

Emotional Learning in Infants: A Cross-Cultural Examination¹

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The current paper examines subcortically based early emotional learning in infants from diverse cultures. We speculate about some long-term deleterious or beneficial effects of this early learning.

According to their specific goals for children, different cultures provide different child rearing environments and obtain different behavioral outcomes. As a result, the behavior of infants, young children and older individuals varies across cultures. Although we would not argue that these early experiences are completely formative by themselves, there tends to be continuity of socialization over time. The fundamental behavior patterns set into place during early socialization are further elaborated on as the child grows, and they persist into adulthood. Cultures may have markedly different goals and socialization practices. In addition, what is viewed in one culture as normal emotional learning and obviously the correct methods for achieving that learning, may be seen by another culture as strange, deficient or even pathological.

As will also become clear, although there is considerable work on early emotional learning (during the first 6-8 months), there is little work explicitly and directly relating this early learning to later behavior. This paper will conclude with some suggestions for doing so. In particular, it is suggested that early stressful experiences may result in a differential ability to handle stressful experiences later in life. The mechanisms by which this is accomplished are: a) that early child care practices that produce stress in infants, may result in higher levels of cortisol on a long term basis, and b) that certain emotional

behaviors may be learned subcortically during the first few months of life, and that these behaviors will persist.

Early Learning

Much emotional and interactive behavior is learned during the first 6- to 7-months of life, and much of this learning takes place subcortically. According to Emde and his colleagues (1976) as well as others (e.g. Fischer & Rose, 1995) seven to nine months is the time of a major bio-behavioral shift. During this shift, changes take place in the frontal lobes of the cortex such that the cortex becomes more involved in planning and carrying out deliberate actions. These changes involve both myelination of the frontal cortex, the growth of connections between that area and other brain areas, and the death of some of the extra neurons present in these areas. Therefore, we would infer that before this biobehavioral shift is the period during which subcortical learning might be most prevalent.

Even after this biobehavioral shift, when the cortex is more involved in behavior, there is a variety of different evidence that suggests that subcortical processing may continue to be an important part of learning and experiencing emotions. For example, Todd et al. (1995) summarize evidence suggesting that myelination continues in some areas of the brain until 6 years of age (for example, for the primary motor and sensory areas of the brain), and in a few areas (for example, some of the associative areas) even beyond that. Other evidence suggests that at least some emotions, such as fear, may be learned subcortically at least into early

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childhood (for example, Izard & Harris, 1995; Jacobs and Nadel, 1985; or LeDoux, 1987).

Today, we focus on experiences that infants have before the 7- to 9- month bio-behavioral shift takes place. A more detailed paper would show either that the continuation of practices into early childhood and beyond could strengthen patterns already established, or that a shift in practices might change the eventual outcome.

Rather than relying on data from one study, this paper integrates results from a variety of published studies. None of these data were originally collected with the purpose of this paper in mind. We feel that this gives us a relatively conservative method of evaluating the hypothesis that a large amount of emotional learning can take place early in life.

In examining how infant behavior develops in different cultures we will use the model proposed by Sigel (1985). Sigel proposes a model that relates parental beliefs and goals to parental behavior, which is then related to child behavioral outcomes. Others (e.g. LeVine et al., 1994) have proposed similar models.

Differing Parental Goals and Behavior

Parents in different cultural settings have different goals for their children. LeVine and colleagues (LeVine et al., 1994) contrast North American (that is, U.S.) parents with Kenyan Gusii parents. The U.S. parents, he argues have a *pedagogic model*. The major goals are for children to learn to feel emotionally independent from their parents and to develop interactive and language skills. We will outline a number of features of this model.

Independence and Sleeping Patterns In order to accomplish their goals, American parents engage in a number of behaviors. Richman, Miller & Solomon (1988), Morelli et al. (1992) and others have described the North American practice of placing even newborn infants in their own beds and often in their own rooms. In Morelli et al.'s sample of 18 North American

families, not a single family reported bringing their newborn into bed with them, although 15 allowed the infant to sleep in a bassinet or crib in the parental room. For the vast majority, this lasted only for the first 3 months or so of life, at which time infants were moved into their own rooms. The Gusii would be quite shocked by these practices.

Other Separation North American parents are also relatively tolerant of other separations: infants are left with unrelated nonresident babysitters on a routine basis by many parents. More extended separations continue to be tolerated by some. For example, parents of young infants may go away for the weekend and leave their infant with a non-resident grandparent. There are no data on the extent of this practice. One practice that reflects the degree of comfort of the culture as a whole with such separations is the fact that until relatively recently, parents were not allowed to stay with their infants and children in hospitals. Most traditional societies are aghast at this practice and have not followed it when introduced to it by Northern Europeans and Americans. The lack of co-sleeping and the tolerance for separation have been added by us to other practices of the pedagogical model seen as essential by LeVine et al. (1994).

