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The Baby Brain Connection / Armed with new research on developing brain structure, social workers can help fix troubled baby/parent relationships

Rob Waters **Published 4:00 am, Sunday, November 14, 2004**

IMAGE 1 OF 2

Cover.Fin.psd Event on 10/19/04 in city}. Photo illustration for Baby Brains story in 11/14/04 SF Chronicle Magazine. Photo by KEVIN IRBY / Freelance

This is a story about the first love that any of us experience, the one that sets the stage and forms a template for all relationships to come: the love between an infant and a parent. It's a story about what happens when love between parent and infant falters or fails -- and the profound, lifelong consequences it can have, not only on a child's heart and soul but also on his or her developing brain. Or when ruptures in their relationship go unrepaired -- because a mother is too depressed to focus on her baby, or a baby is too sick to be readily cuddled. Finally, it's a story about the work of a

small group of specialists, whose mission is to facilitate this process of courtship. This is a story about mothers and fathers loving their babies and what can happen when they can't or don't..

When Oakland social worker Sara Grunstein met Irma Pacheco* last spring, the 28-year-old "was so soft-spoken I could barely hear her voice," Grunstein recalls. "There was nothing in her eyes, no spark, no joy, no light." Pacheco's fifth child, Edith*, had just been born with cocaine in her system and she was taken, temporarily, from her parents.

Pacheco, an immigrant from central Mexico, had come to the United States four years earlier with her 5-year-old son, but without a 1-year-old boy who was left in the care of Irma's mother. In Oakland, she went to work in her sister's flower shop and soon met the handsome Omar*, who waited each morning at the same bus stop she did. They fell in love and produced beautiful twin girls, then conceived a third daughter not long after. At some point, Omar also introduced her to crack cocaine. Their love was deep and they bought wedding rings, but their addiction to cocaine was strong, and they sold the rings for crack.

Then they lost Edith. Determined to get their baby back, they each entered an addiction-recovery program, and Edith was returned to their care. A juvenile court judge assigned the family to the child mental health program run by Children's Hospital and Research Center at Oakland. Grunstein, herself a Mexican immigrant, and a friend of this reporter, drew the case.

Her first task was to try to ease Irma out of her depression. She visited her weekly and spent the first few meetings getting to know the mother and her children, especially the 18-month-old twins. These girls were silent and anxious, and clung tightly to Mom. They didn't vocalize or engage with toys, and they expressed few emotions other than fear.

"These children did not know how to play," Grunstein says, and neither did their depressed mother. So Grunstein played games with the children and encouraged Irma to sing to them. When Irma shyly said she had a terrible voice, Grunstein sang nursery rhymes in Spanish -- "even though I can't sing at all," Grunstein says with a laugh.

Over the next six months, the twins became more outgoing. Soon, instead of sitting and

clinging to their mother, they started playing with Grunstein. They would begin each visit with a ritual: They'd try to get into Grunstein's purse, and she would stop them.

On a recent visit to the family's home, the twins, now almost 2, were precocious and charming, playing mischievously with their father, with Grunstein and with a visiting reporter. Irma sat on a new blue couch, rarely speaking or smiling, and fed baby Edith with a bottle. An older brother played games on a computer. The twins romped around the tidy, crowded room, smacking a coffee table with plastic blocks, and showing off their belly buttons, bottles of formula hanging from their mouths.

One thing the twins did not do, however, was speak. So Grunstein, who wanted their voices to be heard, to register in their parent's consciousness, spoke for them. At one point, Katarina* tried to climb on her father's lap, which was already occupied by Imelda*. Imelda gave her sister a little kick and Grunstein gave voice to her feelings. "Your lap is so special, Papi, I don't want to share it with my sister." Omar lit up and gave both daughters a kiss.

He smiled even more when Grunstein praised them both for sticking with their recovery programs and doing everything the bureaucracy asked of them. "I'm going to do whatever it takes to keep my daughters," Omar said.

When Irma took baby Edith, now 9 months old, and tried to put her to sleep in the bedroom, Edith cried and wouldn't go down. She returned to the living room in her mother's arms. "Oh, Mommy," said Grunstein, "when you leave, I'm scared you won't come back. And you're the one I want." Instead of feeling she had failed in a task, a proud smile played briefly over Irma's broad, round face.

