- **Feed and Leave Species**
 - **(Ungulates)**
 - High fat
 - High protein
 - Low carbohydrate
- High calorie = long feeding interval;
- **Contact, Co-sleeping, And Carry Species**
 - **(Primates—Humans)**
 - Low fat
 - Low protein
 - High carbohydrate
- Low calorie = short feeding interval;

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

(carried infants cry in mothers absence and defecate spontaneously)

Consider the
physical
intimacy of
the maternal-
infant
relationship



...socially and
medically
obscured by
western
culture



Navaho woman at Bosque Redondo, with baby in cradleboard on her back. *Laboratory of Anthropology, Inc., Santa Fe, N. M.*

Characteristic Differences Between Breast and Formula Fed Infants Pertinent To Understanding Outcomes

In discourse about the safety of bedsharing (one form of co-sleeping) the effect of feeding method is either dismissed or overlooked.

Table 4. Characteristic Differences Among Breast and Formula Fed Infants		
Orientation To Mother	Formula fed	Breastfed
Mother facing infant	59%	73%
Infant facing mother	46%	65%
Face to face	32%	47%
Infant Sleep Position		
Infant supine	83%	40%
Infant lateral	6%	54%
Infant prone	0%	0%
Height of infant in bed relative to mother		
Infant face level with mother's face or chin	71%	0%
Infant face level with mother's chest	29%	100%
Feeding frequency	1 bout	2.5 bouts
Total feeding time	9 minutes	31 minutes
Awakening frequency	2(0-4)	4(3-5)
Maternal arousals per night	2(0-4)	4(3-5)
Infant arousals per night	2(0-3)	3(2-5)
Mutual arousals	1(0-2)	3(1-4)
Source: Ball, 2006a.		

Biology of Mother-Infant Co-sleeping and Breastfeeding: Relationship to Changing Concepts of Causes and Prevention of SIDS/SUDI....Can They Be Reconciled

Environment of
Evolutionary
Adaptedness??

*For the sake of the
babies...*

*what was a day like
in the life of an
800,000 year old
Homo?*

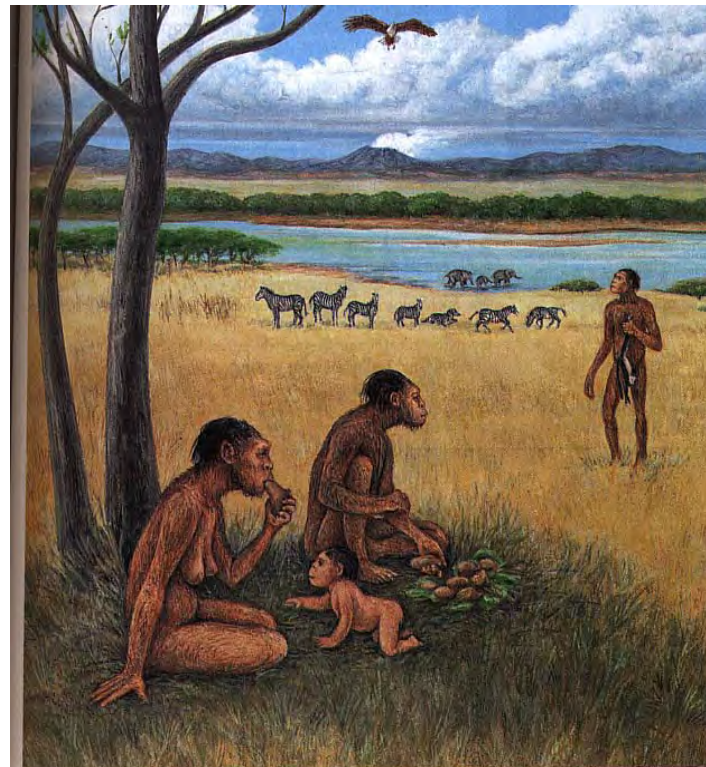


Figure 10-15 • Reconstructed environment at Laetoli, to show the more open spectrum of early australopithecine habitats. Environments at other early australopithecine sites may have been significantly more wooded or even forested.

Shortened
birth intervals
explained by:

Cooperative
breeding
(Hrdy 2008) ?

Direct male
care (Gettler
in press) ?

Humans as
empathic,
mind
readers?

DURATION OF HUMAN SUBSISTENCE PATTERNS

A
n
d

B
e
f
o
r
e
?

Genus Homo
2,000,000 yrs

(Bowlby's EEA)