Verbalizing and face to face interaction As detailed by many investigators (e.g. Brazelton, Koslowski & Main, 1974; LeVine et al., 1994) American mothers behave as if their infants have the capacity to be active participants in interactions with adults: they talk to, look at, smile at and otherwise actively interact with infants from birth. In the absence of actual vocal responses from these very young infants, mothers respond to burps, hand movements, and other behaviors as if these are conversational overtures. Accompanying this strong emphasis on verbal interaction is a deemphasis on physical contact when compared to many other cultures. For example, Richman, Miller & Solomon (1988), and Miller (1994) detailed the low rate of touching and holding among U.S. mothers when compared with Kenyan Gusii mothers in one case and with Mexican mothers in another

case. Miller (1994) has suggested that one could have high rates of touching and high rates of verbal interaction, but at least in the U.S., this does not occur.

Consoling In contrast to the U.S. parent's high responsiveness to positive vocal/verbal behavior, LeVine et al., (1994) reported that American mothers are relatively tolerant of infant crying, allowing it to continue for much longer than mothers in other cultures would. For example, Gusii mothers watching videotapes of U.S. mothers were upset by how long it took these mothers to respond to infant crying.

Pediatric Model

In contrast to the pedagogical model, LeVine (LeVine et al., 1994) described some cultures as having a *pediatric model*, that is, a model in which the most important goal is protecting the health and survival of the infant. Although he used this term specifically in describing the Gusii of Kenya, aspects of this model apply to other cultures as well (and perhaps particularly to cultures in which infant mortality is still high or has only recently decreased).

Co-sleeping and Breast Feeding on demand

In many cultures, including the Gusii studied by LeVine et al. (1994) and the Mayans studied by Morelli et al. (1992), mothers and infants sleep together. This practice generally lasts until the mother's next child is born. Sleeping together allows the mother to more easily breast feed the infant, and breast feeding on demand both at night and during the day typically continues into the second year, and perhaps beyond. LeVine et al. (1994) argue that frequent breast feeding has played an essential role in cultures where infant mortality was very high, by helping to ensure early weight gain and the possible maintenance of hydration in the presence of diarrhea.

Consoling Mothers whose behavior can be described as following the pediatric model tend to respond rapidly to crying, and show high rates of holding and touching. By responding rapidly to infant distress, and otherwise keeping

the infant as quiet as possible (not encouraging other types of interaction that may excite the infant too much), and by engaging in higher rates of holding and touching (Miller, 1994) mothers in these cultures aim to produce children who are quiet, and when older are respectful and obedient to adults. As shown by experimental studies (Barr, 1990) increased holding by mothers tends to result in infants who cry less. LeVine argues that minimizing caloric expenditure due to excessive crying and too much activity may have improved infant survival under difficult conditions.

Verbalization and face to face interactions

Mothers in cultures like the Gusii do not typically talk to their infants extensively (e.g. Ochs & Schieffelin, 1984; LeVine et al., 1994) nor, in the case of the Gusii of Kenya at least, engage in much or any eye-contact with them. They do not see infants as capable of communicating or of understanding language and so do not engage in the type of stimulating face-to-face interactions with them that are seen among U.S. mothers and infants. Middle class mothers from the U.S. tend to find this bizarre.

What Infants Learn

What do infants learn in these situations? Much of the existing evidence has focused on the more overt, cortically controlled behaviors. We know, for example, from the work of LeVine and his colleagues (LeVine et al., 1994; Richman, 1983) that older U.S. infants and children are more active and talkative than the Kenyan (Gusii) infants and children. What types of subcortically controlled behaviors might they also be learning? There is less actual evidence of these types of behaviors, but knowing something about what systems are involved we can offer some possibilities for future exploration. This discussion will focus on nonverbal behaviors and on emotions.

A first difference might involve an infant or child's general level of arousal. Because interactions with U.S. infants involve a lot of stimulation and reinforcement of vocal/verbal behaviors, and elicitation of smiling and

laughing, these interactions have been observed to involve high peaks of excitement, longer interactions that involve play and other exciting activities, and generally higher levels of arousal in the infants (Dixon, Tronick, Keefer & Brazelton, 1981). Dixon and colleagues contrasted this with the style of interaction of the Kenyan (Gusii) mothers. These mothers engaged in the more exciting types of interactions for only very brief periods of time, and when their infants began to get too aroused and excited they were observed to avert their eyes and/or turn away. It is inferred that in general, the U.S. infants spend more of their time in highly aroused and excited states and infants in soothing/distress responsiveness cultures (like to Gusii) spend more of their time in less aroused and excited states. Later on, U.S. children may be more likely to be stimulus seeking, although Gusii children may not or may even prefer quietness, sedateness and low key interactions.