So what, exactly, is going on here? Is this really "treatment," and if so, how is it helping these children?

Babies on the Couch?

Infant mental health treatment strikes many people as bizarre: The Ann Arbor News once described it in a headline as therapists putting "babies on the couch." Even the name is deceptive, because the focus of the work is not on the baby, but on the relationship between infant and parent. It has its origins in the work of the late Selma

Fraiberg, who developed the concept at the University of Michigan, then founded what became known as the Infant- Parent Program at the UC San Francisco in 1979. The Bay Area has been the center of infant mental health research and work ever since.

At Michigan, Fraiberg, a social worker and psychoanalyst, was working with children born blind, trying to understand why some developed normally, interacting with others and forming friendships, while others isolated themselves and seemed to lack the interest or capacity to interact socially or forge relationships.

"Fraiberg came to realize that it was about what happened very early on between those babies and their parents," says Kadija Johnson, a social worker who has worked at the Infant-Parent Program for 18 years and is currently its acting interim director. For example, when blind babies didn't smile at their parents, some parents felt rejected, and subtly detached from their children. From there, the disconnection could snowball.

On the other hand, when parents found ways to read their babies' cues and connect and communicate with them -- despite the children's lack of sight --

the children tended to develop normally, especially in the social and emotional realms.

Fraiberg believed that the same dynamics apply to other parent-child relationships, that problems or blocks other than blindness could also act as impediments to bonding. Those blocks could come from either partner in this dance -- the baby or the parent.

A baby born prematurely, for instance, or with other serious medical complications, might spend months in an incubator or isolated in an intensive care nursery, a huge barrier to parent and baby touching and connecting with each other. A depressed parent such as Irma Pacheco might have difficulty focusing her attention on her baby or playing with her. And a parent whose early life included abuse or neglect might come to this new relationship with a powerful set of expectations about rejection or his or her own inability to sustain a relationship.

"Parents often interpret their baby's behavior in terms of other experiences they've had," says Jeree Pawl, who worked with Fraiberg in Michigan and co-founded the UCSF program before retiring as its director four years ago. "The early relationships we have give us ideas about what people are going to be like, what we can expect of them. If these

experiences are harsh and negative, that perspective narrows into a reality. What people expect, they begin to perceive."

Ghosts in the Nursery

When parents carry their own harsh experiences with them, bringing their "ghosts into the nursery," in Selma Fraiberg's famous phrase, they see and distort the meaning of such events as a baby crying or not wanting to nurse and interpret it as a personal rejection. Ellen Salwen, a psychologist and infant specialist with Children's Hospital Oakland, remembers one young mother who got angry as she showed Salwen a picture from her unborn child's sonogram. "She said, 'Look, she's giving me the finger.' She literally believed this fetus was telling her to f -- off," says Salwen.

Part of the task of an infant mental health worker is thus to help parents see their children in a less subjective light, less colored by the distortions of their own ghosts. Another is to help parents recognize their importance and their impact on their baby.

One day a client of Salwen's, a teenage mother, proudly told her she wanted to show her something. "She said 'Watch this,' and she slowly approached her baby with a big smile," Salwen says. "Then she turned around and walked away." She repeated this three times, as the baby first got happy and excited, then puzzled and confused, and was ultimately reduced to tearful hysterics.

"I can see how good it makes you feel to see how much he needs you," Salwen said to the mom. "But look at your baby right now. How do you think he's feeling?" The mother saw her son for perhaps the first time, and realized that he felt abandoned. She picked him up and soothed him.

Fraiberg believed that by intervening early to help a parent understand and connect with a young child -- whether blind or sighted -- the child's prospects for healthy development could be improved. Based on this thinking, she developed the pioneering program at UCSF.

Throughout the 1980s and early 1990s, therapists and social workers, many of them trained at UCSF, carried out and refined this work by closely monitoring and evaluating the progress in their cases, but without benefit of controlled research, or the

endorsement of a "hard science" like neurobiology. This was a time when psychoanalytic theory -- the notion, based on Freud's work, that psychological problems stem from unconscious conflicts and motivations -- was seen with great skepticism. So infant mental health work, with its psychoanalytic overtones, was often viewed dubiously, given little heed by policymakers and funders.