Homo Sapiens
200,000 yrs

GATHERING

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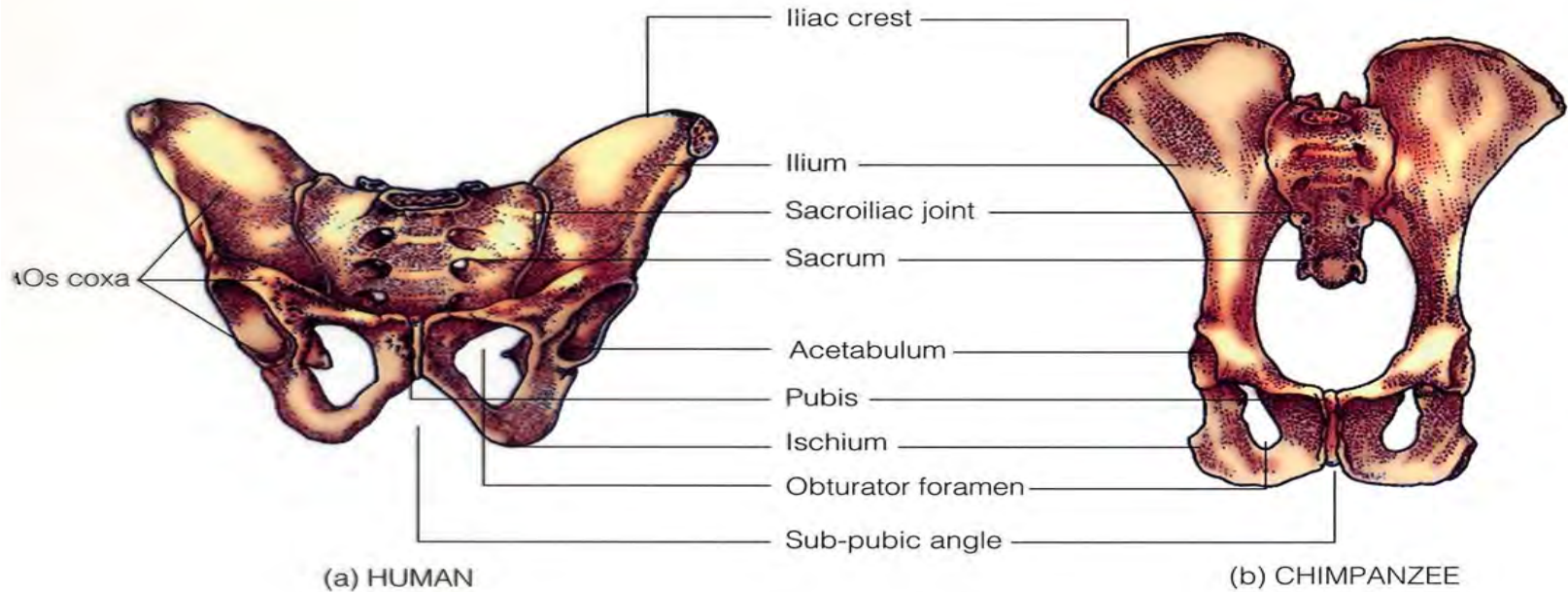
A
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?

AGRICULTURE 10,000 yrs

INDUSTRY 200 yrs

Pelvic Girdles

****Shift to terrestriality and bipedality had enormous effects on direction of human morphological and behavioral evolution**



Acetate 37 (Figure A-6)

© 1997 Wadsworth Publishing Company

- **Rotation of ilium (hip bones) forward and shortening of ischium from upright posture creates a bowl-shaped pelvic concavity....**
- **That is, fetal head size is getting larger at same time that pelvic outlet is getting smaller...creating an “obstetrical dilemma”..and the solution is?**

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

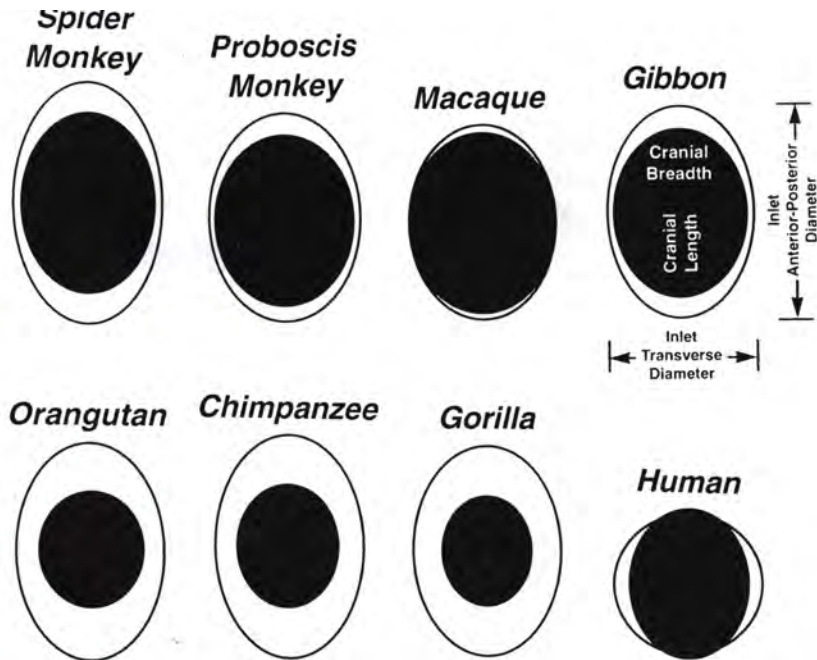


Figure 8.1. Relationship of maternal pelvis (dark outlines) and fetal head (solid dark ovals) (after Schultz, 1949).

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

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.

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)

Is the Following Statement True? How Do We Know?

“ ...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.”

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

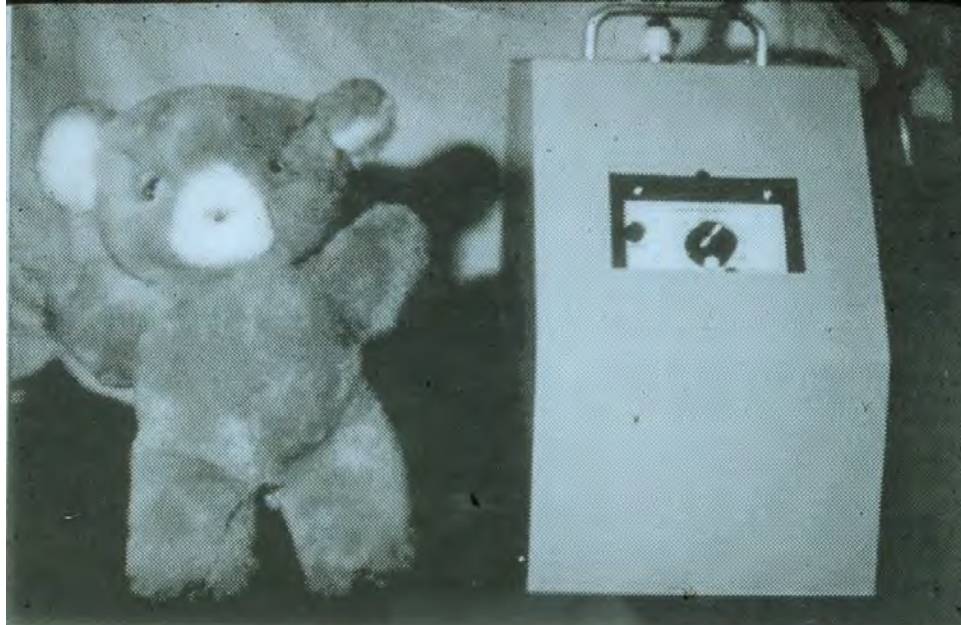
Massaged Babies

- 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

Breathing mechanical Teddy Bear!