Due to relative tolerance of crying among U.S. mothers, and less holding, American infants are expected to be more fussy (Barr, 1990). It may be inferred that the holding and soothing strategies used by Gusii mothers, among others, produce infants that spend less time distressed. U.S. infants and children, therefore, are more likely to spend time in both excited and happy states of arousal and in distressed states of arousal. Infants who are soothed and held will be less likely to experience both peaks of excitement and peaks of distress. The question we will take up below is whether exposure to such peaks of both positive and negative arousal helps infants to cope better with later stresses, or not.

Finally, it is apparent that U.S. infants must learn to cope early with being alone and specifically with being separated from their mothers. Tennes (1982) has shown that in human infants there is a positive linear relationship between amount of separation protest and the amount of cortisol secreted. The information we have about sleep patterns in American infants and children also suggests that these produce stress in them. Although we are

not aware of studies that have measured cortisol levels in infants sleeping apart from their parents and those sleeping with their parents, there is some evidence that these sleeping practices are stressful for American infants. For example, bedtime rituals seem to occur in U.S. settings, where infants and children are put to bed at set times and in separate areas, but rarely in other settings (e.g. Morelli et al., 1992). These rituals may last up to an hour in some cases and seem to be a response to the difficulty the infant or child has with going to bed on their own. A majority of U.S. infants in the Morelli et al. study also required transitional objects such as pacifiers, "blankies" or stuffed animals. It is well known from studies of adults (as summarized by Fackelmann, 1998) that cortisol is produced during all types of stressful events, and that high levels of cortisol seem to be associated with a number of effects, including low immune system functioning.

Implications

We are suggesting two possible early effects of early child rearing practices:

- a) different emotional behaviors related to arousal versus lack of arousal, expectations for contact with consoling individuals when one is upset or alone, and differential anticipations for other features of interactions with others (Commons, 1991).
- b) possibly long term differences in the release of cortisol and possible related changes in brain structure due to the relative stressfulness of certain practices

It is expected that much of the early emotional learning takes place subcortically and results in children who have quite different expectations from their interactions with other people. As discussed above, such subcortically-learned expectations may not be accessible to conscious awareness and therefore control and relearning.

One implication is that cultures that train for independence, and therefore self-responsibility,

risk having more PTSD later in life. That is because these cultures do not support infants (nor adults) during stressful and traumatic events to the same extent as do cultures that emphasize dependence and mutual support. Whether distressed or not, Individuals are isolated or separated and do not experience as much physical contact, which is known to be soothing (it has been shown to reduce blood pressure and so on). Early stressful practices may produce lasting effects, as these areas of the brain are still developing. As has been suggested by numerous investigators, the pathways that remain in place after early development are very determined by experience (as summarized in Todd et al., 1995). There may therefore be permanent alterations in stress-related neurotransmitter systems (such as the release of higher levels of cortisol).

It is also the case that even later on, these individualistic cultures do not make coping with stress and trauma easy, as they tend to view trauma as shameful, something the individual should have controlled or avoided as part of their independence, and typically something to be dealt with alone. Because of the shameful nature of most trauma, it is not openly discussed, which seems to worsen its effects.

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Harvard Researchers Say Children Need Touching, Attention

By Alvin Powell

Contributing Writer, Harvard Gazette

America's "let them cry" attitude toward children may lead to more fears and tears among adults, according to two Harvard Medical School researchers.

Instead of letting infants cry, American parents should keep their babies close, console them when they cry, and bring them to bed with them, where they'll feel safe, according to Michael Commons and Patrice Miller, researchers at the Medical School's Department of Psychiatry.

The pair examined childrearing practices here and in other cultures and say the widespread American practice of putting babies in separate beds — even separate rooms — and not responding to their cries may lead to more incidents of post-traumatic stress and panic disorders among American adults.

The early stress due to separation causes changes in infant brains that makes future adults more susceptible to stress in their lives, say Commons and Miller.

"Parents should recognize that having their babies cry unnecessarily harms the baby permanently," Commons said. "It changes the nervous system so they're sensitive to future trauma."

Their work is unique because it takes a cross-disciplinary approach, examining brain function, emotional learning in infants, and cultural differences, according to Charles R. Figley, director of the Traumatology Institute at Florida State University and editor of *The Journal of Traumatology*.

"It is very unusual but extremely important to find this kind of interdisciplinary and multidisciplinary research report," Figley said. "It accounts for cross-cultural differences in children's emotional response and their ability to cope with stress, including traumatic stress."

