

Ghosts from the Nursery: the Roots of Violence

by **Robin Karr-Morse and Meredith S. Wiley**

Press Release

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Press Release

Ghosts from the Nursery: the Roots of Violence

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"[Karr-Morse and Wiley] emphasize here the importance of experiences absorbed during the fetal stage and in the first two years of infancy for brain development....This is a deeply disturbing wake-up call."

—Publishers Weekly

"This is a most important book—perhaps the most important book of 1998."

—Ann Rule, author of *Small Sacrifices* and *Bitter Harvest*

A 14-year-old Kentucky boy guns down three of his friends and wounds five other classmates during a prayer gathering at his high school.

A six-year-old California child savagely beats and kicks a month-old neighbor baby, rendering the infant debilitated for life.

An 11-year-old boy is raped, murdered and stuffed into a suitcase while out selling candy in his own middle class neighborhood for a school project. The attacker? A-15-year-old who answered the door.

The unsettling link between each of these appalling crimes is exposed by Robin Karr-Morse and Meredith S. Wiley in **GHOSTS FROM THE NURSERY: Tracing the Roots of Violence** (Atlantic Monthly Press, January 25, 1998. \$25.00). Case studies, including death row interviews and stories of children in the news are woven together with the newest scientific research, particularly from the fields of neurobiology and early brain development, to explore the seemingly unanswerable question, "why do children kill and what can we do to keep this from happening?"

Karr-Morse and Wiley present voluminous and startling evidence that points to the earliest months of life as the time in which violent behavior is born and cultivated. The latest research on infant birth development

reveals that the roots of violence can be sown before birth and be well entrenched by preschool.

"The chemical wash inside the womb—not just of drugs but of stress hormones when the mother experiences chronic fear or rage—can have a profound influence on the developing brain of her fetus," said Karr-Morse. "Experiences from pre-birth through the first two years after birth lay the foundation for how we think, how we feel and for how we relate to other people. Negative experiences during that time—a time society typically views as innocuous—are more far-reaching than anyone has understood.

"It's not surprising that prisons continue to be a leading industry in our country," said Wiley. "We've been looking for explanations everywhere, except in the nursery, where this is actually gestating. Midnight basketball and programs aimed at delinquent youth, while helpful, don't get to the causes of this problem. The good news is that as alarming as this information is, it unveils rich opportunities that we are overlooking. With this new understanding we may be able to get to the root causes of violence for the first time."

GHOSTS FROM THE NURSERY argues that the traditional explanations of the cause of violence, such as poverty, are simplistic and allow the rest of society to distance from the very intimate realities shaping children in homes of all classes.

For anyone interested in understanding why children fill the headlines with violent acts, and for anyone concerned about crime and personal safety, **GHOSTS FROM THE NURSERY** is essential reading. Its importance is summarized by Dr. T. Berry Brazelton who writes in the forward, "This book is a call to all of us. It is beautifully written and well-documented. If all who care about children can use it, maybe we can turn around the tide of our nation's surge toward violence and self-destruction."

About the authors

Robin Karr-Morse and Meredith Wiley first met in 1991 when they worked together on the Oregon Children's Care team, a large interim legislative task force charged with revamping Oregon's system of services to children and families. As a person thoroughly steeped in the state's systems for children, Karr-Morse was the sole consultant, responsible for educating the task force and shaping the final report. As chief of staff to the speaker of the house, Wiley was responsible for project coordination. *Ghosts from the Nursery* emerged from this "in the trenches" experience of seeking to establish state policies and programs that address the needs of infants and toddlers as a primary social service strategy in improving outcomes for children.

Robin Karr-Morse is a veteran of both child welfare and public education systems in Oregon. Formerly the director of parent training for the Oregon child welfare system, she has designed and administered three statewide programs for families with children, including one focusing on pre-parenting in high schools, one on teen parents, and one on families reported for abuse and neglect. She was the first executive director of the Oregon Children's Trust fund, a major public effort to prevent child abuse statewide. Karr-Morse was consultant to Dr. T. Berry Brazelton's Touchpoints Program and is a lecturer on the Brazelton Seminar Faculty. She is currently a family therapist in private practice in Portland, Oregon, where she lives with her husband and the youngest of her four children. Karr-Morse is a parent, adoptive parent, stepparent, former foster parent, and a new grandmother.

Meredith Wiley is a lawyer with extensive experience in elective and legislative politics. She holds a masters in public administration from the Kennedy School at Harvard University. Her specialty is in mass communications and message development. She served as a consultant to the Columbia University Graduate School of Journalism on the development of the Prudential Fellowship Program for Children and the News and co-authored a chapter on media and mass communication strategies for children's advocates in *Reinventing Early Child Care and Education: A Vision for a Quality System*. Wiley currently lives in Manhattan. She has three children and three grandchildren.

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FOR IMMEDIATE RELEASE

Contact: Scott Manning

212-614-7892

Chapter 7: Baby, Get Your Gun—The Impact of Trauma and Head Injury

There was an old woman
lived in a shoe.
had so many children
didn't know what to do.
gave them some broth
any bread.
whipped them all soundly
put them to bed.

—MOTHER GOOSE

Citizen reported that on the evening of 10–22–84 loud screaming was

coming from within (S) [Jeffrey's mother's] apartment and sounded like a child was being hit. Citizen also stated that this type of action took place more than once.... Writer and Officer Johnson left (S) residence and went to [V's] school to interview him and examine for abuse.... When [V's] pants were pulled down, writer found that both buttocks had been bruised. The right side was very red and blue in color and it was quite obvious that (V) had been struck numerous times.... Writer left school and contacted CPS and said they should interview (V) and consider placement. Writer to issue CTA (citation) to (S) for Assault IV into District Court.

POLICE INCIDENT REPORT

Mostly we were always really afraid. Sometimes if somebody was just coming up to give us a hug and they'd say our names loudly—and they were coming up to give us a hug—we would cower. We would actually throw our hands up and cower. And I did that all the time until I moved in with Richard, my [foster father]. And when he saw that, he just broke down and started bawling, and I didn't understand why. I figured he was mad at me, and I thought he was gonna come hit me. So I just threw up my hands like, "You're not gonna hit me so just get away!" And he just started crying.... And I didn't understand why he was crying, why that was going on.... 'Cause after a while you don't realize that it's not wrong anymore. You see all this stuff and you don't realize that it's not wrong anymore to hit somebody....

My mom beat my brother up. That one time she beat him with a braided belt, and she put bruises like from his knees all the way up to his neck. I mean, like, I don't know. She had hit him a lot, I mean, and it was like colors you never thought that human people could actually make in their body. You know what I'm saying? I mean it was like all the colors on his back and on his backside and different places. I was totally amazed. I mean, I'd never seen anything ever quite like that....

You could go home and watch Cops on TV and see every single thing on that has happened to us at one time or another. Every single thing! I mean, you name it. There's been guns pulled. There's been knives pulled. There's been people cut open. You name it, it's happened. To me, it's not really—this is sad to say—but it's not really anything new, and after a while you just kind of become callous to it. After a while you're just sitting there looking at it, and it's like, well, nothing new, I guess. And you hear your family, "Well, such and such deserved it."

JOHN, AUGUST 1996

Sometimes it's more difficult than others. I think everybody has to deal with it, you know. Everybody has to deal with anger. It's how we deal with it that's important and how we learn to deal with it. What makes us decide to deal with it or what makes us not decide to deal with it—to just let it flow... and run into uncontrolled rage. There are different

levels of anger from upset, to mad, to pissed off. Then there's raw fear, you know, and uncontrolled rage. And I borderline up there. When I get mad, I borderline up there, then I follow my impulses. If I can't control it up there, then I follow my impulses. If I can't control my impulses, then I do things that I regret later.... I do follow my impulses... because that was the way I learned to survive when I was little.... Like, if I knew I wasn't supposed to be running from an asswhopping, but I'd be running anyway. What I was doing was wrong, but I would follow the impulse rather than stop and think about the consequences of 'He's got to catch up to me sooner or later'. I didn't care about that. I just wanted to get away.

JEFFREY, AUGUST 1996

On a stifling hot and humid day on July 15, 1976 a school bus was highjacked as it rolled along a back country road near Chowchilla, California, a small, middle-class town in the San Joaquin Valley. The children, ranging in age from five to fourteen, were returning from a day of outdoor recreation and activities, including a performance by the sixth-grade class of *Born to Be Free*. The bus driver slowed on his route to pass a white van that was blocking the road. As the bus passed the van, suddenly two men, one with a stocking over his face and the other wearing a mask and carrying a gun, leaped from the van and forced their way on to the bus. They ordered the driver and the older children to the back of the bus.¹

The kidnappers then drove the bus for some distance into a steep gully and at gunpoint ordered the children to get out. The older children went first. One by one they filed off the bus and disappeared from the view of the younger children into the white van, which had followed the bus. When the van was full, one of the men slammed the butt of his gun into the stomach of ten-year-old Terrie and ordered her to stop just before getting in. The white van pulled off, and a fourth man in a green van drove out of the slough and pulled alongside the bus. Terrie, the youngest children, and the bus driver filed into the second vehicle.

The children sat crammed in the vans on hard, wooden seats. The windows were boarded, and any communication with the kidnappers was blocked by a solid barrier erected behind the front seats. They were driven aimlessly in the heat on bumpy roads for eleven hours in total darkness without food, water, or an opportunity to go to the bathroom. At one point the vans stopped and then backed up. Some of the children thought they would be driven off a cliff; others smelled gas and thought they were going to be burned alive. None of them knew what had happened to the other half of the group.

Finally, about three in the morning, the vans stopped and the children were ordered outside at gunpoint. One by one they were interrogated beneath a tentlike canopy placed near a ladder that led down into a hole. Their inquisitor wore a mask and was eerily illuminated by a flashlight

placed under his chin. He demanded that each child tell his or her full name, and he confiscated some personal possession—a toy, a bathing suit top, or the contents of a pocket—and then he ordered the child to get down into the hole. The rectangular space under ground, which later turned out to be a large truck trailer buried several months before, was lit by flashlight and prepared in advance for the children's arrival. There were stale cheerios, soggy potato chips, a jar of peanut butter, musty water stored in cans, and a pile of old mattresses.

The children timidly explored their environment and settled in. A few kids held up towels to shield other children as they went to the bathroom in two wheel wells with signs over them marked "boys" and "girls." Suddenly, they heard the sounds of shovels above and rocks and dirt began hitting the top of the hole. Some of the children begged and shouted, while others whimpered as they were buried alive. The bus driver implored the kidnappers to have mercy and then fell to his knees praying as the shoveling continued. As the dirt and rocks continued to clunk relentlessly on top of the hole, he lay down and cried. They were all "goners," he told the children.

As the hours dragged by, the children remained quiet and listless. Some of them slept. The rest sat doing nothing. This torpor continued until some time during the day of July 16, when one of the younger children leaned too hard against a makeshift pole and the roof began to collapse. This new crisis galvanized the older children, who with great effort and ingenuity finally dug their way out and led the others to freedom. Jack Wynne, the bus driver, having lifted the littlest children out, took off on foot to find a telephone. As they emerged from their crypt, the children found themselves in a strange valley nearly one hundred miles from home with no idea of what had happened or why. (To this day, no one knows why. The four kidnappers were caught and convicted, but they have never revealed their motives or why they chose this particular group of children.)

The sheriff and his deputies took the children—by bus—to the Alameda County Prison for questioning. They received a fifteen-minute physical examination by a prison doctor and a pediatrician, who found them, much to the relief of the waiting world, to be in "good shape." The medical team did not call any psychiatrists, psychologists, or social workers because the children seemed calm and normal. None of them was hysterical or crying, and none of them seemed to be acting strange, except for the smallest kids, who had repeatedly slipped off the bus and tried to hide when the sheriff and deputies came to rescue them.