(reduces infant apneas
by 60%)

(Evelyn Thoman 1985)



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

the “articulated” mother-infant unit is the appropriate micro-environment within which the infants and mothers biology and behavior is being *mutually regulated*



HERE
MOTHER
AND BABY

FACE EACH
OTHER
(FEO), AS IS
TYPICAL

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

*inspired by
cross-species, cross-cultural,
developmental, historical and evolutionary
studies.... a little experiment....
A little research...*



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



What Science Tells Us ...



Mother-Baby Behavioral Sleep Laboratory

At the University of Notre Dame



Sleep Laboratory Lounge



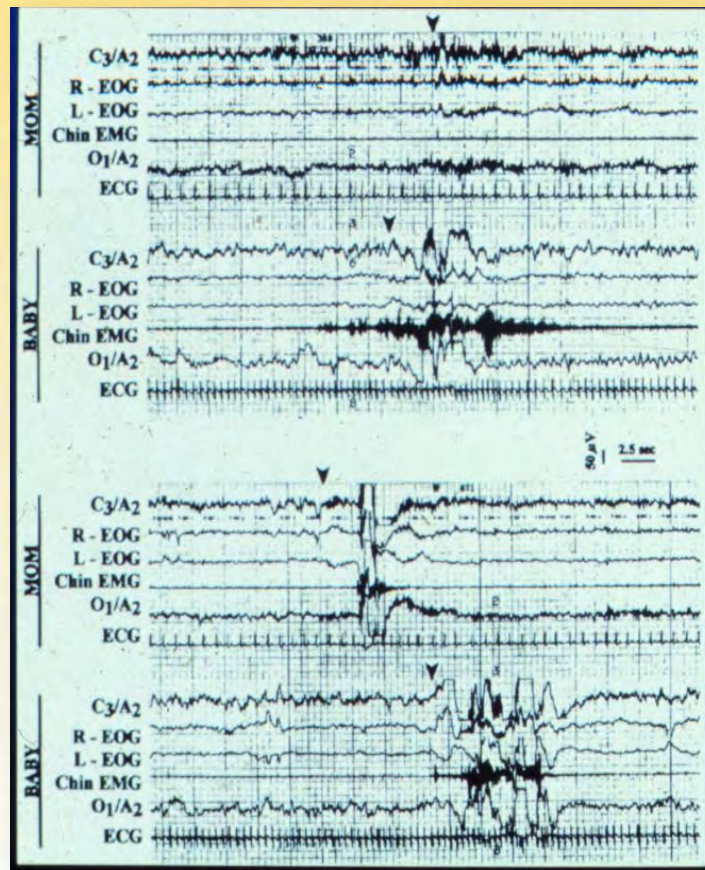
Observing and Physiologically Recording Babies And Mothers Sleeping and Breastfeeding (Together and Apart)



Photo :Max Aguilero-Hellwig
Discover Magazine 1992

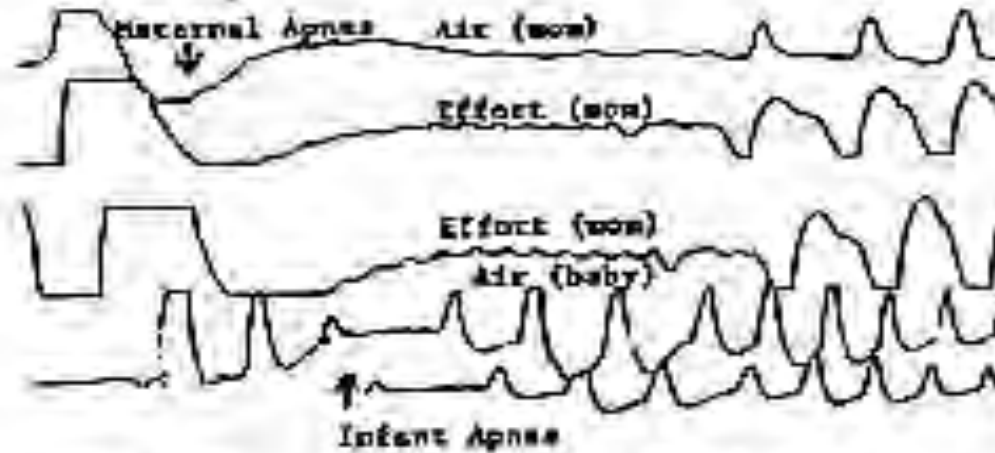
- Lighter sleep (less stage3-4, more stage1-2)
- More Diverse Sleep (greater number of stage changes)
- Longer Sleep In Minutes
- Breastfeeding Doubles or Triples
- Increased Interactions, Vocalizations, Movements
- Physiological Unpredictability For Both
- Sleep Positions and Mutual Orientations Change
- More transient and epochal mutual arousals or partner -induced arousals
- Increased Sleep-Wake Stage Synchrony
- Less crying, More Maternal Interventions
- More Heart Rate and Breathing Variability
- Sub-normal body Temperatures in Solitary Sleeping Infants
- Shift in average duration, frequency, and distribution of obstructive and central apneas per stage of sleep