Figley said their work illuminates a route of

further study and could have implications for everything from parents' efforts to intellectually stimulate infants to painful practices such as circumcision.

Commons has been a lecturer and research associate at the Medical School's Department of Psychiatry since 1987 and is a member of the Department's Program in Psychiatry and the Law.

Miller has been a research associate at Harvard Medical School's Program in Psychiatry and the Law since 1994 and an assistant professor of psychology at Salem State College since 1993. She received master's and doctorate degrees in education from Harvard's Graduate School of Education.

The pair say that American childrearing practices are influenced by fears that children will grow up dependent. But parents are on the wrong track. Physical contact and reassurance will make children more secure when they finally head out on their own and make them better able to form their own adult relationships.

"We've stressed independence so much that it's having some very negative side effects," Miller said.

The two gained the spotlight in February when they presented their ideas at the American Association for the Advancement of Science's annual meeting in Philadelphia.

In a paper presented at the meeting, Commons and Miller contrasted American childrearing practices with those of other cultures, particularly the Gusii tribe of Kenya. Gusii mothers sleep with their babies and respond rapidly when the baby cries.

"Gusii mothers watching videotapes of U.S. mothers were upset by how long it took these mothers to respond to infant crying," Commons and Miller said in their paper on the subject.

The way we are brought up colors our entire society, Commons and Miller say. Americans in

general don't like to be touched and pride themselves on independence to the point of isolation, even when undergoing a difficult or stressful time.

Despite the conventional wisdom that babies should learn to be alone, Miller said she believes many parents "cheat," keeping the baby in the room with them, at least initially. In addition, once the child can crawl around, she believes many find their way into their parents' room on their own.

American parents shouldn't worry about this behavior or be afraid to baby their babies, Commons and Miller said. Parents should feel free to sleep with their infant children, to keep their toddlers nearby, perhaps on a mattress in the same room, and to comfort a baby when it cries.

"There are ways to grow up and be independent without putting babies through this trauma," Commons said. "My advice is to keep the kids secure so they can grow up and take some risks."

Besides fears of dependence, other factors have helped form our childrearing practices, including fears that children would interfere with sex if they shared their parents' room and doctors' concerns that a baby would be injured by a parent rolling on it if it shared their bed, the pair said. The nation's growing wealth has helped the trend toward separation by giving families the means to buy larger homes with separate rooms for children.

The result, Commons and Miller said, is a nation that doesn't like caring for its own children, a violent nation marked by loose, nonphysical relationships.

"I think there's a real resistance in this culture to caring for children," Commons said. "Punishment and abandonment has never been a good way to get warm, caring, independent people."

John Hoffman <benhoff@ptbo.igs.net>

Today's Parent Magazine

Baby cribs breed social ills, psychiatrist says. That headline ran in a great Canadian metropolitan newspaper last February. The story went on to say, among other things, "leaving babies alone in their cribs at night causes stress in infants that can spark anxiety, narcissism, violence and depression later in life." Strong statements! No wonder they made the news!

Today's Parent contacted Michael Commons, the "psychiatrist" in question, to gain some insight into these provocative declarations.

First of all, Commons is not a psychiatrist, but rather a behavioural scientist and psychologist who teaches in the department of psychiatry at Harvard Medical School. He also denies having said that baby cribs breed social ills. What does he really think? In a nutshell, Commons believes that certain North American parenting practices (having babies sleep alone in cribs, for one) cause unnecessary stress in babies and that this early "emotional learning" may have a negative effect on the way they will deal with stress later in life.

"North American parenting culture overvalues independence in babies, and undervalues comforting," he continues. "American infants tend to spend more time sleeping alone in cribs, less time in physical contact with their mothers, and their cries are responded to less quickly than babies in many other cultures." Commons bases his assertions on anthropological studies of several different cultures which he and his collaborator (and wife) Patrice Miller examined. One of the most striking sets of data concerns the Gusii (a Kenyan tribe). Gusii infants go through much less emotional stress than American babies according to Commons and Miller. "Gusii mothers maintain almost constant physical contact with their babies, they sleep with them and they respond immediately to their distress," he says.

Commons and Miller are convinced these early experiences are significant. They theorize that leaving infants uncomforted in stressful

situations may cause them to develop excess cortisol, a hormone which the brain secretes in response to stress. (Researchers have been able to measure cortisol levels in babies during stressful events, although babies sleeping in cribs have never been tested). This they argue, must affect the way the developing brain learns to respond to stress and makes it harder for people to deal with stress later in life.

"I'm not saying babies can avoid all stress," Commons says. "The point is, let's not leave them alone to deal with it. Put most simply, let's respond to and comfort crying babies, so they will learn that when they're stressed, people will help them cope with it."