Then, in the mid-1990s, came the revolution in medical imaging techniques. Suddenly, neurologists were able to look into the brains of babies and children and see synapses connecting and pathways forming in response to external stimulation. Their observations showed that the brain was not a static "black box" that developed in isolation, but rather a living, changing organism that used outside events to shape itself and to develop abilities like vision, speech and reasoning.

"What the science told us is that experience becomes hard-wired," says Pawl. "It has an actual literal effect on the structure of the brain."

One of the leading interpreters of the new brain science is UCLA neuropsychologist Allan Schore, who spent the past decade synthesizing the latest findings in neurology, pathology and developmental psychology. His research provides powerful evidence that an infant's attachment with the primary caregiver during these early years is crucial for healthy development, and that poor attachment, along with abuse or neglect, can alter the brain's structural path, predisposing a child to lack empathy or to being aggressive.

A Parent's Gaze Helps Brain Circuits Connect

During these first two years, Schore says, "the brain more than doubles in size, growing more rapidly than at any other time of the life span." It's a time of tremendous neurocellular activity as millions of cells fire and wire together, forming pathways and connections. But these connections may not form in an optimal way if a baby's emotional needs are not being met by his or her primary caregiver.

For example, Schore says that at 2 months of age, there's an explosion of synaptic connections in the brain's right hemisphere, at the same time that the baby begins to visually process the mother's face. The experience of visualizing Mom allows those synapses to connect, he says. "Through the attachment relationship, which is first touch-to-touch, smell-to-smell but then becomes face-to-face, the mother is providing the

kinds of stimuli that are needed for the circuits to wire up."

In two recent studies, researchers using devices known as PET scanners and functional MRIs looked at the brains of 2-month-old babies as they gazed at a picture of a woman, or at the brains of women as they looked at videos of their babies. The researchers noted that the same regions of the right hemisphere of the brain were activated in both.

"We have, in essence, communication between the right hemispheres," says Schore. "The mother is basically downloading to her baby programs about processing faces."

This process can be disrupted, however. If the mother is badly depressed and constantly wears a flat face, it could impede the wiring of those circuits. Or say that instead of calming and soothing a baby, a caregiver allows the child to remain agitated. Or, even worse, the caregiver neglects or abuses the child, sending him or her into states of very high stress for long periods of time.

"Now you've got an immature brain with large numbers of synapses being bathed in high intensities of cortisol (a stress hormone) and glutamate (a neurotransmitter)," Schore says. "That combination literally can burn out synapses. The connections within the right hemisphere become thinned down."

A thinned-down right hemisphere disrupts the capacity to feel empathy, normally a right-brain function. High levels of fear and stress lead the brain to release endorphins, natural chemicals similar to opiates, perhaps cueing a later need for recreational drugs or the rush of extreme experiences. It may also train the brain to dissociate and disconnect from what is happening outside. All of these events, Schore and other experts suggest, can be a recipe for producing an aggressive or self-destructive child and adult.

The new understanding about the importance of good attachment between infant and mother -- and the high cost of poor attachment, abuse and neglect -- validated the work that infant mental health specialists had been doing for years, and brought new respect and funding to the field.

The new research was key in getting actor and director Rob Reiner to propose, and California voters to approve, Proposition 10. Since its passage in 1998, it has generated $2.5 billion in programs aimed at children up to 5 years of age, some of it for mental

health services.

This funding, coupled with increased attention on brain development, has fueled an expansion of infant mental health programs throughout the Bay Area and the state. Children's Hospital Oakland has been able to start sending specialists such as Grunstein and Salwen into the field to work with families in their homes. In nearby Alameda, a similar program called Smart Healthy Babies opened its doors in 2001.

Staff members there get notified whenever an Alameda baby is born in an area hospital, and a nurse pays a follow-up visit to make sure all is well. Social worker Beth Hoch, the program's director, can go see families who seem to be having trouble. On a recent morning, Hoch was on the phone with the mother of an 8-day-old child.

"The nurse told me you were feeling kind of depressed," Hoch says gently to the woman. "Are you having any suicidal thoughts? OK. Uh-huh ... It's just really overwhelming, huh? I can come out and visit if you're interested. ... You're doing a good job, Mom. Do as much relaxing and letting go as you can. I'm gonna call you back on Friday."