EEG Defined Mother and Infant Arousals

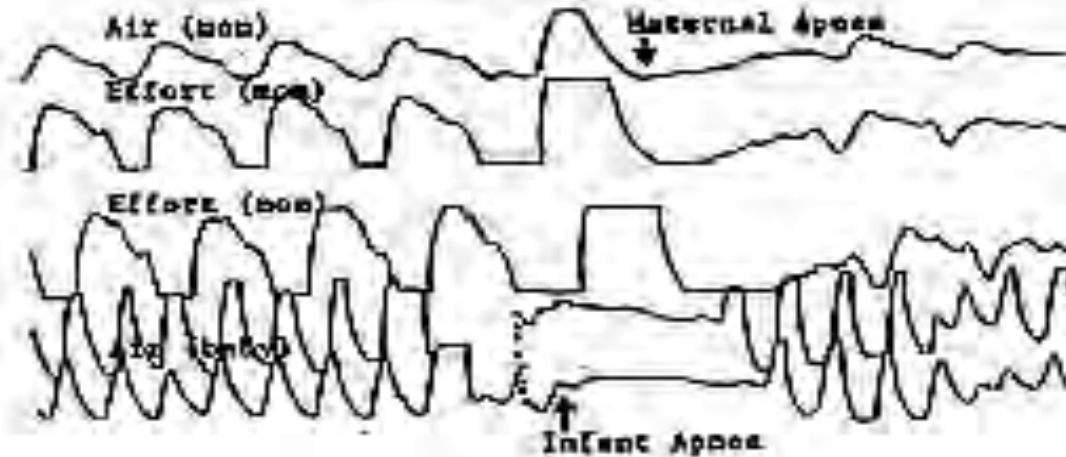


- Infant-induced maternal arousal.
- Maternal-induced infant arousal.

Baby >



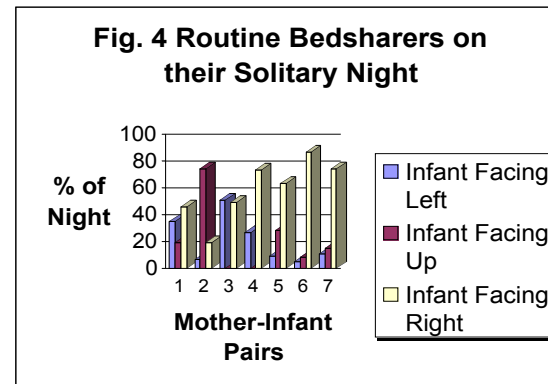
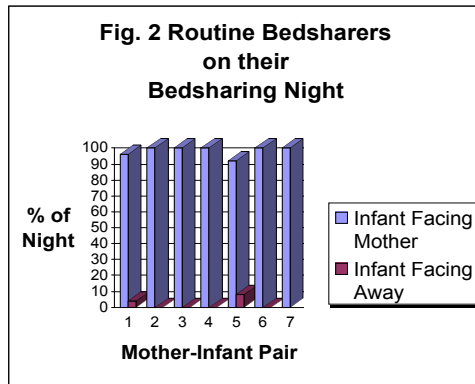
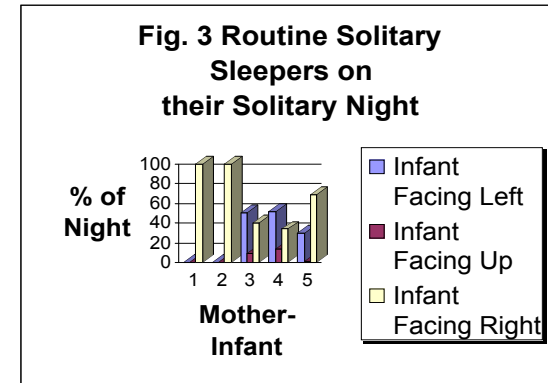
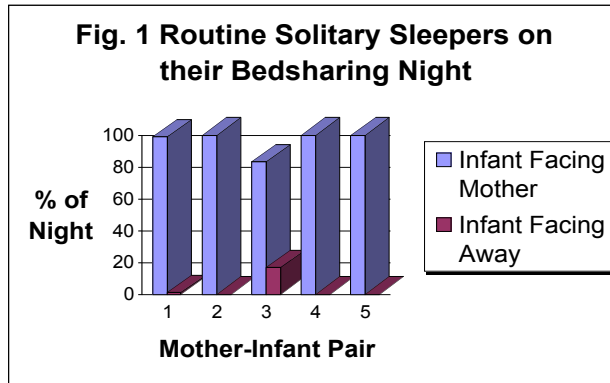
Mom >



Synchronous breathing pauses of cosleeping mother-infant pairs.

McKenna, JJ and Mosko, S. (1990). *Human Nature* 1 (3).

Body- Facial Orientations Amongst 24 Solitary Sleeping and Bedsharing Mothers and Infants



Mean Frequencies of Breast Feeding Episodes and Mean Total Nightly Breast Feeding Durations Amongst Routinely Bedsharing and Routinely Solitary Sleeping Mother-Infant Dyads