Commons used the example of cribs because he sees them as a symptomatic of our cultural practice of separating infants from their parents. He acknowledges that some parents will have difficulty with the idea of sleeping with their babies because the practice is not considered normal in our culture. "I'm not suggesting that all babies who sleep in cribs will grow up emotionally damaged. It's more a case of reducing the odds a little bit. I just want more parents to feel comfortable about touching their babies more often and to feel free to sleep with them."

These assertions are not meant to imply that everything American parents do is bad, and everything that parents in other cultures do is good, Commons and Miller say. "Compared to many other cultures, including the Gusii, American parents engage in more stimulating face-to-face interactions with their babies, which seems to better prepare them for language development and later on for school," Miller says. They also note that although Gusii families cater to babies, they can be fairly hard on older children.

However Commons and Miller suggest that we can probably learn something from these other cultures about how create a calm and comforting atmosphere for babies. "We (North Americans) are very good at jazzing babies up, but not so good at making them feel calm," she

says. "Surely we can offer our babies both."

Leaving infants alone at night linked to anxiety

BY JOSEPH HALL
Science Reporter
Toronto Star

Friday, February 27, 1998

PHILADELPHIA — A baby crib is the breeding ground for many of the mental health and social ills that befall western societies, a meeting of the American Association for the Advancement of Science has been told.

Leaving babies alone in their cribs at night causes stress in infants that can spark anxiety, narcissism, violence and depression in later life, Harvard Medical school psychiatrist Michael Commons told the conference.

The practice is common only in North American and northern Europe.

"Parents from most cultures have their infants sleep with them, and of course you know in northern European and American cultures our infants sleep apart from us," Commons said.

"As an infant, sleeping by yourself is very stressful...and the stress that goes on in that period causes the brain to secrete (the hormone) cortisol."

Excess cortisol in the subcortical areas of the brain can alter children's neurochemistry and make them more susceptible to stress for the rest of their lives, Commons said.

It's this susceptibility that can lead to non-genetically based mental problems in youth and adulthood.

"Cortisol makes you more prone to the bad effects of future stress, it makes you more prone to mental illness and it makes it harder to recover from stress," Commons explained.

Among the ways this biological inability to handle stress can manifest itself later is through a

susceptibility to post-traumatic stress disorder, narcissistic tendencies, depression, violence and chronic loneliness.

It also creates a "Marlboro Man" society, in which rugged individualism is admired and the inability to handle stressful situations is cause for shame and withdrawal.

"Support for failure and for emotional responses to stress are not part of our culture. You're supposed to brave it." Commons said.

"And this leaves people very open to developing post-traumatic stress disorder, depression and character disorders...and they recover more slowly because they don't have the emotional resources to seek comfort and consoling," he says.

Commons said that babies - especially those younger than 8 months - should be allowed to sleep with their parents.

They should be close to comforting adults throughout the day, he added.

"Infants should be rubbed and hugged and kissed, and they should be kept very close to parents," he said.

"And if we have day care...this idea of having kids sleep in separate cribs is a bad idea. It's better if they sleep touching each other."

Stressed Babies May Have Trouble Later

Barbara Fitzsimmons
Feature Writer
San Diego Union-Tribune

2/17/98 - Psychiatrists said Tuesday there may be a physical basis linking stressed-out babies to personality disorders in adulthood, reports Reuters. Babies who are made to sleep alone or are not picked up and comforted enough may grow up susceptible to post-traumatic stress disorder (PTSD) and personality problems, said Dr. Michael Commons of the Harvard Medical School, and colleagues. Researchers speaking at

the annual meeting of the American Association for the Advancement of Science said they were starting to find evidence of physical changes in the brain caused by stress in infancy. "Parents in most cultures have infants sleep with them," Commons told a news conference. "As an infant, sleeping by yourself is very stressful. We can see this because infants cry." Scientists have also found levels of the stress hormone cortisol to be much higher in crying babies. Commons suggested that constant stimulation by cortisol in infancy caused physical changes in the brain. "It makes you more prone to the effects of stress, more prone to illness including mental illness and makes it harder to recover from illness," Commons said. "These are real changes and they don't go away." He said his team was doing studies with Kenyans, people of Mayan descent and residents of Boston. In the West, children are encouraged to be self-sufficient and face danger alone. But other cultures teach infants to stay close and look to others for emotional and physical support, he said. He said illnesses such as PTSD and phobias, on the rise in industrialized countries, such as the United States, barely existed in more primitive societies.