After eating hamburgers and apple pie, the children spent the night in the prison and were then taken home in the morning—on a bus—with no warning of or protection from what they were to encounter: a town gone insane with FBI agents, news personalities and reporters from around the world, television cameras, microphones, sightseers, and frantic parents,

siblings, and relatives, all waiting for the bus as it pulled into the parking lot next to the Chowchilla fire station.

No psychiatrist or psychologist even spoke with the children until five months after the incident, when Dr. Lenore Terr, a clinical professor of psychiatry at the University of California at San Francisco, approached one of the families. She had read a newspaper article published in the *Fresno Bee* reporting that the children were still suffering from terrible fears and nightmares. Terr undertook one of the first major studies of the long-term effects of trauma on children and found that at one-year, four-year, and five-year evaluations every single child of Chowchilla was still seriously affected.

As incredible as the blindness to the psychic injuries of the Chowchilla children may seem to us now, at the time of the incident—just twenty years ago—we believed that children were resilient and would weather most trauma given time. The two doctors who initially examined the children had no idea that anything serious was wrong. They didn't even know what symptoms to look for, since the possibility of serious psychic injury, let alone any specific symptoms of trauma in children, was totally absent from medical literature.

As the story of the Chowchilla schoolchildren illustrates, we have come only recently to begin to understand that, for children of any age, long-term damage can occur from a single searing trauma or prolonged exposure to chronic stress or fear. But we have yet to understand that when serious trauma occurs to babies and toddlers during their most explosive phase of brain development, the injury reverberates beyond anything we have ever imagined possible. Fear and anger produce changes in the levels of hormones that are associated with aggression and violence, including noradrenaline, which puts the brain on red alert and serotonin, which has a calming effect when the perceived danger subsides. When stress is especially severe or prolonged, permanent changes may occur in hormone levels that alter the brain's chemical profile and affect patterns of information processing. The result may be maladaptive behavior patterns, including both aggression and depression. Children so traumatized come to perceive the world as a dangerous place.

Jeffrey's older brother, John, describes how he and Jeffrey cowered from the hugs proffered by foster parents who held out their arms spontaneously to receive the boys. For children who have associated adults' sudden arm movements with being hit, this fear is a normal response. Children who are seriously traumatized stay watchful to anticipate and be prepared for the worst. They are apt to misread gestures and respond accordingly.

When the environment continues to teach a child to expect danger rather than comfort, the results can be disastrous. Such was the case of Robert

"Yummy" Sandifer, who was shot through the back of his head at age eleven by two members of his gang.² In commenting on Yummy after his death, Cook County public guardian Patrick Murphy said, "He was in trouble the moment he was conceived."

Yummy was born to an eighteen-year-old mother on welfare. He was her third child. By the time she was twenty, she had five children. At the time of Yummy's death, she had seven children by four different fathers. The court records show that she had a serious drug problem and had been arrested forty-one times. Yummy's father, also a teenager, went to prison for theft three months after Yummy's birth. At the time of Yummy's death, his father was in prison again, for dealing drugs. The court records show that Yummy had a history of serious physical abuse and neglect. At twenty-two months, he was treated at a Chicago hospital for scratches and bruises on his arms and torso. His mother said he had been beaten by his father. When Yummy was three, the police found him at home alone with two other brothers under the age of five, apparently a routine occurrence. He was removed from his mother's custody and placed with his grandmother when investigators found cigarette burns on his neck, back, and buttocks, scratches on his face and abdomen, and marks on his legs from beatings with an electrical cord.

Yummy's criminal record began at age nine. Police believe that he committed more than two dozen felonies before his death two years later. He was prosecuted eight times for various felonies and convicted twice. The charges included attempted armed robbery, auto theft, arson, and burglary. He was kicked out of a group home for fighting and stealing. He was turned loose by a frustrated judge who could no longer detain him under state law after a dozen homes refused to take him.

In a story published in the *Toronto Star* on September 3, 1994, George Pappajohn reported on a psychological examination of Yummy conducted at a state-run shelter for children ten months prior to his death. During the testing he had to be reassured constantly that it wasn't a police interrogation and that he wasn't in trouble. At one point when he heard a walkie-talkie outside the door, he jumped to his feet to look for police. In writing of the incident, Pappajohn said:

He seemed to see the worse—even in himself—and to expect it from others.... Even though the troubled child in the lime-green jeans and food-stained sweatshirt was in the care of the Illinois Department of Children and Family Services, not in court or jail, he thought of himself as "servin' time."... Robert's past was marked by abuse and chaos, but he made the transition from victim to victimizer by the age of 9. In language both clinical and heartbreaking, the psychological report fills in that picture.... "Robert is a child growing up without any encouragement and support," the examiner wrote.... "Since he is so bound up in trying to

manage negative feelings of inadequacy on the inside, and the pressure his environment is exerting from the outside, Robert is emotionally flooded.... His response to this flooding is to back away from demanding situations and act out impulsively and unpredictably.... He is caught up in a never-ending cycle of emotional overload and acting out. His anger is so great that his perception of the world is grossly distorted and inaccurate."

What happens to children to turn them into vicious killers? How does a baby turn into a child who wants to hurt or even kill another baby? How can a child grow into an adult who enjoys torture and killing? The answers, which are just beginning to surface, are not simple. But neither are they impossible to understand once we reflect on how the brain works. It is the brain that mediates this metamorphosis from baby to killer. And it is the environment that shapes the entire process.

Chapter 7: Baby, Get Your Gun—The Impact of Trauma and Head Injury

THE HOUSE THAT JACK BUILT

We humans have evolved and maintained our primacy on the planet because of our amazing ability to successfully adapt to the varying environments in which we find ourselves. The brain presents us with a microcosm in which we are able to see how biology shapes itself in response to individual experiences. Like the capacity of photographic paper to respond to varying patterns of light, our brain is constructed to respond to specific environmental needs and will adjust its chemistry to reflect environmental demands. In early childhood, or even in later life, responses such as extreme vigilance, chronic anxiety, and depression are adjustments that protect people in difficult settings when their survival is threatened. But when such responses are generated in the first years of life, they may be developed at the cost of other more constructive potentials such as trust, confidence, and curiosity, which atrophy when not reinforced by the environment.

Neurons, the basic cells of the brain, connect with each other to form networks; networks connect with each other to form systems; systems work together to facilitate specific functions such as vision. Every neuron in the human brain is geared and waiting for stimulation to call it into action. Experiences in the environment determine which of these cells will be called into use and for what purposes so that an internalized reflection of specific responses needed for survival in a particular environment is created in the brain of the developing child. The more a certain type of stimulation is experienced, the more the corresponding

cells in the brain will be called upon or sensitized. Once sensitized, the same neural activation can be called forth by less and less intense stimulation.³

When the brain is first forming, both the quantity and quality of tissue and chemistry can be changed by sensitization to trauma. The same experiences can change the brain of an older child, also, but in the beginning, in infancy and toddlerhood, while it is at its most malleable, the brain actually organizes itself around these conditions.

Hypersensitivity can become wired in to basic brain chemistry and bodily functions. And attention and capacities in the brain originally available for learning other skills may be deflected to help defend against future trauma.

Chapter 7: Baby, Get Your Gun—The Impact of Trauma and Head Injury

FROM STEM TO STERN

As discussed in chapter two, the brain grows from the simpler or more basic functions to the more complex. So the brainstem, which regulates basic functions like heart rate, body temperature, and blood pressure, grows before the mid-brain, which controls sleep, appetite, and arousal. This is followed by the limbic area, the center of emotional activity. And finally, the cortex, the seat of rational and analytical process.⁴ In the normal brain, there is a balancing system in which the "lower" or more primitive areas of the brain—the parts responsible for excitatory processes—are modulated or held in check by the "higher" or executive functions in the cortex.

Early developmental experiences that build cortical functions, such as exposure to language or music or a loving relationship with a parent, are investments that protect against the expression of violent or impulsive behavior. Conversely, experiences that increase reactivity of the lower areas of the brain, such as physical or sexual abuse by a parent, will increase the capacity for impulsive emotional responses and the likelihood of later violence.⁵ Dr. Bruce Perry, executive director of the Civitas Child Trauma Program and chief of psychiatry at the Baylor College of Medicine, has specialized in treating traumatized children and teaching how trauma in the environment alters the developing brain. Dr. Perry's research is at the forefront of our evolving understanding of the impact of early trauma and its relationship to the early precursors of impulsive violence.⁶

Because development occurs in stages that build upon each other, that which occurs first tends to echo through subsequent development. For

example, negative experiences such as chronic maternal stress or drug consumption that occur prenatally and affect the development of the brainstem or mid-brain will subsequently affect the development of the limbic and cortical areas of the brain as they mature.⁷ This is not to say that all children, or even most, who are young victims of abuse or neglect will become victimizers. In fact, most will not. And all neglect, abuse, or trauma does not have an equal impact. Children are not affected equally; ameliorating factors vary greatly in the lives of individuals. Most of us have had some degree of negative childhood experience. But growing numbers of children across the world are victims of severe trauma ranging from sexual mutilation, to incest, to war and natural disasters. In this country alone, conservative estimates of the number of children exposed to trauma exceed five million each year.⁸ These are the children who are victims of or witness to physical, emotional, or sexual abuse, or to domestic or community violence such as gang murders. For American children, the gestation of violence takes root primarily in the home. When trauma or neglect happens early in life and is left untreated, the injuries sustained reverberate to all ensuing developmental stages. Adult and adolescent community violence begin with violence inflicted on the babies these individuals once were.⁹

Chapter 7: Baby, Get Your Gun—The Impact of Trauma and Head Injury

ROUND AND ROUND IT GOES

In the late 1980s Cathy Spatz Widom of Indiana University conducted an extensive review of the literature to answer the question "Does violence beget violence?" Her conclusion was that, although it is not invariably the case, there is strong evidence that a history of maltreatment is associated with aggression and violence. Her review documented what those of us who are parents have often experienced in spite of our best efforts: that we tend to parent as we were parented.¹⁰ Widom reviewed several studies of intergenerational transmission of abuse and concluded that, over all, abuse tends to breed abuse. Dorothy Lewis, who also looked retrospectively at histories of violent criminals, reported that the more offenders were victimized by chronic violence in the home, the more violent crimes they committed.¹¹

The cycle Widom documents is obviously generated by nurture, by the experiences the child has in the environment. But in addition to understanding the social and psychological imprinting of abuse, several researchers, including Perry, now paint a brain-based picture of how being victimized in childhood can lead to becoming an adult victimizer. Again, this is not an either-or argument. While we tend to think of mind

and body as separate domains with separate lines of influence, they are not separate at all. The mind is constructed in the brain, which is a physical entity with physical connections—in fact, controlling connections—to the entire body.¹² Nature and nurture are united in the brain. All that we experience changes the brain, and the brain in turn changes physiological responses in the body. Heart rate, blood pressure, and muscle tension are all examples of changes that occur in response to experiences. Each relationship, each person, each situation we experience is reflected by responses in the brain, which is constantly adapting itself and the rest of the body in response to environmental input. So when we look at the transition of the baby from victim to victimizer, the first step is understanding the neurological as well as the psychological impact of chronic fear, pain, or terror in earliest life.

Chapter 7: Baby, Get Your Gun—The Impact of Trauma and Head Injury

TOO LITTLE TO FIGHT OR FLEE

The phrase "fight or flight" was coined by W. B. Cannon in 1929 to describe the classical adult response to threat.¹³ But for the infant, neither of those options is available. Faced with overwhelming fear—such as parents yelling or hitting each other—or having cries signaling hunger or discomfort met by pain, the infant brain presents a different menu: becoming very alert or becoming numb—hyperarousal or dissociation.