Fig. 5 Mean Frequency of Breastfeeds per Night

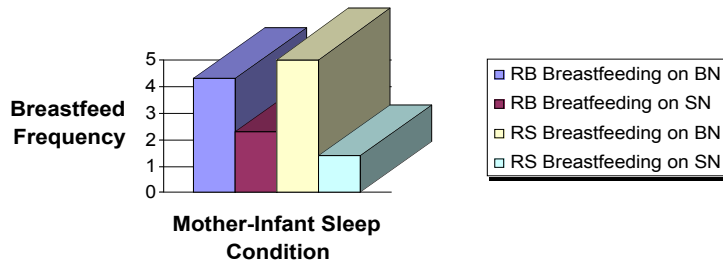


Fig. 6 Mean Duration of Breastfeeding Episodes

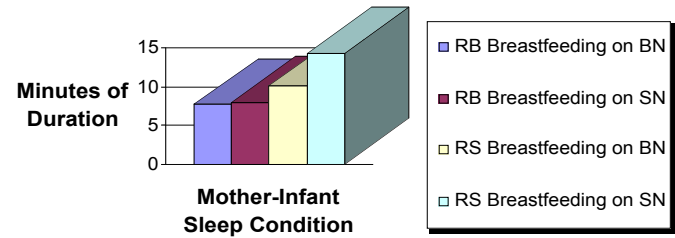
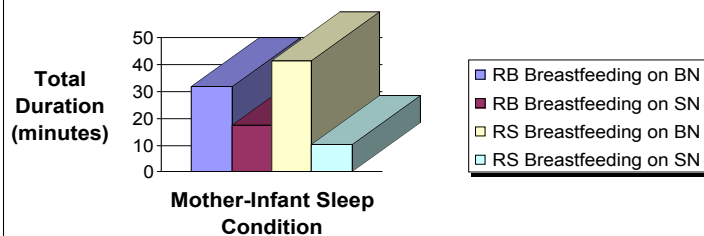
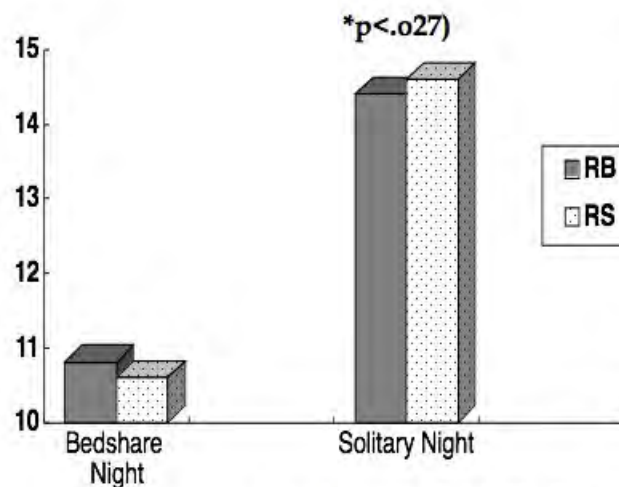


Fig. 7 Mean Duration of Nightly Breast Feeding



Co-sleeping *in the form of* Bedsharing: Increased protection for arousal deficient infants?

Mean Duration of Stage 3-4 Sleep:
Why Important ?

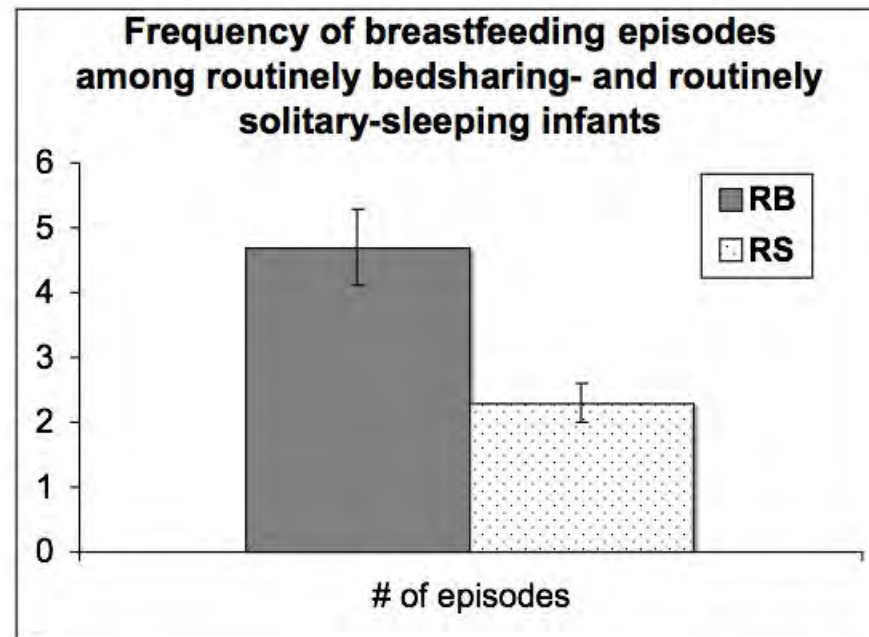


Mosko et al 1997 *Sleep*

- Schechtman et al. report that, at 3-4 months of age, siblings of SIDS victims display increased integrated delta amplitude, in early morning hours compared with controls;
- Siblings of SIDS and ALTE infants: deficient arousal responses to hypoxia or hypercapnia;
- SIDS victims: more difficulty awakening from sleep, fewer movements;

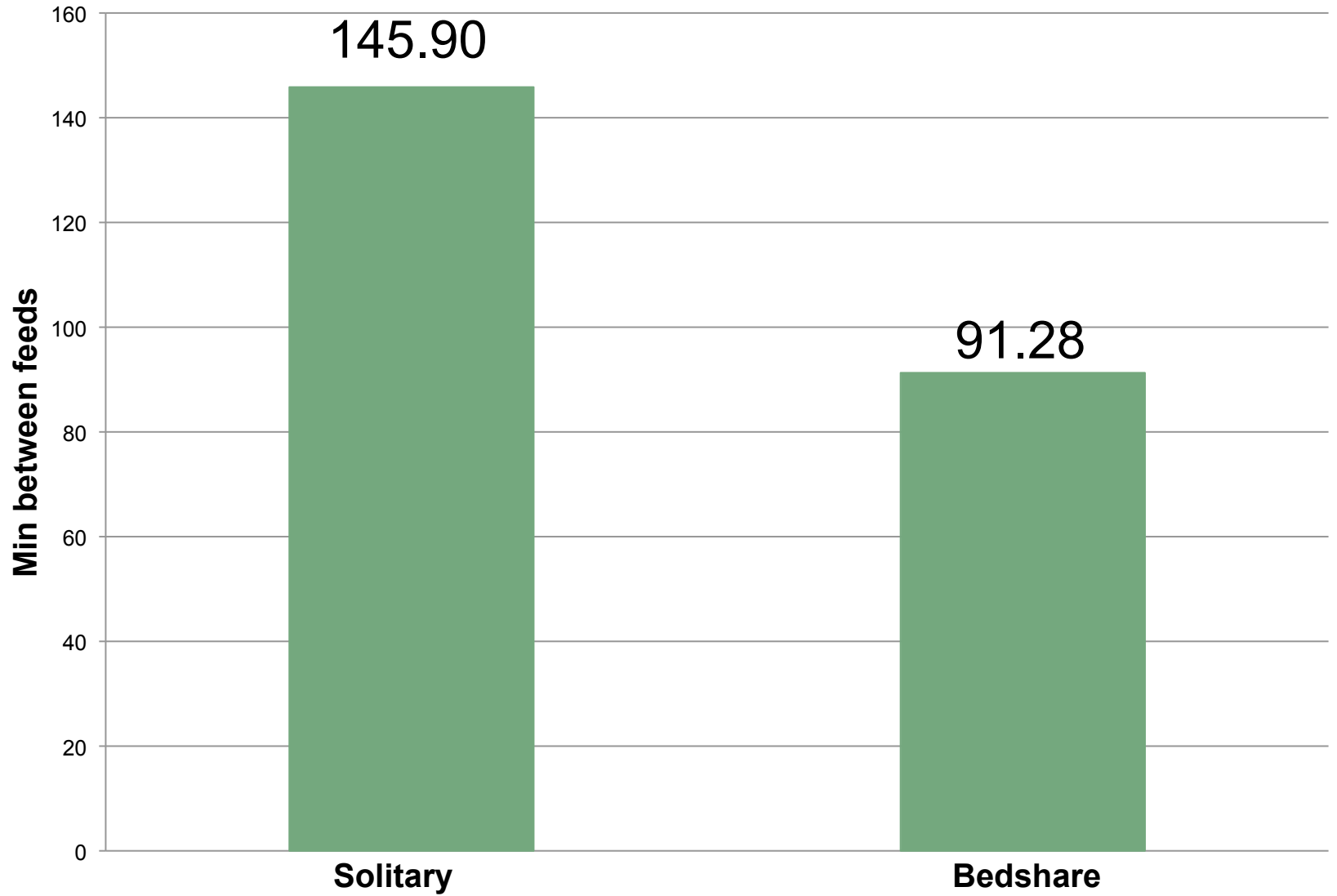
All studies confirm that bedsharing increases breast feeding frequency and duration (below..McKenna et al 1997, see also Ball 2003, Baddock 2006, Young 1999)