Minna Stenroos

Stressed Babies May be Prone to Trouble Later

By Maggie Fox, Health and Science Correspondent PHILADELPHIA (Reuters) -

Psychiatrists said Tuesday there may be a physical basis linking stressed-out babies to personality disorders in adulthood. Babies who are made to sleep alone or are not picked up and comforted enough may grow up susceptible to post-traumatic stress disorder (PTSD) and personality problems, said Dr. **Michael Commons** of the Harvard Medical School, and colleagues. The idea that babies need physical contact is not new -- that is why they are no longer swaddled in tight blankets and left to cry for hours. But researchers speaking at the annual meeting of the American Association for the Advancement of Science said they were starting to find evidence of physical changes in the brain caused by stress in infancy. "Parents in most cultures have infants sleep with them," Commons told a news conference. "As an infant, sleeping by yourself is very stressful. We can see this because

infants cry." Scientists have also found levels of the stress hormone cortisol to be much higher in crying babies. Commons suggested that constant stimulation by cortisol in infancy caused physical changes in the brain. "It makes you more prone to the effects of stress, more prone to illness including mental illness and makes it harder to recover from illness," Commons said. "These are real changes and they don't go away." He said his team was doing studies with Kenyans, people of Mayan descent and residents of Boston. In the West, children are encouraged to be self-sufficient and face danger alone. "They don't have the emotional resources to seek comfort and consoling and the experience becomes unspeakable," Commons said. Other cultures teach infants to stay close and look to others for emotional and physical support, he said. "The infants sleep touching the parents," he said. "They are carried around touching the parent or some family member." Commons cited theories that such constant support kept down levels of cortisol, and helped the cortical structures in the brain develop better. He said illnesses such as PTSD and phobias, on the rise in industrialized countries such as the United States, barely existed in more primitive societies. But Commons conceded he had no proof of his theory, although he planned more tests such as PET scans, which can show blood flow in the brain and indicate what structures in the brain are working. But he said parents should think carefully about how they treat infants. "I think infants should be rubbed and hugged and kissed," he said. Children in day care should not be put to sleep in separate cribs, he said. "They should sleep touching each other." Commons conceded the growing prevalence of post-traumatic stress disorder could be because it had become fashionable to talk about. "I think the cultural fad of PTSD is probably a slight, slight overreaction," he said. "But I work in a mental hospital and clinical instances of PTSD and phobia are just way, way up. I think there's a strong organic basis."

Image Not Available

Paul Willis reporting on the...

Image Not Available

Day 6, 17 February 1998

Today is the last day of the 150th AAAS in Philadelphia and the end of conference statistics are very impressive. Overall there were 5,450 registrants of which 877 were registered as media representatives. Around 850 papers were presented over six days in more than 170 sessions. Adequate coverage of this event is impossible for anything but a small army of journos.

It's been fun (the best kind of work!) to be both involved in and a spectator to the AAAS spectacle. I have been particularly struck by the differences between journalists from various nations when it comes to reporting some of the myriad stories that have been presented. Now this is going to be a generalisation (and all generalisations are wrong) but there really is a difference between the Poms and the Yanks when it comes to question time. Americans ask very "polite" questions that clarify details of a story and they treat the scientists with a certain respect and reverence. The British, however, are more likely to ask provocative questions about the scientific foundations of a story and, while not exactly disrespectful, they are more likely to give the boffins a run for their thesis. There was a good illustration of this at a press conference about advances in cancer therapies.

Dr Ellen Heber-Katz from the Wistar Institute presented some of her research that flowed from a simple but startling observation. Heber-Katz has been using a particular type of laboratory mouse that had been specially bred to have a suppressed immune system. She asked a lab assistant to pierce the ears

of the mice ready for ear tagging so that they could identify each individual. Two weeks later, when they went back to actually put the ear tags in, there were no holes. Suspecting that the technician had simply forgotten to do the job in the first place, they did it all over again. Two weeks later, the holes had disappeared again. It turns out that these mice could completely regenerate the damaged tissue (the hole in the ear) without even leaving a scar. There was something about having a suppressed immune system that allowed these particular mice to regenerate tissue in a way that was impossible in normal mice. Looking across the animal kingdom Heber-Katz commented that amphibians have virtually no immune system and they can regenerate whole limbs. It appears that mammals have acquired immune systems at the expense of being able to regenerate body tissue. No one is quite sure what's going on here but it is a significant new perspective on how bodies grow and repair themselves. The implications of this research could eventually lead to treatments that would allow an amputee to grow a new arm or leg.

It was a great story and it generated an extended question session. American journos were interested in the correct spelling of particular words, details about where the mice come from and possible applications of the research. But it took the British journalist Nigel Hawke from The Guardian to ask the really meaty question; "Have you tried lopping their legs off?". It was an obvious question that gets to the core of just how robust the research and theory really is. After all, it might be cute that a mouse can deal with a small hole in its' ear, but this is a long way short of being really useful body

rebuilding.