According to Perry, in the initial stages of fear, an alarm reaction is triggered in young children, just as it is in adults. The sympathetic nervous system goes into full swing, increasing heart rate, blood pressure, respiration, and muscle tone and creating a release of stored sugar. The child becomes hyperalert so that all information irrelevant to the perceived danger is tuned out. Next, if the threat materializes, the autonomic nervous system, the immune system, the hypothalamic pituitary axis (HPA), and other stress systems in the brain come into play. Norepinephrine is released, and all the regions in the brain that regulate arousal within the brainstem and mid-brain are turned on. If the threat is perceived frequently or is very intense, the systems contributing to hyperarousal will become sensitized, ready to flip on at the least provocation.

Following even one intense exposure, the systems involved in stress modulation will be reactivated by reminders or thoughts of the event, including dreams. If it occurs often, the response may generalize to more reminders of the event so that a loud noise will be enough to terrify a child traumatized by gunshots, or any man may terrify a child

traumatized by rape. When chronic hyperarousal is elicited in the earliest weeks and months of life—for example, by physical or verbal abuse experienced directly, or by witnessing episodes of terrifying domestic violence—sensitization will cause the dysregulation of the stress response systems. Traumatized children will show sleep problems, anxiety, or impulsive responses. In extreme situations, the fear responses go into overdrive, resulting in overreactivity, oversensitization, and difficulty concentrating. Hyperaroused children may suffer from high blood pressure, rapid heart rate, a rapid and irregular heartbeat, slightly elevated temperature, and constant anxiety. The neural thermostat becomes stuck on high. The child becomes hypervigilant for signs predictive of the feared event, constantly on the watch for nonverbal cues that may signal threat in the environment and in a physiological state of preparedness to face the danger. According to Dr. Perry, when this process occurs in very young children while the brain is still at its most malleable and is just organizing, trauma that is originally experienced as a brief "state" of arousal can, after chronic intense experiences, become a "trait" in the child. The brain organizes around the overactivated systems to ensure the child's survival.

Religious cults that deliberately employ physical, emotional, and social violence to condition their young to mindlessly follow directives have provided unfortunate natural experiments revealing how children respond to chronic trauma. Dr. Perry examined eleven of the children involved in the Waco, Texas, Branch Davidian crisis. He compared their noradrenaline levels after they were released from David Koresh's compound with those of a group of inner-city Chicago children he had examined earlier. Perry characterized the abnormally high noradrenaline levels in both groups of children as the "chemical signature of post-traumatic stress disorder." These children, while seated, had heart rates of 100–170 beats per minute; the average for their age is 84. Their brains were pumping noradrenaline and other stress hormones—their chemistry reset for survival in a dangerous setting.

Originally an adaptation to a threatening environment, these responses become maladaptive in a nonthreatening environment such as school. With noradrenaline keeping the body in a constant state of readiness, these children are quick to erupt. With this neurophysiological state hardwired into brain function and chemistry, IQ, school performance, and social relationships generally suffer. This is commonly the scenario when children have been physically or sexually abused.

By kindergarten, the world of nonabused children is expanding to include their focused learning of numbers, letters, and a kaleidoscope of interests. But children who have been unable to develop trust and security with a primary caregiver in the first two years, show a depressed interest in the world—and in themselves. The playfulness we anticipate in very young children is often absent or dulled. Dr. Dante Cicchetti, of the University of Rochester and Mt. Hope Family Center, has studied the

self-image of abused children extensively. In one study, children at nineteen months of age were placed in front of a mirror after a spot of rouge was painted on their nose. The nonabused control children reacted with delight upon seeing their decorated face, while the children who had been maltreated viewed their faces without expression or made negative faces at themselves.¹⁴ Cicchetti's studies also show that abused children are more dependent and have less knowledge and ability to think effectively. Lacking security in the present, they are also less likely to seek to explore or to engage in new situations.¹⁵

Each of these factors creates additional barriers to success in school. By age thirty months, maltreated children use proportionately less descriptive language and are less likely to verbalize or describe their feelings than children who have not been maltreated. They also talk less about themselves, their activities, and other people.¹⁶ Numerous studies show that in early grade school abused children perform less well than nonabused children on various developmental measures, have attentional problems, lack impulse control, and perform less well on measures of verbal IQ.¹⁷ Instead of providing the foundation for self-control, for empathy, and for focused cognitive learning, abuse in earliest life undermines all three.

Because we each view the world through our own filter, based on our individual experiences, it is not surprising that abused children tend to suspect others of hostile intent. Even neutral behaviors may be viewed as arising from cruel motives. This negative expectation is associated with greater aggression in elementary school, which is in turn associated with peer rejection.¹⁸ The combination of aggression and peer rejection predict academic, social, and behavioral problems in middle school.¹⁹

When a traumatized child sits in a classroom next to a nontraumatized child, even if they are of equal intelligence, the traumatized child will not be available to focus on the cognitive information being presented by the teacher in the same way that the nontraumatized child will. The traumatized child will be hypervigilant, still on red alert for signs of impending threat. A margin of his or her focus will be on reading subtle cues in the nonverbal behaviors of those in the vicinity—constantly prepared to take quick protective action for survival. Cortical functions that would otherwise be available for the lesson presented by the teacher are deployed for self-protection. There is a jumpiness—a quickness to act—in response to often misperceived intentions of others. In grade school, such children may be diagnosed as ADHD or even ODD. Learning and relating are often drastically affected, resulting in learning disabilities and impaired self-image and confidence.

Dr. Perry explains that as they grow older, hyperaroused children become ostracized. Standing outside of the mainstream of nontraumatized children, they inevitably find each other. The violent cycle begins to intensify as disenfranchised preadolescent and adolescent

children hang together with others like themselves. Lacking the healing effect of a nurturing home or normal environment, gangs or groups of children with in-common trauma and deprivation look to each other for social acceptance and appreciation of the very traits that first segregated them from their peers. Hypervigilance, impulsivity, pervasive expectations of threat, and quickness to be the first to act are the exact skills called for in gangs and illegal activities. That which has been a liability in school is an asset on the streets, where the environment is similar to the traumatic environment that first shaped the child's adjustment. Like all children, these children migrate to a familiar setting where they feel acceptance and valuing of their abilities. In a chapter of his book *Violence and Childhood Trauma* entitled "The Vortex of Violence," Dr. Perry describes the too commonly heard retorts from young offenders that reflect this now deeply ingrained mindset: "Listen, man, I just did him before he did me." "I could tell he was going to jump me—he looked me in the eyes." "If I didn't shoot him, he would have shot me."²⁰ Alcohol further lowers the adolescent's capacity to control fear-based thoughts and impulsive behavior. Such a child may permanently see the world as a hostile place where one has to be ready to defend oneself. Cradled in trauma, the adolescent is positioned to begin the cycle again.

Jeffrey, who sits on death row, fits this profile. Based on the testimony of family members, he was a baby terrified by chronic traumas ranging from multiple, often abusive caregivers, to violence between his parents, to drug-induced stabbings, to regular beatings, which he ultimately volunteered to take for both himself and his brother. After he was diagnosed with ADHD, stimulant medications had little effect on his hypervigilance, impulsivity, and inability to focus in school. Obviously a bright, verbal, and insightful young man at nineteen, when he was interviewed for this book, Jeffrey reflected that he learned in grade school that his only possible friends were "the little toughs." Drugs and alcohol played a role in Jeffrey's life from his earliest memories, compounded his school problems, and appear to have been a major contributor to his first and only serious crime. Although Jeffrey was only sixteen when he was imprisoned, he was clearly identified as one of the troubled kids on the fringes of his community, and he had already fathered one child.

Any child, regardless of gender, intelligence, or temperament, when exposed to repetitive terror, will develop a chronic fear response. The form the response takes will vary—commonly by gender. Boys, as they grow older, tend to develop an "externalized" or aggressive, impulsive set of symptoms: the "fight" response. Males are more likely to be violent. Girls will typically "internalize," responding to such trauma by dissociation, or "freezing." We can see how this works by observing traumatized babies.

The baby or young child will typically cry in response to threat, hoping

to elicit the help of a caregiver. When the caregiver is neglectful or is the source of the trauma, and crying does not result in help or results in further pain, the child either moves further into arousal with more vocal and motoric efforts to engage help or will stop crying altogether, or freeze. Lack of movement and sound in the face of increasing threat allows for the opportunity to camouflage, to scan for additional information, and to think how best to respond. In children who have been sensitized by previous trauma, freezing may be the first response to anxiety. Because sensitization means that events or people or fragments of memory that bear any resemblance to the original threat may elicit the same anxious response, such children may freeze or act defensively in situations that observers find puzzling. Thus, a child like Jeffrey's brother John, who has been hit by his parents, may throw up his hands to protect himself at the approach of a well-meaning foster father intending a hug. Or a child asked by a teacher to do a seemingly simple task may, fearing abuse, appear to be deaf and dumb, refusing to budge—appearing oppositional. If the terror continues, the child may move from freezing to complete dissociation, appearing to "go away" or to disengage mentally and emotionally from the immediate environment.²¹ The child is there in body but not in spirit, mind, or heart. Dissociative states vary along a continuum that ranges from short episodes of daydreaming to total loss of consciousness. Individual children (or adults) dissociate at varying points in their response to terror. Some will immediately faint at the first sign of arousal, while others will only dissociate late when reaching a state of complete terror.

Both hyperarousal and dissociation involve brainstem-controlled central nervous system activity that produces an increase in epinephrine and other neurochemicals. But unlike hyperarousal, dissociation results in decreased blood pressure and heart rate. In dissociation, there is an increase in dopamine-secreting systems, which work together with opioid systems in the brain to produce a calming effect, lowering pain perception, and altering one's sense of time and space. The younger the child is at the time of experiencing terror, the more likely she or he is to respond with dissociation rather than hyperarousal. Freezing or dissociation is the most likely response to be employed if one is helpless, feels powerless or is immobilized. When we are terrified and know there is nothing we can do to escape, dissociation is our only choice. This is why women and children, especially young children, are more likely to move to dissociation than arousal to survive violence perpetrated by men. Fight is futile. Numbness and compliance work. For self-protection as they grow older, many children employ a combination of hyperarousal and dissociation.²²

The chronic overactivation of neurochemical responses to threat in the central nervous system, particularly in the earliest years of life, can result in lifelong states of either dissociation or hyperarousal. In the case of hyperarousal, overdevelopment of the stress response systems in the brainstem and mid-brain alters the development of the higher cortical

functions, creating a predisposition to behave in aggressive, impulsive, and reactive ways. The oversecretion of cortisol is believed to actually destroy synapses in some parts of the brain, particularly in the orbitofrontal system, an area involved in reading emotional responses in other people.²³ As mentioned earlier, the overuse of the alarm response in young children can result in post-traumatic stress disorder or ongoing symptoms of fear characterized by intrusive memories or flashbacks, fear of vaguely similar occurrences, invasive dreams, interrupted sleep patterns, hypervigilant or avoidance behavior, numbing, detachment, or a decline in cognitive performance.²⁴ PTSD, while frequently diagnosed in adult victims, is rarely diagnosed in very young children.

It is ironic that we continue to overlook the reality of the impact of serious trauma on babies. While we know PTSD is a common response to severe trauma in older children and adults, we fail to recognize the much more pervasive damage being done to a baby's developing brain at a time when the impact of trauma can shape the entire organization of key brain functions.