Breastfeeding Behavior in Mother-Infant Dyads

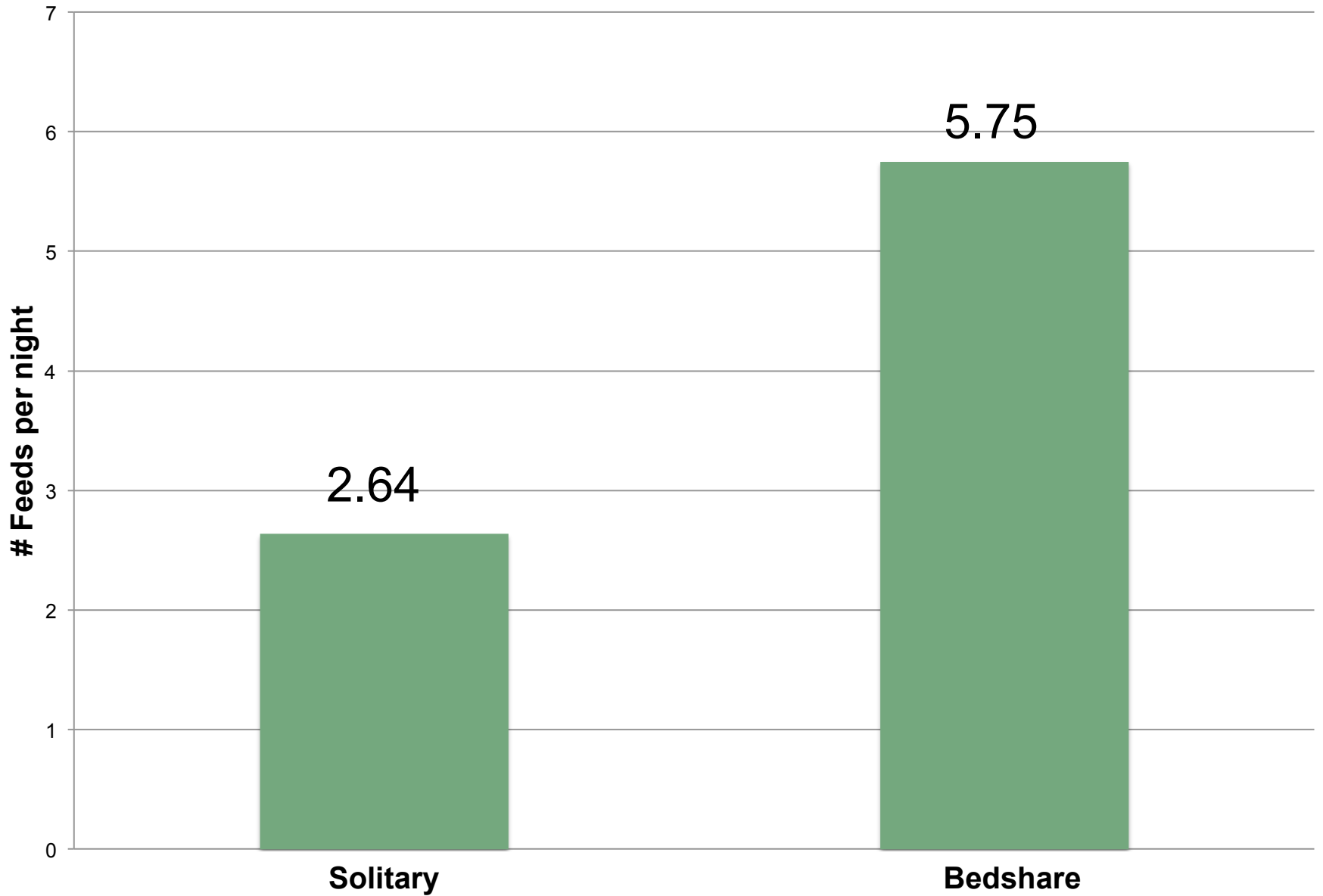


From: McKenna et al. Pediatrics 1997
“Bedsharing Promotes Breastfeeding”