Hoch hangs up and explains that she called the woman because she cried through her entire meeting with the visiting nurse. "She's still in the window for normal postpartum blues," Hoch says. "After 10 to 14 days, if she's still feeling that way, I'll go out."

The Magic of Touch

While Hoch is on the phone, mothers lugging baby carriers and pushing strollers have been filing in for a weekly class in infant massage, one of the newest ways of promoting parent-child attachment. Soon, six squirming babies are lying on their backs on the carpeted floor, their heads resting on pillows.

Social worker and massage therapist Lisa Eiben explains that the goal of infant massage is to build a bond between mothers and babies through touch and communication. "It's more than just the strokes," she says. What I'm really trying to emphasize is reading the baby's cues."

She passes around some massage oil, then leans over the doll that she's using as her baby, and looks into its eyes. "May I give you a massage now?" she asks in a slow, soft

voice.

Taking the doll's silence for consent, Eiben lays her hands gently on its stomach. "That's their cue to get ready," she explains. She encourages the moms to keep talking to the babies and tells them to take a deep breath. "If you're stressed out and not relaxed, the babies will pick that up from you," she says.

She urges them to watch the babies' facial expressions and movement as a guide to how they're feeling and responding to the touches and strokes. Then she asks the mothers how they can tell if a baby is uncomfortable. "They look away," says mother Laura.

"Good," Eiben says. "They're learning to regulate themselves when they're overstimulated. Parents sometime feel rejected by that, but it's not about them. Baby will look away and then look back. It's a dance."

A different kind of infant massage is happening in a very different environment at Children's Hospital. In the three rooms of the Intensive Care Nursery, 31 babies lie on tiny beds or in incubators, each of them hooked up to an array of lines, tubes and wires, as monitors and ventilators flash and pulse around them.

The fragility of the babies and the intensely medical atmosphere act as barriers to parents touching or connecting with their babies. Even those that want to connect don't really know how to do it. At Children's, it's the job of infant development specialist Bette Flushman to help them.

At the entrance to Room C, 1-week-old Jasper lies in the lap of his mother, Molly McDaneld. His father, Joel Hodge, a blond bear of a man, bends his large frame over the baby, cradling his tiny leg in one hand while lightly stroking it with the other. For the first time since he was born, they are touching and massaging their baby, as Flushman whispers encouragement. "Now take your fingers and walk, walk, walk, up to the top of his sole," she tells Hodge.

McDaneld, meanwhile, is holding a pacifier in Jasper's mouth while stroking his cheek with one finger. He sucks rhythmically, his dark blue eyes opening and closing periodically.

A monitor emits a loud warning: "beep-beep-beep, beep beep," and Jasper begins to cry.

McDaneld caresses him lightly between the eyes. Flushman suggests that instead she make strokes above each eye, moving out from his nose in each direction. Soon, Jasper's eyes close, and his face and breathing relax. "Look at that," McDaneld marvels. "He's like a little Zen baby."

Jasper was born with a rare congenital heart defect and will be undergoing open heart surgery the next day. "When he was born, they had to immediately hook him up to tubes and wires, so we didn't have the opportunity to touch him or be affectionate with him," Hodges explains. "Now, being able to give him comfort by touching, rubbing and massaging him gives me comfort. I feel like I'm participating."

And that, says Flushman, is precisely the goal. Many of the babies in the ICU are much smaller than Jasper, who was born at full term, and scary-looking in their fragility. As she gives a tour of the nursery, Flushman lifts a blanket to reveal a tiny baby boy born at 25 weeks, nearly four months early. He weighs 1.5 pounds, with limbs that are stick thin. "For many parents, this is not a baby they want to touch or do anything with," she says. "It's too frightening.

"You have to learn to see the baby through the machinery and the intense environment, to read the cues and recognize what a baby is saying," she adds. "That's what attachment is at this earliest level."

Flushman and colleague Gay Gayle use a variety of techniques to facilitate this bonding. For babies who are too sick to handle being massaged, a parent might just touch them with a single finger or surround them with cupped hands. They might give the mother a piece of fabric to sleep with near her breast, where it will absorb a scent much like the familiar smell of amniotic fluid. This "scent square" can then be placed near the baby's face.