Perhaps the most disturbing implication from the research on the brain's adaptation to chronic fear and anger is the growing evidence that it may be altering the course of human evolution. Not only can the changes in hormone levels be permanent in an individual's lifetime, the altered chemical profile may actually become encoded in the genes and passed on to new generations, which may become successively more aggressive.²⁵ Increased rates of child abuse and other forms of unpredictable and uncontrollable trauma in our culture mean that more and more children are having this experience. Dr. Perry calls this process, along with its growing social implications, "devolution."²⁶

There is now some speculation that an increase in violent crimes committed by females may be an early sign of this accumulation of violence in our nation's social fabric. Dr. Robert Cairns, a psychobiologist from the University of North Carolina at Chapel Hill, undertook a research project to breed increasingly aggressive male rats by successively breeding the most aggressive lines. In the course of the study, he observed that sisters of the aggressive males were also more aggressive. Based on his study results, Cairns believes that in rats, genes for increased aggression can be transmitted to offspring by parents who are exposed to stressful environments. Cairns speculates that this same dynamic also may be occurring in the human population. After looking at the arrest records of two populations of teenage girls from 1900 to 1960, Cairns concluded:

The pattern is emerging of girls, who are increasingly victims of child abuse, who grow up angry and have children with men who are likely to also be aggressive. As a result, succeeding generations of children are being born to aggressive parents and into aggression-producing

environments. It really suggests that if there are red signals that our society has to be wary of [they] should be those temporal increases in female violence. This has been ignored, but is maybe the most important of all.²⁷

Chapter 7: Baby, Get Your Gun—The Impact of Trauma and Head Injury

WHEN JACK FALLS DOWN AND BREAKS HIS CROWN

It has long been an established fact that injury to the head, even a single blow, can cause subsequent recurring violent behavior. The medical literature is filled with anecdotal accounts of patients who suffered remarkable negative personality changes after a head injury. Raff Brinker, the father in the classic children's story *Hans Brinker or The Silver Skates*, written in 1924 by Mary Mapes Dodge, is a fictional account of this phenomenon. At the time the story is told, Raff Brinker has changed literally overnight from a loving, cheerful father and husband to a silent and strange man who is subject to periodic episodes of murderous violence directed at his wife. This metamorphosis occurred in the story when he fell and hit his head and was taken home unconscious after trying to repair a dike in the middle of a storm.

While accidental injuries that lead to violent behavior are rare, they are clear evidence that the brain can be profoundly altered by a physical blow, which can cause small lesions at specific sites.²⁸ A number of studies on adolescents and adults show a correlation between head injuries and aggression and violence. Several retrospective studies on juvenile and older death row inmates show that a high percentage have a history of serious head injury. A 1986 study on a group of violent adult offenders who had been sentenced to death found that all of them had a history of head injury.²⁹ A second study by the same group of researchers two years later on a group of fourteen violent juveniles on death row corroborated this earlier finding; all of the juvenile offenders had a reported history of serious head injury.³⁰ Males with problems of aggression in marital and dating relationships also often reflect this history, with correlations between head injury and wife battering ranging from 52 percent to 92 percent.³¹

While there is debate among some researchers as to whether the head injury causes violence or those who are prone to violence suffer an abnormally high degree of head injuries as a result of their lifestyle, a growing body of information demonstrates that head injury may play a much greater role than is currently understood in predisposing an individual to delinquency and crime. Head injury from either blows or the early shaking of an infant may diminish coping skills, judgment, and

control.³² To date, the studies on the links between head injury and violent behavior have been done on older children and adults. The role of early head injuries resulting from child abuse has been virtually overlooked. To an angry or frustrated parent whose patience has snapped, the head of the infant or toddler is the part that cries or is rebellious and talks back. As such, it is a primary target for hitting. Rough shaking or blows can cause shearing and multiple microscopic lesions throughout the brain. These early injuries are often cumulative from multiple incidents of abuse and, except in the most extreme cases, are hard to detect because they leave no external marks. The damage from such injuries often does not appear until later as the affected neurological system matures.

The extent of this problem is both insidious and serious—the majority of all infant head injuries and 95 percent of serious head injuries to children are due to child abuse.³³ Even violent offenders who do not report a history of head injury may have suffered early neurological damage if they come from abusive homes. Many of the studies that report a high incidence of head injury in violent offenders from other accidental causes also report high rates of serious child abuse. Such individuals have had a double dose of damage to the brain and are more likely to become violent. Ultimately, it is likely that we will come to discover that the link between child abuse and violent behavior may be both biologically based through early damage to the brain and psychologically and socially based through the modeling of violent behavior.³⁴

The majority of studies on the link between injury to the head and aggressive behavior focus on damage to either the frontal lobes or the temporal lobes. The frontal lobes are the seat of the capacities for planning, self-regulation, and sustained effort as well as of higher abstract thinking and judgment. The temporal lobes, by contrast, contain the limbic system structures important for regulating emotion and behavior. Individuals who have sustained injuries to their frontal lobes show impairment in their control of emotional expression and an absence of empathy or awareness of the impact of their behavior on other people. They are often highly egocentric and unable to appreciate pain to anyone but themselves.³⁵ While impairment of the frontal lobes does not always lead to aggression or violence, it is particularly serious when the injury occurs early in life, before internal controls have developed.³⁶ There is strong speculation by researchers, such as Dr. Charles Golden of Nova-Southeastern University in Florida, that frontal lobe injury is a primary cause of sociopathy or cold-blooded criminal behavior. Dr. Golden believes that the apparent increase in violent behavior is linked to several aspects of modern living, including car accidents, child abuse, especially of youngest children, and the increased capacity of medical science to save the lives of premature and birth-injured infants.

Temporal lobe injuries, by contrast to frontal lobe injuries, are associated with "episodic dyscontrol," in which violent behavior erupts seemingly

out of nowhere, is unpatterned, and occurs without provocation or premeditation.³⁷ As many as 30 percent to 50 percent of individuals with a criminal history may have sustained injuries to their frontal or temporal lobes.³⁸ Although head injury is one way in which the human brain may be altered toward aggressive behavior, it cannot be assumed that all brain-injured individuals become aggressive, let alone violent. In most cases, brain damage creates only a greater likelihood of impulsive behavior. The larger environment plays a key role; with rare exceptions familial and social factors exacerbate or greatly lessen the likelihood of violence. Conversely, even in cases in which no acute brain injury has occurred, negative environmental factors, such as trauma, may produce neurological changes of such magnitude that violent behavior may be the result.

In grappling with the issue of violence, it is crucial to understand that both the physical structure and the chemical profile of the human brain may be adversely and permanently altered from prolonged stress or injury during the most rapid period of brain growth, which occurs during the first thirty-three months of life. When children have been traumatized or head-injured, the key to preventing such early experience from setting a course toward impulsive, aggressive, and violent behavior is the presence of a nurturing and responsive caregiver.³⁹ One healthy individual willing to protect, teach, discipline, love, and play constructively with a child can greatly offset the adverse effects of trauma in a very young child. But when the child's caregiver is equally affected by the threat or is the source of trauma, the risks to the child's development are greatly magnified. When the caregiver is physically present but is emotionally unavailable or distant, the convergence of early chronic trauma or head injury with impaired attachment becomes the seedbed for impulsive violence. One person can make the difference.

Chapter 8: The Hand That Rocks—The Impact of Emotional Deprivation

Piglet sidled up to Pooh from behind.

"Pooh," he whispered.

"Yes, Piglet?"

"Nothing," said Piglet, taking Pooh's paw.

"I just wanted to be sure of you."

—A. A. MILNE
Winnie-The-Pooh

[Jeffrey's mother] was walking down the center of the highway toward on-coming cars causing traffic problems, as the cars were having to swerve around her. She said she wanted to die... and she was attempting

to throw herself in front of cars. She had no smell of alcohol and was very depressed and despondent.

EYE WITNESS ACCOUNT IN JEFFREY'S CHILD WELFARE CASE FILE

After I came home from the hospital, I couldn't hold nothing down. I had a problem with retaining any kind of food... and [Mother] said she would feed me and I would just vomit it right back up. And she said that she was real scared. She took me to my grandma and grandpa's house. And she was crying. She didn't know what to do. She was scared that I was going to die.... I don't think she had the money to take me to the hospital... so she went to her dad for advice. And her stepmom told her she should leave the baby with her and get out of here and don't come back for two weeks. So that's what happened....

When my brother was only two and three years old himself, he says he got up and used the cooking stove to heat water and did things like changing my diapers. My mom would go into bouts of depression and sleep forever. The house would be like just sick, and John fixed bottles by himself.... My earliest recollection was the ambulance coming to take her away.... I remember my brother and me sitting on the porch. I was still wearing a diaper, that's how young I was.... I remember my brother wrapping his arms around me and holding me tight. And a police woman told us our mom had to go to the hospital. We didn't know what for. We thought she was dead.

JEFFREY, AUGUST 1996

When we arrived at the home, John and Jeffrey were observed outside with nothing on but their underpants. The temperature was 53 degrees. It had been raining earlier, and the ground was still wet.... The condition of the family's trailer was deplorable. Clothing was scattered throughout the floor. Dog feces was observed on the floor and clothing. Moldy dishes and baby bottles were on the kitchen counters. Dirty diapers, tin cans and a collection of garbage was on the kitchen floor.... The only food in the house was milk and cereal.

CHILD PROTECTIVE SERVICES
CASE WORKER REPORT, OCTOBER 23, 1979

They were so much alike—my grandma and my mom—in so many ways. When my grandma was younger, she had her kids taken away from her. And then there's my mom not doing the things she should be doing, so my grandma figures she should take us away from her. Well, my mom was of course no angel. She was doing a lot of drugs. My grandma decided we shouldn't be living with her.... So we went from bad to worse—back and forth until at least the third grade, plus at least six foster homes by the time I was six years old. Yeah, we went back and forth between my grandma and my grandpa 'cause my mom was young and she wanted to party and stuff like that. She left us at times. Official foster care began later. I must have been two or three years old when I

went to my first foster home, and I don't even remember why....

Walt and Bev are the reason I turned out the way I am.... We had a lot of structure. I remember every night we went to bed at the same time. Every night, no if, ands, or buts about it. There was an older boy—he was in high school, every night he stayed up and watched the 10:00 news, and we always wanted to stay up and watch the 10:00 news, too.... One night we got to stay up and watch the news with them.... And like, I remember going to preschool or kindergarten. I'd never gone to school before.... And every day Bev would wash my pants. I had to wear corduroys, and I loved those corduroys 'cause they made the neatest sound. I just loved them. I thought they were the coolest things in the world.... They always told us that they loved us. They always told us, every time we went anywhere. From the very beginning, they expected a kiss and a hug. And it was always funny to me. I was like, "I don't want to kiss you! I mean, I hardly ever kissed my mom, why would I want to kiss you?" And it was hard for me to get over for a little bit, but after a couple of weeks it was like, "Yeah, I'm going to kiss them." So, you know, I'd give them a hug and a kiss and we'd get out of the car and go do our thing. I remember every time, I mean, this is how much love they had in this house....

I know half the time [going to foster homes] was because we were getting beat up by either my mom or one of her boyfriends or actually sometimes even her friends, her lady friends that would be living with us.... I don't know if they found drugs... or just plain neglect, like not having food in the house or, you know, having clean clothes. I mean, we lived in this one house this one time, and when you'd walk into our room, you'd literally walk through a pile of clothes.... We had a bunk bed and it would actually go from the door—you couldn't open the door because the clothes were all the way up to the top of the thing, and Mom never washed them.... She was too busy. She was out doing her drugs.... Sometimes she'd be with her friends. You know, this one lady, Bobbie, I remember when she lived with us. She and Bobbie were always going out, and this is a biker lady. I mean, she had four kids of her own. So you can imagine us three kids plus her four all in this one room.... And their little baby always screaming, and some of the little girls and boys wetting their beds and never getting it cleaned up. You know, sleeping in wet sheets and different things like that. It was just gross. It was disgusting. I remember times, you know, there was garbage all over the floor in the kitchen. You would try to walk through the kitchen, and you could not, no matter how hard you tried. It was literally piled on the floor with garbage and stuff. I mean, you couldn't hit the linoleum....

I had a friend when I was in the fourth grade, and his family was perfect. I always wanted to go over to his house. Always. Every weekend I would actually ask him if I could stay the night.... He had his own room, and his parents were super nice. They always made sure he had breakfast. They always made sure he had his lunch and dinner, you

know, three meals. They always told him that they loved him and all this stuff. They all could talk. They could all sit down and actually have a conversation together without having an argument. You know, just talk about fun things.