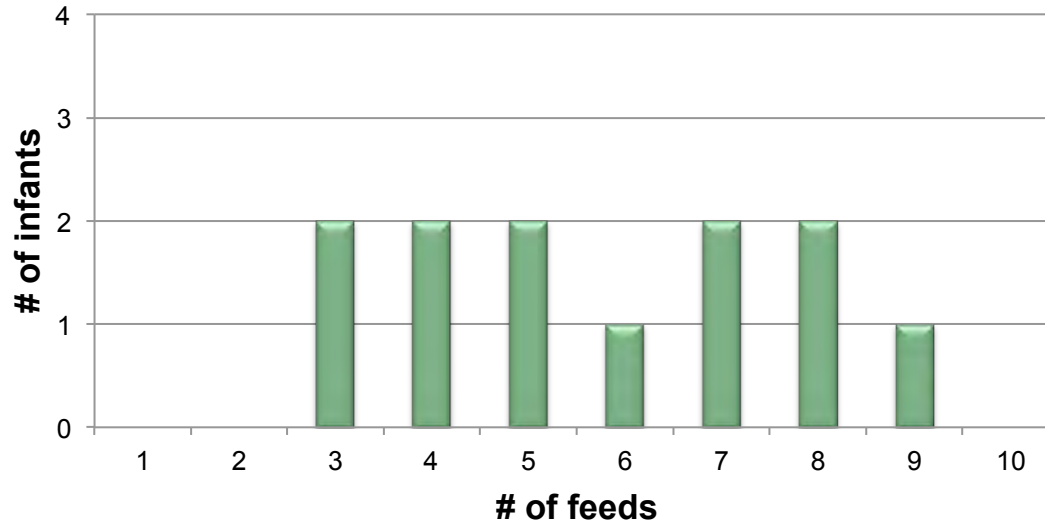
Mean Intervals In Minutes Between Breastfeeds for Solitary and Bedsharing Mother-Baby Pairs On First Night



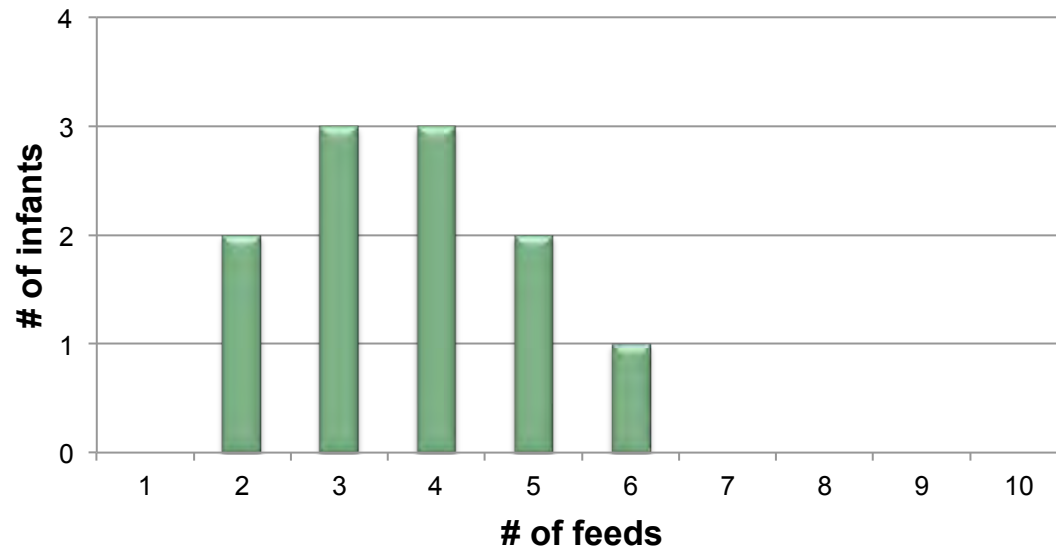
Mean Frequency of Breastfeeds Between Solitary Sleepers and Routine Bedsharers On First Night



RB First BN



RS First SN



EFFECTS OF BEDSHARING ON INFANT SLEEP

Bedsharing Night vs. Solitary Night

Total Wakefulness During Sleep		↓14%	0.008
Sleep Stage %'s (of TST)			
% Stage 3-4		↓4%	<0.001
% Stage 1-2		↑3%	0.036
% Stage REM		--	--
Mean Stage Durations			
Stage 3-4		↓16%	0.027
Stage 1-2		↑16%	0.005
Stage REM		↑26%	0.001
Waking	--		--
Arousal Frequency (/hr)			
Stage 3-4			
EWs		↑38%	0.014
TAs		--*	--
Stage 1-2			
EWs		--	--
TAs		--	--
Stage REM			
EWs		↑35%	p<0.001
TAs		--	--

Table reflects results of 2x2 repeated measures ANOVA (laboratory sleeping condition x routine sleeping condition). Entries show significant (p<0.05) effects of laboratory condition (BN vs SN). (Mosko et al 1996)

EFFECTS OF BEDSHARING ON MATERNAL SLEEP

Bedsharing Night vs Solitary Night p value

Total Sleep Time (TST)	--	--
Total Wakefulness During Sleep	--	--
Sleep Stage %'s (of TST)		
% Stage 3-4	↓4%	0.001
% Stage 1-2	↓4%	0.014
% Stage REM	--	--
Mean Stage Durations		
Stage 3-4	↓25%	0.002
Stage 1-2	↓30%	<0.001
Stage REM	--	--
Waking	↓62%	<0.001
Arousal Frequency (/hr)		
Stage 3-4		
EWs	↑67%	<0.001
TAs	--	--
Stage 1-2		
EWs	↑37%	<0.001
TAs	↑28%	<0.001
Stage REM		
EWs	--	--
TAs	--	--

Table reflects results of 2x2 repeated measures ANOVA (laboratory sleeping condition x routine sleeping condition).

(*see Mosko, Richard, McKenna 1997 *Sleep* 20 (2) 142-150)

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”

Controlling what is talked about: parents/citizens have every right to insist that *the discourse be changed* what 'safe infant sleep' messages using public monies include

(General Questions)

- Bedsharing safety..how safe is safe? Informed parents ? or medical authorities decide?
- Evidence (whose) ? What kind of evidence is privileged or prioritized? Only Epidemiology? Laboratory? Home Studies? Ethological? Evolutionary? Cross-cultural?
- Who decides which lines of evidence are *unimportant* to recommendations?
- Who should decide whose scientific understandings and/or findings and facts should be dismissed?
- Who decides which risks are worth taking and what risks are worth investing in to eliminate?