As it turns out they have begun experiments that explore the regenerative powers of these rodents. If you snip off the last centimetre of the tail, they can regrow 75% of it. However, if you lop off more than the distal centimetre, the mouse is likely to bleed to death. This being the case, they haven't tried removing limbs because they are more complex and are supplied with a lot of blood. It was a powerful insight into the research that would not have been surfaced if it weren't for the pythonesque question from Nigel.

Being the American Association for the Advancement of Science, much of the research is presented, not just from an American perspective, but with a needlessly parochial American application. Much of the science at AAAS has global significance but it has often been presented with a scope that only considers the United States. This is particularly frustrating for the foreign press in attendance and their questions often try to broaden out the scope of the research so that they have something relevant to report in their home countries. I had a stab at doing this myself earlier today.

Dr Michael Lomport Commons from Harvard Medical School has been looking at brains and comparing them across cultures. In a nutshell, what he has found is that infants who are separated from their parents or family for extended periods get really stressed. By "separation", Commons means out of physical contact while an "extended period" could be as little as an hour. Stressed babies generate large amounts of the stress hormone cortisol and this conditions the individual to a life of high stress living. The result is more stress-related conditions in individuals who were "isolated" as infants as opposed to those who aren't. Alternatively, "non-isolated" babies do not handle stress very well as adults.

The cultural factor here is the difference in early childhood development practices

between cultures. In Western cultures, mothers are encouraged to leave babies and infants "isolated" for extended periods. Isolation periods include sleeping in a different bed from the parents, time spent in day care centres or other care arrangements where the child is separated from nursing parents or family. Many other cultures, particularly subsistence cultures, rarely isolate an infant. The baby sleeps in the parents' bed at night and is carried (usually by the mother) for most of the day. Adults from these cultures are not particularly good at handling stress or being alone and this is reflected in their societal structures.

My Australian spin on this research was to ask about its' possible relevance to the Aboriginal deaths in custody issue. Generally Aboriginal families (particularly those in more traditional environments) do have extensive parent-child contact which should, if this research is relevant, produced adults unconditioned to handling stress. When adult Aboriginals are jailed two or more to a cell, the death rate is much lower than when they are held in isolation. While other factors such as police thuggery have been demonstrated to be important in the Aboriginal death rate in custody, I was curious if Commons thought that his research might identify another factor.

"Absolutely" Commons responded. Although he was not familiar with the Australian Aboriginal example specifically, the details as I had relayed them in my question agreed with his research into stress in adults from other indigenous cultures. Commons is now interested in the Australian case and his future research may assist in the deaths in custody issue, not only for Australian Aboriginal people, but also for other indigenous peoples.

The thought that some of the research I have been exposed to over the last week in a conference in Philadelphia may someday help with a problem in Australia was, for me, a demonstration of the benefits of conferences such as this one. It was a good

conclusion to the AAAS.



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The Family Bed

Though some people oppose the idea of people sleeping with their babies, the latest research from Harvard shows it leads to children who become adults with fewer emotional problems.

- By Jennifer Coburn -

The family bed may be good for your baby's mental health.

A Harvard [psychologist] has found that in cultures where infants sleep with their parents or siblings and are touched frequently, stress disorders are virtually unheard of.

On the other hand, psychiatrist Michael Commons found that babies who sleep alone, or are not picked up and comforted enough, may be more susceptible to post-traumatic stress disorder and personality problems. Commons and his colleagues presented their research to the American Association for the Advancement of Science. They found that when babies cry for extended periods of time, levels of cortisol, a stress hormone, are elevated. The constant stimulation of this hormone causes physical changes in the brain, according to Commons. "It makes you more prone to the effects of stress, more prone to illness, including mental illness, and (it makes it) harder to recover from illness," he said. Not everyone agrees with Commons and other advocates of the family bed. The best selling American book on infant sleep strongly advises against co-sleeping. In fact, Richard Ferber, author of "How to Solve Your Child's Sleeping Problems," recommends training babies to put themselves

to sleep by letting them cry it out. Many American parents "Ferberize" their babies by allowing them to cry alone in their cribs for timed intervals, then offering them short periods of verbal consolation.

Ferber argues that his method helps children learn to become more independent. However, advocates of the family bed believe that ignoring a baby's night-time crying teaches the infant that he cannot depend on his parents. "In order to develop independence, a baby must first develop a healthy sense of dependence," says Dr. William Sears, a pediatrician and advocate of co-sleeping. James McKenna, a sleep researcher at the University of Notre Dame, agrees that co-sleeping offers health benefits to children. McKenna says that, when compared to their counterparts, children who slept with their parents as babies do better in school, have higher self-esteem, and are healthier.