JOHN, AUGUST 1996

Eleven-year-old Ray DeFord lived in a dingy apartment house in Aloha, Oregon, with his six pet rats, a python called Satan, and a knife he called "protection." Neighbors described him as a strange and disruptive child, referring to him as a "junior Charles Manson," and ordered their kids not to play with him. "He would throw rocks at my children," one neighbor said. "One time he punched my son badly, and I complained to his mother. She wouldn't say anything. She laughed."¹

Based on neighbors complaints, the deputy sheriff went several times to the DeFord's home prior to July 2, 1996, to talk to Ray and his parents. Ray beat up two neighbor children ages five and nine, packed rocks in socks to sling at children, and kicked kids in their backs as they got off the school bus. He was never referred for services or taken into custody, however, until July 3, 1996, when he became the youngest child in Oregon history to be charged with murder the day after he set fire to the apartment complex where he had lived for five years. The fire killed eight neighbors—five children and three adults—all from the same small village in Mexico. Fourteen more people were taken to the hospital with injuries, and dozens of people were displaced by the fire.

Ray is an only child, born three years after the marriage of his parents sixteen years ago. His mother is mentally retarded and is unable to read or write. His father, while more mentally capable, had been a fugitive from a New Mexico prison for fifteen years at the time of the fire. He is partially paralyzed from a stroke that occurred two years before Ray was born. The neighbors describe Ray as both abused and neglected with parents who alternated between letting him do anything he wanted and sudden brutal punishment. "He was born, fed and unloved," a neighbor told reporters. He wore tattered and ripped bell-bottoms and T-shirts. He was dirty and unkempt and had frequently been shunned in school by children who refused to sit near him for fear of catching "Ray germs." The neighbor children often ridiculed him when his parents, both without jobs, searched through the apartment garbage-collection site for redeemable bottles and cans to supplement their disability checks.

Ray is not at his age level in reading. He failed the first grade and was in special classes for slow learners, where he reportedly fidgeted at his desk and stared into the distance. Ray has been diagnosed as slightly mentally retarded with ADHD. He reads at a first grade level, is unable to do any math except for counting his fingers, and doesn't know how to respond socially. According to expert testimony given in court, Ray was injured on the head at eighteen months of age "before the soft spot had hardened" when his father beat him with a clipboard for crying. He also

weaned his son by placing Ray's baby bottle in a pan of rubbing alcohol and setting it on fire.

Those who know Ray say that he learned not to cry and that his father continued to abuse him. Ray's thirteen-year-old friend Jed told reporters from the *Oregonian* that once Ray's father, Tom, invited Jed and a few other boys to Ray's home when Ray was eight. While the boys were there, Tom smoked marijuana and then began shooting Ray in the legs with a BB gun for laughs. "Look at his parents and you'll get the whole story," Jed told reporters. Tom encouraged Ray to drink beer and whiskey and to smoke marijuana. He often allowed Ray to play with flammable liquids and fire in his presence and taught his son how to make cyanide out of bleach, detergent and Coca-Cola. By the time he was five, Ray was threatening children who teased him about his clothes and hair with sharpened popsicle sticks and with knives he took from his kitchen. Detective Michael O'Connor, who interviewed Ray after his arrest and who arrested Tom eight months later, said that Ray talked about the people who had died but showed no remorse during the several hours he was questioned.²

Even the casual reader of Ray's story in the newspaper can see the painful reality of abuse and neglect that constituted Ray's daily life. We have grown accustomed to such children acting out the fury they have absorbed. But questions remain: Why did this particular boy and not another who experienced equal pain wreak such havoc on innocent people? What keeps other children in similar circumstances from committing such crimes? The answers lie in understanding not only the separate factors involved in creating or preventing the creation of a Ray, but also in understanding the ways in which biological and social factors work together from infancy to set a course that may be lethal.

A review of the research on violent and homicidal children reveals that the majority of children like Ray have neurological impairments or diagnosable psychological illnesses. The majority of violent adolescents also have substance abuse disorders. Few have received treatment for these problems.³ In one study, 96 percent of homicidal children had come from chaotic family backgrounds, usually including family violence (81 percent). Ninety percent had been abused by a family member as a child. One hundred percent had a history of serious school problems, including 86 percent who had failed at least one grade and 76 percent with documented learning disabilities.⁴

As reviewed in earlier chapters, many children who become impulsively violent had, as babies, subtle neurological abnormalities. They began life with "difficult" or extremely sensitive temperaments or showed early signs of attention-deficit/hyperactivity disorder, which progressed to more serious behavioral disorders. They may have been exposed to extreme trauma. But these beginnings are not in themselves causal. Neurological differences only render a child more vulnerable to negative

environmental circumstances. Whether children become poets or ax murderers depends on the interaction of biological and social factors—the complex interweaving of risks and protective qualities in a child's life.

One way to picture the interaction between the biological (particularly neurological) traits of the child and familial or social factors creating violence is to imagine each individual as a small lake. Each lake is different; the size and depth and breadth of our lakes vary. Each is unique in its dimensions since birth. The parameters of our lakes are determined by biological and genetic factors. The water in each lake is the fluid force of potential, the basic competence and confidence we each bring to life. Positive experiences in our environments serve as the wind and rain that enlarge the size of our lakes—we may grow deeper or broader and develop our potential capacities. The water in our lakes increases from these experiences. But negative familial or social factors are like rocks in our lakes. Some rocks, such as multiple family moves, are small; most of us have several of these. Others, such as early physical or sexual abuse, are huge rocks that may rise above the surface of the water. Numerous large boulders in a very small or shallow lake have a far greater impact in reducing the total volume of water than the same number of large rocks in a large and deep lake. A child who begins life with an expansive lake will be less likely to experience immediate overflow from a huge rock outcropping (e.g., loss of a parent) than a child who starts with a lake rendered small and shallow by negative biological factors such as neurological impairment. All lakes will be affected by boulders, and if there are several, the water can become dammed or overflow, leaving the lake nearly empty. Those children with small and shallow lakes from the beginning are most at risk.

Biological and social factors are highly interactive in human development, particularly in earliest development. Biology is one strand of influence on human behavior, affected both by heritable genetics and by environmentally imposed factors such as the prenatal impact of alcohol or drugs, birth trauma, or later head injury. Social factors, particularly the sensitive nurturing of a committed caregiver interact with and actually alter biological elements such as brain chemistry and brain tissue. Reducing the relationship between biology, experience, and behavior to its most basic form: Children reflect what they have absorbed biologically and socially. Though the processes are complex and often the injuries are unintended, when it comes to our babies, we reap what we sow. Never is the opportunity so great to make so much difference for our children. And never is it so potentially damaging to our communities and to our nation to be unaware of this reality.⁵

Emotional Deprivation

FIRST LOVE

The interactive process most protective against later violent behavior begins in the first year after birth: the formation of a secure attachment relationship with a primary caregiver. Here in one relationship lies the foundation of three key protective factors that mitigate against later aggression:⁶ the learning of empathy or emotional attachment to others;⁷ the opportunity to learn to control and balance feelings, especially those that can be destructive;⁸ and the opportunity to develop capacities for higher levels of cognitive processing.⁹

In the 1960s, John Bowlby theorized that children form models or templates of themselves and relationships with others based on their experiences with first caregivers, most often mothers.¹⁰ These templates form the organizational core of children's beliefs, expectations, and motivations, which continue to guide and shape the child's sense of himself and of his role in subsequent relationships. Bowlby recognized that the emotional dance we go about creating in intimate relationships as adults has a strange way of echoing our first relationship. Americans spend untold fortunes and countless hours in therapy trying to figure out why they have continued to seek and then how to avoid marrying the ghost of their mother or father. As the result of early emotional learning, we tend to replicate familiar relationship patterns and confirm the view we formed early of how relationships work. In the same way, generally without awareness, we bring our own histories as infants to our roles as parents.

Bowlby's theories were a blending of views adapted from psychoanalysis and ethology, or the study of animal behavior. Bowlby had been particularly impressed with the work of Konrad Lorenz, who noted that ducklings and goslings "imprint" or attach to the first moving object they see after hatching (human, goose, or whatever). Early interpretations of Bowlby's work were applied very simplistically to human children, resulting in the still popular but poorly validated concept of "bonding." This is the notion that, immediately after birth, babies, like goslings, imprint or bond in gluelike fashion to their caregiver, presumably the mother, and that birth bonding is critical. In fact, we now know that for human babies attachment does not occur all at once and does not happen just at birth. It is a cumulative process of minute interchanges between a child and a caregiver over a period of many months, perhaps even years. Even the traditional emphasis on mothers is misleading. Key to attachment is the child's ability to secure a close and trusting, reciprocal relationship with one caretaker, male or female. The failure to achieve this at all is even more devastating than suffering a disruption in an existing relationship. The first months of life are especially important to this process.

At the explosive event of birth, the normal newborn is wired to signal her mother with behaviors designed to draw her mother close. Expelled from an existence that maintained her comfort automatically, the baby cries and extends her arms in a primitive message designed to trigger her mother's protective embrace. When the mother responds by reaching for her baby, bringing her infant to her breast, making comforting sounds, and patting or rocking, the baby's temporarily alarmed nervous system is calmed. Inside the baby's brain, the neurochemical responses to the mother's soothing reestablishes the physiological equilibrium, and this new little person experiences a physical state similar to the one preceding birth. The baby quiets and relaxes. The mother in turn relaxes.

From this beginning, these exchanges, initially triggered by the baby's biological needs, will be repeated in millions of tiny gestures and will evolve over time to complex readings of the respective emotions of both mother and baby. The differences between one mother-and-baby pair and another will occur at this moment-to-moment level. Behaviors of the baby trigger behaviors by the parent; crying, for example, can trigger the letting-down of milk for nursing. Optimally, the behavior of the parent, such as holding and feeding, elicits predictable behaviors from the baby, such as nursing and calming, which in turn relieves the parent's tension and results in a balanced, goal-directed partnership. These gestures passed back and forth—cries and agitated movements followed by smiles, caresses, pats, gentle words, warm nipples, dry clothes—or frowns, slaps, yells, cold food propped and left—all occur hundreds of times in the course of a week. Together they leave a cumulative imprint on the developing brain, which, over time, forms a template or pattern for anticipated behavior.¹¹ Bowlby calls this the child's "internal working model." Bowlby observed the ways in which one generation transfers patterns of caretaking to the next through the working model. He also noted that these are "working" not static models. They can and do shift with education, therapy, and important life events such as marriage and close relationships. This is how child-rearing patterns, including child abuse, are transferred from one generation to the next.

Dr. T. Berry Brazelton has documented this process of intergenerational transfer of basic caretaking behaviors on videotape. He first shows a mother feeding, burping, and holding or playing with her baby. Brazelton points out the feeding posture, the positioning of the baby by the mother to receive the bottle or breast, her timing, and the way she does or does not wait for the baby to show satiation before interrupting for a burp. Her positioning of her child over her shoulder, the way she pats or rubs the child's back or holds her on her lap to burp, are all observed. Then the scene shifts to a different mother and baby. The second mother also feeds and burps her baby, using the same gestures, positioning, rhythms, and even facial expressions. After watching for a while, the audience learns from Dr. Brazelton that the second mother is the now grown-up baby seen in the first sequence. Though this woman has never seen the film of herself as an infant with her mother, her behaviors with her own

infant are a shadow image of her mother's behaviors with her. The somatically stored memories of her own experience as a baby were activated with the advent of her own child. To document the variations of parenting behaviors being transferred, Dr. Brazelton shows several two-generation sequences, each different from the other and each graphically illustrating the transference of patterns stored and remembered from babyhood. It is through this subtle process of working models internalized quietly in the nursery that the hands that rock the cradles do in fact influence world outcomes.