(Questions Specific to Sleep Research)

- Interpretations of findings: what is healthier and for whom as regards: awakenings? Nighttime feedings vs.consolidated sleep?
- Light maternal-infant sleep vs. deep sleep? Infant's protesting separation? Infants accepting separation? Higher or lower infant body temperatures?
- Long term vs. short term findings or is independence and problem solving skills i.e as valuable or more valuable than willingness to sleep alone, achieved much earlier by routine solitary sleepers?
- Because some cannot bedshare safely does it mean that nobody can.or should be supported in their choices;
- Is any bedsharing death 'proof' that it is dangerous or as is the case with crib deaths, a tragic problem to be solved through education?

How One Interprets Infant Sleep Related Behaviors Depends on Initial Assumptions

- If to the researcher co-sleeping/ breastfeeding is normative, appropriate and expectable (biologically) then..
 - Babies accepting separation and isolation without protesting do so at their own peril;
 - Or--Infants who accept separation without protesting are developmentally immature and not adapted vigorously;
 - Infants who “sleep through the night” at young ages are “at risk”;
 - Infants resting body temperature while sleeping alone is sub-normal;
 - Infant night wakings are advantageous especially when associated with breastfeeding..
- If co-sleeping/breastfeeding is not normative, appropriate and expectable biologically then..
 - Night wakings are a problem to be eliminated, as are feedings..as soon as possible;
 - Protesting sleep isolation is a “problem to be solved” a disorder..a developmental deficiency;
 - Infants sleeping through the night represents adaptation, not a potential risk I.e. spending sleep time in deep sleep rather than light sleep;
 - Co-sleeping infants experience hyperthermia;
 - Any and every problem associated with co-sleeping becomes an indictment against the practice, and proof the practice should be eliminated rather than a problem to be solved

Stepping Back: Finally, do evolutionary narratives and/or evolutionary rhetoric/narratives promote or hinder maternal agency?

Perhaps...it's two edged sword?

Goal: Validate maternal choices, place decision making in home where it belongs, provide access to unbiased information, search for appropriate scientific explanations, *but without providing ammunition for essentialist arguments concerning a woman's "place"*

My appreciation and thanks to:

*the many families that made my research possible and my esteemed colleagues Drs. Sarah Mosko, Peter Fleming, Peter Blair, Helen Ball, Agustín Fuentes and my students Lane Volpe, Kristin Klingaman, Lee Gettler *from whom I continue to learn so much.**

“The prevalence of breastfeeding was significantly higher among those who shared beds constantly or shared beds early, compared with those who did not share beds” Blair, Heron, Fleming 2010:1125).

“Top Eleven List: What Every Health Professional Should Know About Co-sleeping

- 1. Co-sleeping is “normative” human behavior, it is not “surprising, unexpected, nor irresponsible nor child abuse nor neglect; it is not abnormal (but normal) immoral or inherently stupid or ignorant parental behavior;**
- 2. Sweeping public health recommendations must resonate emotionally&socially with the constituencies for whom they are intended (unqualified, anti-co-sleeping messages do not);**
- 3. Where infants sleep is often unplanned, and very fluid; most babies sleep in more than one context..from solitary to social. Health brochures capturing social and solitary environments are critical.**
- 4. Co-sleeping is biologically inter-dependent with breast feeding and is associated with an underlying parental biology that motivates it;**
- 5. Co-sleeping is diverse. There is a difference between the act of co-sleeping or co-sleeping in the form of bedsharing and the conditions within which it occurs (which can be safe or unsafe);**

“Top Eleven List: What Every Health Professional Should Know

6. **Co-sleeping is not a SIDS risk factor in the same way that prone sleep is. Why?**
 - **no consensus scientifically, data are inconsistent across sub-groups and cultures;**
 - **Co-sleeping is natural, biologically appropriate**
 - **Cosleeping is heterogeneous**
7. **For political moral and ethical reasons PARENTS (not medical authorities) must remain the final arbiters of their infant's nighttime needs and sleeping arrangements;**
8. **Where babies sleep is not ultimately a medical issue at all, but is instead, “relational” and sometimes economic;**
9. **No one-size must-fit all strategy will work: there is more than one way to save babies lives, and promote the well being of families;**
10. **The early consolidation of infant sleep is a recent socio-cultural construct associated with bottle-feeding cultures and has little to do with what is in an infant's best interest, indeed, it threatens the best interests of infants psychologically and physically.**
11. **Evidence-based public health recommendations must first and foremost meet the needs and preferences and possibilities, in context, of those people for whom the recommendations are intended (Sackett et al 2001)**

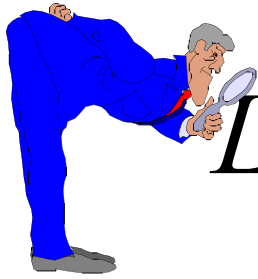


Limitations of Western Pediatric SIDS And Sleep Research From An Anthropological Point of View

Are adult-centric and ethnocentric..the “fallacy” of western medical normalcy..according to George Williams...

not inclusive, holistic, no cross-cultural studies of human infants

Western “medical authoritative knowledge..” is hierarchical..it dismisses parental knowledge which is subordinated to “official” knowledge dispensed by “medical authorities” or civil authorities (Bridget Jordan)



Limitations ... Sleep Science From An Anthropological Point of View

(there is no theory around which to interpret clinical events or research results, a “snapshot- in- time” approach to infants)

non-evolutionary;

(a)theoretical..the infant is defined by and suspended in contemporary time and space and has no continuity to its unique evolutionary past

scientific reductionism? Good?

NO! Not Suited for understanding the role of physiological regulatory effects

How One Interprets Infant Sleep Related Behaviors Depends on Initial Assumptions

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