Books on the family bed:

The Family Bed, by Tine Thevenin
Nighttime Parenting, by Dr. William Sears

Three in a Bed, by Deborah Jackson
Crying Baby, Sleepless Nights, by Sandy Jones

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The Benefits of Co-Sleeping

Lower your baby's risk of stress disorders, SID and more

*by Jennifer Coburn
courtesy of The Compleat Mother*

Harvard psychologist Michael Commons and his colleagues recently presented the American Association for the Advancement of Science with research that suggests that babies who sleep alone are more susceptible to stress disorders.

Notre Dame anthropology professor and leading sleep researcher, James McKenna, has

long held that babies who sleep with their mothers enjoy greater immunological benefits from breastfeeding because they nurse twice as frequently as their counterparts who sleep alone.

In his book on Sudden Infant Death Syndrome, pediatrician William Sears cites co-sleeping as a proactive measure parents can take to reduce the risk of this tragedy. McKenna's research shows that babies who sleep with parents spend less time in Level III sleep, a state of deep sleep when the risk of apneas are increased. Further, co-sleeping babies learn to imitate healthy breathing patterns from their bunkmates.

Every scientific study of infant sleep confirms that babies benefit from co-sleeping. Not one shred of evidence exists to support the widely held notion that co-sleep is detrimental to the psychological or physical health of infants.

If science consistently provides evidence that the American social norm of isolating babies for sleep can have deleterious effects, why do we continue the 150-year crib culture in the United States? Why do parents flock to Toys R Us to purchase dolls that have heart beats, sing lullabies and snore when they can do the same for free?

McKenna suggests that there are several factors that maintain this cultural norm. Foremost is the American value of self-sufficiency. Independence is an important characteristic for a successful person in our society. We take great pride in watching our babies pick themselves up by their own bootie straps. But the assumption that co-sleeping inhibits independence is pure cultural mythology. In fact, the opposite is true.

Children who share sleep with their parents are actually more independent than their peers. They perform better in school, have

higher self esteem, and fewer health problems. After all, who is more likely to be well-adjusted, the child who learns that his needs will be met, or the one who is left alone for long periods of time? McKenna suggests that it is confusing for a baby to receive cuddles during the day while also being taught that the same behavior is inappropriate at night.

The Commons report states that when babies are left alone to cry themselves to sleep, levels of cortisol, a stress hormone, are elevated. Commons suggests that the constant stimulation by cortisol in infancy causes physical changes in the brain. "It makes you more prone to the effects of stress, more prone to illness, including mental illness, and makes it harder to recover from illness," he concludes.

The best-selling book on infant sleep is frighteningly misdirected and offers absolutely no scientific grounds for its thesis. Richard Ferber suggests that the best way to solve your child's "sleep problems" is to isolate them in another room, shut the door, and let them cry for ten minutes without interruption. Then parents may enter the room and verbally soothe the baby, but are warned against making physical contact with their baby. Shortly after, they are advised to leave the infant to cry for another timed interval a la "Mad About You."

Most sleep disorders are not biologically based, but rather, created by well-intended parents. Making oneself available by intercom is simply not meeting the nighttime needs of an infant.

Many parents argue that they tried "Ferberizing" their baby and enjoyed great success with the technique. Indeed, the infant may stop crying and learn to go to sleep on his own, but this is a short-term pay off for

parents. The baby has not suddenly discovered quiet content. He simply is exhausted from his futile efforts to be nurtured. Fifteen years later, the same parents shrug their shoulders and wonder why their kids are shutting them out.

Though co-sleeping is common in most parts of the world, many American parents would not consider it because they fear it will cause them sleep deprivation. Every scientific study concludes that parents who bring their babies to bed sleep longer and better.

A few parents do experience difficulty sleeping with a baby in their bed. For them, a "sidecar" or bedside sleeper is an ideal way to meet their needs for rest and their baby's need for co-sleep. Keeping a crib or bassinet in the parents' room is another option. A "family bed" is not for everyone, but creative solutions for co-sleep are abundant in our consumer-friendly culture.

The most common question co-sleepers are asked is about maintaining a sexual relationship with one's partner. The answer is simple. Go someplace where the baby is not. Enough said.

For those who consider unlimited access to their sexual partner more important than meeting the needs of their baby, cat ownership is a wonderful alternative to parenthood. You can just toss a bowl of Nine Lives on the floor and frolic around the house whenever the mood hits you.

Co-sleeping is not right for everyone. Heavy drinkers and drug addicts should avoid sleeping with their babies. Of course, these folks should probably avoid parenthood altogether.

If scientific research consistently demonstrates that co-sleeping offers

tremendous benefits for babies and has no deleterious effects, it's time Americans join the rest of the world and parent our babies 24 hours a day.

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