Chapter 8: The Hand That Rocks—The Impact of Emotional Deprivation

MIRROR, MIRROR: THE ORIGIN OF EMPATHY

Twenty-three-month-old Jason was strapped into his car seat looking out the window as his mother slowed to a stop at a traffic signal. As the light turned from yellow to red, an old woman waiting at the corner stepped painfully from the curb and walked across the street directly in front of the car where Jason and his mother waited for the light to change. As the old woman hobbled across the street, bent over with the weight of two bulging shopping bags, Jason began to cry softly. His mother turned to ask him what was wrong. Tears flowing down his cheeks, he pointed at the old woman as she continued slowly toward the opposite curb, "Dat poor old lady," he said.

Two-and-a-half-year-old Tray, short for Thomas, received national media attention and praise last year for his part in a serious domestic drama in February 1996. His mother wouldn't wake up, apparently having succumbed to an undetected heart problem in her home in Vancouver, Washington. She had died in her bed with a book across her face, leaving Tray and his 18-month-old sister, Kiana, who was upstairs in her crib, alone in the apartment. Tray's mother appeared to him to be sleeping. When he couldn't rouse her, he knew what to do. He opened the kitchen cupboard and found dry cereal. For two days he fed himself and carried juice and handfuls of cereal and crackers to Kiana. He used wads of toilet paper to mop up his sister's wet crib and to pad her diaper. When a scheduled but new babysitter came to the door two days after his mother's death, he wouldn't open the locked door. His mother had taught him not to open the door for people he didn't know. When he grew sleepy, he lay down on the toddler bed near Kiana's crib. Concerned at her inability to contact Tray's mother by telephone, though she heard the children inside, the sitter returned the following day and persuaded Tray to let her inside the apartment.¹²

These stories of preschoolers, though unusual, are not rare. By the age

of fourteen months, toddlers often show clear signs of empathy.¹³ Like violent behavior, empathic behavior does not emerge from a void. Unlike violence, it is built from the loving experience between a baby and a caring adult. Many believe that some form of empathy is inborn: the frequently cited example is of the newborn who begins to cry upon hearing another baby cry in the hospital nursery. But developmental research distinguishes this response from empathy, viewing it as a form of emotional contagion experienced prior to the baby's capacity for empathy. The more sophisticated cognitive processes involved in empathy include the ability to discriminate oneself from another person, the ability to take the perspective of another person into account, and finally to respond to alleviate another person's distress. The first of these functions—recognizing one's physical separateness from others—is generally developed near a child's first birthday. But at that young age, it is difficult for toddlers to discern that other people's feelings are not the same as their own. A one year old will often cry at seeing a cut on Daddy's knee or will examine his own fingers when he sees another child hurt his fingers. But as young as fourteen months, some children will move from showing signs of awareness of another's pain to trying to do something about it, like summoning an adult to help. Between twenty and twenty-nine months, children begin to take steps to comfort others directly—patting, embracing, and taking things to the victim.¹⁴

Here lies the root of altruism—the core of moral behavior. Without this quality, human societies would fall apart. When the early sensitive exchange of emotional and physical caretaking between a child and a parent is continued and followed by the parents teaching the child about the impact of their behaviors on others, altruistic behavior like Tray's is not uncommon by thirty months. Although individual differences in children's temperaments, personalities, and other potentials certainly influence the ease with which these lessons are absorbed, given parental modeling and direct teaching, young children will reflect empathic and altruistic values.¹⁵

The foundation for empathy is laid from the beginning. When the early months of an infant's experience include consistent, sensitive interactions in which the caregiver accurately assesses the child's needs and responds quickly in a soothing manner, and when a child's sadness or joy is mirrored in the face of the parent, the child experiences comfort and trust with the caregiver. But when the baby instead experiences unpredictable or dissonant emotions from a key adult, or no response, or a harsh or overwhelming response to efforts to engage the adult, the attachment to the caregiver may be characterized by distrust, fear, or a disorganized combination of conflicting feelings.

Observing the securely attached baby at four to six months of age, we can see and feel his sense of confidence at gaining and maintaining his closeness to his mother, his freedom to express a range of emotions and the expectation that he will be soothed and comforted. The relationship

looks fluid and flexible like a waltz between mother and baby. This is the kind of relationship we all love to watch. The pair, like lovers, are enthralled with each other. They seem not to tire of mutual gaze, and even the subtlest gestures are appreciated. The baby's delight at a toy or a funny sound is reflected in the mother's smile. Conversely, her baby's fear or pain evokes the mother's immediate tension and triggers gestures to comfort her child. It is only a very few months before the infant becomes a toddler like Jason, Tray, or Rachel (introduced below), who reflect to the world the quality of the positive connections they have experienced. This emotional attunement is the cradle of human connection. Tiny interactions between each infant and his mother create threads of empathy that together form the warp and woof of the tapestry we call community, a tapestry that is weakened by each thread that is frayed or broken.

Not all mother-child relationships look like a waltz. Research on interrelationships, particularly parent-child relationships, was given strong impetus by Dr. Mary Ainsworth in the 1960s. Prior to Ainsworth, individual behaviors had been the primary focus of psychology's lens. It has only been since her work that transactional, or interactive, dynamics have taken their place alongside individual measures in assessing young children. A student of Bowlby, Ainsworth created a now famous laboratory exercise involving mothers with babies who ranged in age from twelve to eighteen months.¹⁶ In brief sequences, researchers watched babies as they played with their mothers, as the baby was separated from the mother when she left the room, and as the mother returned. During two intervals a stranger was in the room. In one, the baby was alone. Ainsworth called this assessment the "strange situation." It was used to determine the type of attachment relationship infants experienced with their mothers. Ainsworth classified the infants' reactions into three distinct profiles. One group of babies cried when their mother left the room but when she returned, reached up and greeted her with smiles and obvious signs of pleasure. They molded easily to their mothers' bodies when their mothers picked them up and were easy to console. These infants, which Ainsworth called the "securely attached," accounted for 70 percent of the total.

A second group of babies were clingy with their mothers and seemed afraid to explore the room independently. When their mothers left, these babies became agitated and anxious and cried frequently. When the mothers returned to the babies in this group, which Ainsworth called the "ambivalent" babies, they also reached to their mothers for contact, but then they arched away and resisted their mothers' efforts to comfort them. This pattern is associated with erratic, inconsistent, and sometimes intrusive caregiving during the first year.

The third group, which Ainsworth called the "avoidant" babies, looked very independent while their mothers were with them. They explored the new environment and seemed not to look much to their mothers for

reassurance. Having shown no preference for their mothers over the stranger, when left alone, these babies showed little response. And when mothers returned, the avoidant babies went their own way or avoided contact. This pattern is associated with parental insensitivity or emotional unavailability. The child's avoidance is believed to be a defense against the parent's lack of responsiveness.

Succeeding studies have added a fourth category, the "type D," or disorganized type. These are children who have typically been abused. They seek closeness to their mothers but in disorganized or distorted ways. These babies may approach their mothers backwards or suddenly freeze or sit and stare off into space. Upon reunion, they show conflicted, sad, or fearful behavior. Unlike the children in Ainsworth's first three categories, who all have the ability to get their needs met in some organized if not ideal manner, type D children are at risk of serious relational conflicts. Type D relationships are characterized by parents who are both the primary source of protection and simultaneously the source of harm or failed protection. Researchers studying maltreated children estimate that 90 percent of abused and neglected children exhibit disorganized attachment.¹⁷ When seeking to prevent violence at its root, it is this group of babies and their caregivers that warrants intense intervention.¹⁸ As we look more deeply at what is going on for "disorganized" babies both behaviorally and biologically, this understanding becomes especially relevant to understanding the antecedents of violence. Over time we realize that far more is being exchanged between parents and babies than meets the eye. This is particularly true when neglect or abuse characterizes this relationship, as the following story of Rachel illustrates.

At age eleven, Rachel is a beautiful and intelligent child. But Rachel steals money from her adoptive mother's purse, her brother's wallet, her teacher's pockets. She destroys her brother's favorite things—most recently his prized autographed baseball card and his new mitt. Recently, her mother found a darning needle pointed upright in her bed carefully lodged in the middle of the mattress pad and bottom sheet. At school Rachel fights physically with other kids. She's bright but won't accept the teachers' authority. Even when she has completed her homework, Rachel won't turn it in. Little things upset her, and when they do, she yells obscenities and pushes, shoves, or hits whoever happens to be there.

When Rachel was barely a year old and still living with her biological mother, a neighbor who was babysitting one afternoon found cigarette burns on Rachel's bottom and reported it to authorities. Although she was not removed from her mother then, her case was monitored by the child welfare system. Almost a year after the first incident, Rachel was again reported with serious injuries when hospital staff at the emergency room discovered multiple bruises and more serious burns on her buttocks. Just before her second birthday, Rachel was removed from her home and placed in protective custody when her case worker discovered

that her mother's boyfriend had set fire to Rachel's diaper. Initially, Rachel's mother was angry and demanded that she get her baby back. For the first few months after Rachel's removal, her mother faithfully attended parenting sessions and came for weekly supervised visits in an effort to regain custody of her daughter. But after her mother met a new man, Rachel was left crying and disappointed as her mother failed to appear for several scheduled visits.

Rachel's mother, herself a baby adopted and then relinquished to foster care, was unable to put Rachel's needs ahead of her own. She said that Rachel had always been hard for her, a difficult baby with a bad temper. Rachel's father had relinquished paternity shortly after she was born. After nearly a year of mostly missed visits by her biological mother, Rachel—then in a foster home—was placed in "permanent planning," a child welfare term for the final phase of evaluation of biological parents prior to the state's termination of parental rights. Rachel's mother decided to relinquish her rights to Rachel. After two years of foster care, at age four, Rachel was adopted.

Rachel's adoptive parents met a little girl whom the agency told them had "lacked loving parenting." The reality of Rachel's multiple losses, moves, and disappointments—to say nothing of the physical traumas—was missing from the account. Rachel's honeymoon with her new family was short-lived. Her temper was irrepressible. When she didn't get what she wanted, she would scream and then hold her breath until she turned blue and passed out. She was irritable and loud in most situations, rarely allowing affection from her foster parents, let alone giving it. She was constantly aggressive with other children. After seven years of failed efforts, Rachel's adoptive parents are now near the end of their rope. The school wants her in a more structured fifth-grade setting because she frequently becomes physically violent with other students with little provocation. Her parents intuitively feel that her behaviors are a misguided and now habituated response that Rachel exhibits in an effort to receive attention and to make an emotional connection with adults. But they have no idea of how to cope with her behaviors and fear that they may be forced by her escalating aggression into confirming what Rachel already believes and screams at them: that they will "dump her."

From all we know about Rachel's mother and the agency records of observations that began before her first birthday, the interactions between the infant Rachel and her mother were, from Rachel's view, unpredictable and erratic. Her mother was only able to respond to Rachel when her own feelings were controlled and when her own needs were met. Her ability to comprehend or respond to Rachel's signals was very limited. Rachel's mother was physically available to Rachel sometimes, but her emotional availability and responses had little to do with Rachel's cues. Her efforts to engage her mother as often as not likely resulted in frustration. Rachel was picked up, fed, and talked to sometimes—but often she was also handled with anger, or burned, or left

to cry. Having tried and failed to engage her mother, Rachel, learning only that she couldn't predict what would happen, felt angry, fearful, and ineffective. By age one, she would hold her breath and then erupt into explosive tantrums. Her mother was surprised by her baby's fury, which she experienced, just as Rachel had experienced her mother's anger, as "coming out of the blue." Rachel's rages, however, at least succeeded in attracting her mother's attention. There were several visits to the emergency room before she was two with Rachel holding her breath and turning blue, sometimes fainting.