Babies who are stronger can be held by the mother or father skin to skin, cuddled against their chests in a "kangaroo hold." They might also be held in parent's arms in a position that allows them to gaze into each other's eyes.

This kind of approach, known as developmental care, has been found to help premature babies start nursing more quickly, gain more weight and leave the intensive care nursery sooner. Babies treated this way in these early months of life scored better on measures

of cognitive ability at 9, 18 and 36 months of age and were seen as more socially and emotionally healthy, according to research by Harvard psychologist Heidelise Als, the pioneer of developmental care.

Als' most recent study found that developmental care makes measurable structural changes in the brains of pre-term babies. Viewed through an MRI scanner, their brains had thicker bands of connective tissue -- white matter -- between regions of the frontal lobe than babies who got standard care.

This approach is not just for preemies, as Japer's parents were learning. And the benefits it offers go beyond what can be found in cognitive tests or brain scans. Parents who learn and use these methods "come to see themselves as the baby's most important nurturer," says Als. "And they learn to see through the eyes of the child."

Seeing Eye to Eye

Baby Carl* is 15 months old. He moves slowly, placidly on the carpeted floor, sometimes lying across his mother's legs as he plays with a small toy mop. He doesn't speak or make a sound, and his face contains neither smile nor frown nor grimace. When he was born, he was tiny and had cocaine in his system. Now he is considered to be 1 year old because he was born three months prematurely. For minutes on end, he crawls sluggishly around a small area of floor, picking up the mop and putting it down. He keeps his back to his mother, never turning to look at her or gaze into her eyes.

His impassivity matches hers. She sits silently, leaning against the wall, her legs stretched across the carpet the only contact point between them.

"It's hard for me to be with this," says psychologist Mary Claire Heffron, clinical director of the early childhood mental health program at Children's Hospital, as she looks away from the video monitor. "Even as I watch, I'm remembering his behavior. He was just sort of lying there, not making any sound, not crying out for help, just kind of giving up on the world."

Heffron first met Carl and his mother in 1991, when he was brought to the ICN at Children's, where Heffron had recently begun to work. She worked with Carl, his mother, and later his father over the course of several years, trying to help them develop

what psychologists call a "secure attachment."

She met with the mother five or six times during the four months that Carl was kept in the ICU and started to develop a relationship. "She began to trust me," Heffron says. After Carl was released from the ICU, she visited him and his mother at home, encouraging her to tune in to Carl's moods and behavior, to talk to him and make eye contact. During some of those visits, she videotaped their interactions.

"I was very worried because in my early visits, the mother was taking care of him very well physically but there was no holding, mutual gazing or joy," she remembers. "Her pull was to talk about her own stuff. My intervention was to try and interest her in the kid. She cared about him -- you knew that. But things were unraveling in her life."

They soon fell apart completely. One day, Heffron paid a visit to her house and found Carl and other young children in the care of a 9-year-old. Carl was removed from his mother's home, placed in emergency foster care, and ended up in the care of his father. He had fathered Carl during an extramarital affair and now, with his wife of many years, wanted to raise him. He called Heffron asking for her advice and assistance, and she began to meet regularly with him and Carl.

Carl was a quiet child who showed little emotion and rarely approached or looked at his caregivers. He was used to playing on his own, and had become very independent. Heffron began working with the father to help him engage with Carl. "My job was to jazz Dad up, to teach him to woo this child and to magnify his own affect (or expressiveness)" by making big sounds and gestures, she says.

She fast-forwards to another section of tape. Carl is now nearly 3 years old. He's sitting on the floor, playing with a plastic teacup. He's quiet, not speaking much, and it seems at first as if little has changed. Then we hear a voice from off camera. "Oh, look at this," Carl's father is saying. "Let's find some things in the basket."

Carl walks over to a basket and picks up a play telephone, then brings it to his father. For the next several minutes, he plays with the phone and other toys in the basket, turning frequently to look at Dad. They work together, pushing a truck around and putting a baby in the back of the truck. Then his father does something that is at once wonderfully simple and deeply symbolic: He holds up a small mirror near Carl's face.

"See that baby," Dad says. "That's you. That's Carl."

For the first time in his young life, Carl was learning who he was in the eyes of another, and was being seen and loved..

* Names have been changed.