Rachel's behavior at age eleven may be viewed by some therapists as an attempt to engage or connect with her adoptive parents and to release her anger at what she experiences as anticipated betrayal. Rachel—as all children do—developed a working model of what to expect in intimate relationships based on her first relationship with her mother in early infancy. Even in the best of circumstances, creating constructive patterns of relating will clearly be difficult for Rachel. She will require unusual structure, patience, and energy and remains at risk of losing her second primary caregiver. Her behavior, once adaptive to a negative pattern with her biological mother, is now recreating her early formed belief about what happens when she is vulnerable to a caregiver: they hurt her and they leave her. Without intensive and expensive therapy, Rachel is well on her way to school failure, negative peer affiliations, and violent behavior.

While psychologists have long been aware of the concept of attachment in behavioral terms, it is only in the last few years that neurobiology is providing the understanding that actual biological change accompanies the behaviors we see. The biology of attachment again points to the crucial period of the first two years when negative patterns are rooted in structural and neurochemical changes.

Dr. Allan Schore, at the UCLA School of Medicine, believes that there are neurochemical and structural processes in a specific area of the baby's brain—the orbitofrontal cortex—that are designed to be receptive to and programmed by the interactive emotional relationship between the baby and the mother or primary caregiver. This area of the brain appears to link sensual input from the cortex (sight, smell, sound, etc.) with the child's emotionally reactive limbic system and with his internal physical processes (the autonomic nervous system). When the caregiver is able to read the baby's physical states and cues accurately and respond in a timely and sensitive way, this system of the baby's brain associates the caregiver with positive and balanced internal physical feelings. By experiencing the joyful and soothing responses of the caregiver to basic needs, the baby experiences connection and pleasure and confidence in the presence of the caregiver. Over time, these feelings become associated with her presence and anticipated in future interactions with this person. In addition, the infant learns that strong emotional states can be entrusted to another and ultimately balanced or resolved, in the

context of relationship. This reciprocal process of positive emotional exchanges is the foundation not only for attachment, but also for the development of empathy and the constructive ability for emotional sensitivity in intimate relationships. Dr. Schore explains:

The self is not present at birth. The self emerges over the course of infancy. And it emerges over the course of infancy only if it is part of a relationship with the caregiver. That is, the emergence of self requires more than just a genetically programmed or inborn tendency to organize experiences. It requires certain types of experiences that are presented and performed by an emotionally attuned caregiver. What this means is that the relationship is the crucible, the nurturing matrix out of which the child's self is cultivated.... The mother is providing certain modulated emotional experiences that allow for the attachment bond between the two of them to form, this channel of emotional communication to be created. As a result of this, the child begins to master the central task of the first year of life—learning about his own or others' internal states and how she or he can regulate these states with other human beings.

In an optimal scenario, the infant is an active participant in a relationship with an emotionally attuned primary caregiver who expands opportunities for positive emotion and minimizes states of negative emotion.... Experiencing the joy of being the gleam in the parents' eye, and of having the secure feeling that one is under the watchful eye of the mother, directly support and nurture the infant's burgeoning positive self-esteem.

At the end of the first year, these same attachment experiences directly influence the growth of the infant's brain, especially the orbital prefrontal areas of the right brain that are involved in affect regulation and in coping with internal and external stress. Over time, the cumulative effects of these early interactions set up an internal sense of security and resilience that comes from the intuitive knowledge that one can regulate the flows and shifts of one's emotional states either by one's own coping capacities or within a relationship with caring others. The development of this prefrontal area is responsible for empathy, and therefore for that which makes up "human."

So, a securely attached infant learns in the first two years of life that certain internal subjective states are shareable with others, that one is a human among other humans. This capacity for empathy gives him or her a sense of

connectedness with others and therefore a human identity. To be a biological human and to be a psychological human are very different things. To have a human body is one thing, but to be able to feel that one's needs are of value to self and others only emerges as a result of, at the beginning of life, experiencing an ongoing relationship with an emotionally attuned adult human....¹⁹

In Rachel's case, and in the case of children with type D attachment patterns, instead of a sensitive, "attuned" emotional exchange between the baby and parent, there is "misattunement." Signals intended by the infant to elicit comfort have been met with pain or unpredictable responses that did not lead to pleasure and soothing for the child. Structural and biochemical processes that could have once supported feelings of relief and connection instead were set to handle erratic and stressful responses. By ten to twelve months of age, these patterns are internalized by the child, even in the absence of the caregiver. At the end of the first year, brain maturation allows for the baby to move from solely existential responses requiring the physical presence of the caregiver to the ability to store the memory of the caregiver's face and to recall her emotional responses even when she is not present. At this point, Bowlby's template is internalized, and expectations of future emotional encounters will be based on past interactions with the caregiver.

When all has gone well, the mother's role in the baby's first year has been one of primarily nurturing and approval, coaching and cheering. This is what the baby thrives on, expecting it to last. But sometime early in the child's second year, generally around fourteen months, the necessary role for the mother shifts to that of a socializing agent for the child. Where the circuitry being built in the first year in the orbitofrontal area has been predominantly what Schore calls the "excitatory" circuit, now it becomes essential to build certain "inhibitory" mechanisms. In this new stage it is essential for the mother to provide guidance and discipline; her child's safety becomes dependent on restriction. The caregiver's verbalizations change from the gentle encouragement and coaching of infancy ("There you are. You can do it. Look at you! Good job—what a big boy!") to include moments of disapproval ("Stop! No, No."). When this shift occurs, the baby, expecting his mother's consistent approval, is faced with a misattunement between the pleasure experienced from his own explorations and the disapproval that the mother now delivers.

Resolving this misattunement and achieving a balance between excitatory and inhibitory processes is a major task for the parent and child, which is only beginning during the second year. It is an essential and normal process for a mother to give inhibitory commands. But when the parent of the toddler is excessively disapproving ("Bad boy! You are so stupid! You can't do anything right!") and allows the child to experience shame for long periods of time, then the child's ability to connect intimately with

others can be damaged. This is especially true when the first year's task of achieving attunement has not occurred. Schore believes that these effects often continue throughout life:

I suggest that the orbitofrontal system is an essential component of the affective core. This prefrontal-limbic region comes to act in the capacity of an executive control function for the entire right cortex, the hemisphere that modulates affect, nonverbal communication, and unconscious processes for the rest of life.²⁰

Excessive shame results in the child experiencing "hypo-arousal" (underarousal)—the opposite of excitement and playfulness—a dampening of pleasure. This is conveyed to the rest of the child's physical system through the inhibitory circuitry to the autonomic nervous system, affecting all the nonvoluntary functions, such as heart rate. Schore believes that when prolonged cold and shameful experiences with the primary caregiver are experienced too early during the child's first year of life, particularly when playful and warm interactions have been infrequent, these events foster low self-esteem. Not only does the child experience a lack of excitement, closeness, and warmth in this early relationship, but the child's basic brain biology shifts for self-preservation to a dampened level. Now little comfort or sensitivity is expected from other people. Over time, these children become individuals who may show little concern for relationships. Schore asserts that early unregulated humiliation may be a common source of transmission of severe emotional disorders associated with the underregulation of aggression and an impaired ability to empathetically experience the emotional states of others. Schore sees strong clinical evidence that shame-humiliation dynamics always accompany child abuse, and that the loss of the ability to regulate the intensity of feelings is the most far-reaching effect of early trauma and neglect.

In extreme instances of misattunement, scientists like Antonio Damasio, author of *Descartes Error*, believe that the result is developmental sociopathy.²¹ If the synapses in this area of the brain are never built due to neglect or are destroyed by neurochemicals resulting from chronic stress, the individual may be left without the ability to connect, to trust, and ultimately to experience empathy. Developmental sociopathy renders the individual unresponsive to the pain or endangerment of others. In laboratory settings, when scenes of horrific violence are shown to such individuals, their autonomic nervous systems do not register the normal physiological responses such as increased heart rates or increased skin moisture. In describing a child who cold-bloodedly murders, Bruce Perry says:

The part of his brain which would have allowed him to feel connected to other human beings—empathy—simply does not develop. He has affective blindness. Just as the retarded

child lacks the capacity to understand abstract cognitive concepts, the young murderer lacks the capacity to be connected to other human beings in a healthy way. Experience or rather lack of critical experiences resulted in his affective blindness—this emotional retardation.... If a child feels no emotional attachment to any human being, then we cannot expect any more remorse from him after killing a human than one would expect from someone who ran over a squirrel.²²

While the prognosis for Rachel is still unknown, her story is, unfortunately, no longer an unusual one, especially not for teachers or foster parents. Nor is this an unfamiliar story for therapists who specialize in working with adopted and foster children or children who have had multiple "breaks" or separations from their biological parents, who themselves have serious problems such as mental illness or drug addiction. There is something very fundamental in our first relationship with our parents, which reverberates throughout our ensuing relationships—often for a lifetime. When we are at our most vulnerable, when care is a matter of physical and emotional survival, parenting behaviors have a more pervasive impact on both our behavior and on our biology than we might want to consider.

Chapter 8: The Hand That Rocks—The Impact of Emotional Deprivation

THAT OLD FAMILIAR FEELING: LEARNING TO REGULATE EMOTIONS

Besides meeting the baby's basic physical needs for food, shelter, and warmth, early caregiving behavior sends subtle messages of emotional comfort—or not—to the infant's brain. Not only are physical systems such as digestion being regulated by the mother's proximity and her provision of food, touch, etc., but the child's neurologically based emotional systems are also setting their balance points. A mother's ability to accurately interpret her baby's cues and her response to those cues have immediate repercussions on the modulation of the stress-related neurotransmitters (e.g., norepinephrine) and on key centers of emotion such as the limbic system in the baby's brain. The baby left to cry for long intervals or the baby whose cry is greeted with a slap is undergoing a very different experience emotionally and neurologically than the child whose cries result in immediate soothing. A caregiver's predictable responses to the baby's distress signals and her sensitive pacing of activities to engage her infant when the baby is alert are not only patterning the emotional behavior we can observe, but also are actually building connections and modulating neurochemicals in the baby's brain.

This becomes the biological foundation for the child's later efforts to maintain emotional balance.

Schore's research on the neurobiology of emotional regulation focuses not only on the orbitofrontal system in the brain, which links the neocortex to the limbic system and modulates emotions, but also on the right hemisphere of the brain, where emotions of distress, sadness, and disgust originate. Dependent on the caregiver's ability to accurately and sensitively respond, the baby communicates her internal state through a repertoire of emotional signals. Over time, the actual physical structure and neurochemical profile of the baby's brain comes to reflect the caregiver's responses. According to Schore, the sensitivity and responsiveness of the mother "is literally shaping and fine tuning the circuits in the infant's limbic system, which will ultimately be responsible for the regulation of affect."²³ Through mutual interaction, the mother actually recreates in the baby a psychological and physiological state similar to her own.

The baby left alone to cry or whose cries result in unpredictable or abusive responses may never learn what it feels like to maintain or regain balance through thoughtfully timed external soothing. This is our first model for a constructive, self-consoling pattern when faced with strong negative emotions. Fear or rage may frequently overwhelm a child who has not learned emotional regulation skills. Explosive aggression, freezing, or self-destructive behavior may result from a child's disorganized efforts to handle strong feelings without a constructive experiential "map."

As they mature, all children—like all adults—will be exposed to situations that will generate strong negative emotions of fear, anger, jealousy, or frustration. But here, in our first relationship, is the seat of our physiological and emotional patterning in regulating those emotions. A 1995 study by Dr. Angela Scarpa Scerbo, psychologist at Eastern Washington University, and David Kolko, of the University of Pittsburgh, suggests that the ability to regulate emotion in childhood serves as a protective factor against one's own aggressive behavior.²⁴ While this ability can be taught in later childhood, the fundamental patterns for handling negative emotionality are formed in the first two years of life. By late preschool, failure to learn to modulate strong negative emotions may have taken its toll on the child's social relationships and on self-image.

Emotional regulation begins with parental responses to a child's behavior. There are four aspects to parental emotional regulation that are particularly important for young children: joyfulness, anger, fear, and empathic sensitivity. Joyfulness is crucial to self-esteem, relationships with others, and trust in a caregiver. Children of depressed mothers who receive relatively little stimulation of this emotion are at increased risk of depression and anxiety; later social and academic problems are also

correlated with this experience.

Anger or rage, while experienced by all children, may be inherited behavioral tendencies. There is increasing evidence that irritability tends to run in families.²⁵ If these emotions are not modulated in infancy or toddlerhood by caregiving adults, children may continue to act out high levels of aggression and overt conflict. The ability to control impulses may also be linked to this patterning and is definitely affected in a positive manner by constructive and consistent adult involvement.²⁶ By school age, children who lack this skill are often already labeled bullies or troublemakers, and the pattern can be hard to reverse.²⁷ If allowed to continue, the inability to regulate emotion may undermine the child's ability to focus on learning tasks in school, as was the case with Jeffrey.

Chronic fearfulness may also be genetically based, but like rage it can be modulated by caregiving behavior.²⁸ Easily frightened children, particularly little boys, may cause great concern for parents in our culture, which typically values outgoingness and boldness. The role for parents here is sensitive support and encouragement to expand the child's experience, confidence, and competence.

Finally, empathy is a strong protective factor against antisocial behavior. By modeling sensitivity to the child's needs and by encouraging the child to be aware of the impact of his behavior on others, parents help children build a foundation for altruistic behavior.²⁹ Dr. Patricia Brennan and her colleagues, who have looked extensively at protective factors against the development of criminal behavior, identify "orienting reactivity" (measured by skin conductance and heart rate) as a factor that distinguishes nonviolent from violent sons of criminal fathers. Orienting reactivity is a physiological measure of emotional sensitivity, the lack of which distinguishes many violent criminals. This quality may be heritable through an "inhibited," shy, or fear-sensitive temperament. But researchers speculate that it is also shaped by early sensitive responses to the subtle emotional cues of the baby and young child.³⁰

Chapter 8: The Hand That Rocks—The Impact of Emotional Deprivation

BEFORE DICK AND JANE: NURTURING THE FOUNDATION FOR COGNITIVE LEARNING

The ability to learn broadly about the world "out there," to focus on learning in school, and to master a range of interests in the world outside of self all hinge on a child's freedom to direct attention away from

internal needs—away from basic survival. When children have not been able to achieve some level of trust in at least one other person, when they are coming to school or to play groups with strong feelings of fear, rage, or grief, when babyhood experiences push them into a state of constant vigilance or escape into a fantasy world, learning is compromised.³¹ The ability to focus on abstract concepts requires some degree of emotional security, which may not be available to children who have not found protection and trust in a caregiver during earliest childhood. Internal "noise" from unresolved emotional dramas can undermine learning, even for children of high intelligence.³² These are the children who, anticipating fearful experiences and with no secure base, will hang back. They will show little interest in exploration and will be reticent or frightened in new situations.³³

A related ability children learn early from their caregivers is that of constructing an internal dialogue, to put feelings into words. The abilities to regulate strong negative emotions and to express feelings are essential to later problem solving, particularly in situations involving conflict or anger between peers. These skills are optimally taught in the first three years and are modulated in our first intimate relationship, generally long before we have expressive language.³⁴

There is a strong correlation between school failure and aggressive or violent behavior.³⁵ The single best investment parents can make in school success is a warm, attentive, and sensitive relationship with their baby. Here, in emotional nurturing and early stimulation, is the nucleus of "school readiness": the building of self-esteem, and a sense of effectiveness, self-control, relatedness, and ability to communicate and cooperate with others.³⁶ The child's abilities to relate to other people and to know how to behave in social situations are key to successful transition to school. Restlessness, timidity, and proneness to fighting can undermine achievement.³⁷ Self-expectations—formulated by children's experiences with parental or caregiver expectations—play a crucial role in school adjustment. At least one study has shown that high gains in first grade were predicted by neither family social status nor children's test scores at the beginning of the year; children's high academic self-image and their social maturity were the key factors determining academic success.³⁸

The devastating results to both emotional and cognitive development when a baby is deprived of early sensitive nurturing are clearly evident in the children arriving from the orphanages in Romania. In a January 1997 episode of *Turning Point*, a weekly television news magazine, Tom Jarriel and Diane Sawyer focused on a group of Romanian children who have been adopted by Americans.³⁹ While some children appear to have done well since their adoption, many continue to show serious cognitive, social, and emotional problems. Due to the lack of adequate records documenting the children's histories prior to their arrival at the

orphanages, there are many questions left unanswered about these developmental disparities. All of the children who spent early months in the orphanages in Romania suffered severe emotional, cognitive, and social neglect. But there are wide differences in the ages at which the children came to their new families, the quality of care among the orphanages, and the length of time children languished without stimulation prior to adoption.

Left for months in rows of cribs in the orphanages, without a person to engage them in speech, holding, or play, the children featured on the program were all adopted at what we have traditionally believed to be highly malleable ages, before they were thirty-six months old. Often underweight and lagging in development, they came to loving homes in America that lavished on them the best nurturing, educational, and therapeutic interventions available. Several pairs of adoptive parents were interviewed on camera. Their stories, while different, were linked by a common heartbreak at their inability to restore to their children what they had lost in their first months—not just psychologically, but in terms of actual brain tissue.

Using the newest research by Dr. Harry Chugani of Wayne University in Michigan, the documentary offered graphic testimony of the children's losses. PET scans showed the areas of activity within the brain of a normal child in blues and reds. By contrast, the scans of the little Romanian girl whose story was used to illustrate the differences showed that the area of her brain that controls language was barely active. The area that interprets sound and emotion showed even less activity. "It's a black hole," said the voice-over on the film. Areas that should have been pulsating with color were black and still. Adopted at twenty-four months, this little girl could speak, but she couldn't remember simple messages like the fact that her mother loves her. At age seven, she could not remember a simple three-number sequence.

Another child, a little boy, had no ability to create or maintain attachment to his adoptive parents of four years. He was equally happy to go home with total strangers. Born prematurely, this boy was thought to have been the product of a botched abortion. He had been kept in a cardboard box with a forty-watt bulb, which served as an incubator. At three, when adopted, he was covered with scars and could barely walk. As he matured, he improved physically, but his emotional damage is lasting. He is self-abusing, throwing himself against walls and making himself go into seizures by banging his head on the floor. A French woman, on assignment in Romania with Doctors Without Borders, was interviewed for the program. She explained that the orphanage staff was instructed to provide only basic physical care, especially focusing on sanitation. "No one is responsible for taking the baby in their arms... for feeding the baby... for playing with the baby... for speaking with the baby."⁴⁰

Beginning shortly after birth, interactive "games" between baby and caregiver and the caregiver's responses to the infant's sounds have a direct impact on the development of speech and cognitive thought. The baby begins to learn very early that there is meaning and communicative intent in such exchanges. Early language disorders are highly predictive of later school problems. Studies show that greater than 40 percent of the children who have early language difficulties will have learning problems in school.⁴¹ One study found that maternal attentiveness and mood during feeding when infants were four months and twelve months of age significantly predicted children's three-year-old language performance and four-year-old IQ.⁴² The research indicates that this interactive teaching is particularly effective when begun during early infancy. Babies whose mothers engaged them in a teaching process at four months, providing them with opportunities to observe, imitate, and learn, performed higher on IQ tests at age four than children who were exposed to the same teaching beginning at age one.⁴³ In writing on the importance of early experience on cognitive development, Dr. Marc Bornstein says:

Infants are thought to be particularly plastic to such external experiences because of the still fluid state of the nervous system, because of primacy effects in learning, and because of the lack of established competing responses. This perspective helps to explain why many lifelong characteristics might assume their basic form in infancy and why infants' caretaking experiences might be so influential in later life.⁴⁴

Not surprisingly, children's attachment classifications as measured at twelve to eighteen months tend to be predictive of school success. Children who are identified as anxiously or ambivalently attached are less likely than securely attached infants to make an easy transition into school.⁴⁵ Teachers are more likely to view avoidant children as hostile, impulsive, withdrawn, and quick to give up. They are disobedient, overly dependent on their teachers, and poor at getting along with other children.⁴⁶ Anxiously attached children, though less troubled by school than the avoidant group, also have limited social skills and lowered confidence levels.⁴⁷ In preschool, 75 percent of the children in one study who were identified as having significant behavioral problems had been identified at twelve to eighteen months as anxiously attached.⁴⁸ This relationship between attachment and social behavior continues into grade school.

By preschool, we can already see the child's internal working model in action, replicating with teachers the interactions that the child learned at home. Preschool teachers respond differently to children in ways that reflect the children's attachment histories.⁴⁹ Anxious or avoidant children tend to provoke teachers' anger, whereas teachers are generally tolerant

of immature or dependent behavior in the ambivalent group. Anxiously attached children seem to receive messages of low expectation from teachers, while the attitude of teachers toward securely attached children remains warm, confident, and matter of fact and assumes compliance with their expectations. Research has shown that teachers' expectations are associated with children's IQ scores.⁵⁰ It appears that the child's internal working model continues to play out in grade school where teachers' responses influence their self-perception and subsequently their IQ scores as measured in first through sixth grade.⁵¹

Chapter 8: The Hand That Rocks—The Impact of Emotional Deprivation

WHEN THE BOUGH BREAKS: THE IMPACT OF MATERNAL DEPRIVATION

The first clue is something that happened when Kaczynski was only six months old. According to federal investigators, little "Teddy John," as his parents called him, was hospitalized for a severe allergic reaction to a medicine he was taking. He had to be isolated—his parents were unable to see him or hold him for several weeks. After this separation, family members have told the feds, the baby's personality, once bubbly and vivacious, seemed to go "flat."

EVAN THOMAS REPORTING ON THE UNABOMBER,
TIME, APRIL 11, 1996

While attachment research has long focused on the baby's behavioral attunement with the parent or caregiver, what we have not known until recently is that another, even more fundamental biological drama is simultaneously taking place within the infant's brain. Based on recent discoveries by researchers such as Dr. Myron Hofer, a psychiatrist at the New York Psychiatric Institute who initially studied the impact of separation on animals, we now know that long before working models are internalized by human infants, attachment behaviors serve the purpose of maintaining homeostatic balance in the baby's physical and emotional systems.⁵²

Nurturing behaviors like holding, touching, making eye contact, speaking, and rocking—even before they provide the baby with a template of learned expectations about relating to another—provide for the regulation of basic biological functions in the infant. These functions include the immune system, blood pressure, body temperature, appetite, sleep, and cardiovascular regulation. The infant is so fundamentally dependent for these functions on the mother's continuous proximity that many researchers refer to the mother and baby as one biological

system.⁵³ The baby comes to associate physiological security or homeostasis, which he or she experiences as contentment, with proximity to the mother. The baby's natural opiate network in the brain is stimulated by the normal nurturing and attending behaviors of the mother.⁵⁴ This process links attachment to the central reward system—the same system that is stimulated by addictive drugs. These early physiological regulatory experiences, resulting in frequent states of contentment or of frustration or rage or confusion—are the building blocks of later mental representations of the parent and of the feelings associated by the child with similar experiences later in life.⁵⁵

When the baby is screaming, the nurturing mother provides soothing to lower the baby's state of alarm. When the baby appears droopy or depressed, an attuned mother will attempt to raise her baby's state to a more elevated mood. These maternal behaviors, besides providing a moderation of the baby's mood, are also maintaining an even balance of neurochemicals in the baby's brain, resulting in the contentment we observe and the baby's experience of emotional modulation, which over time becomes the child's internalized model for self-regulation of strong emotions, as discussed previously.

If a baby is separated from the mother, he or she experiences the loss not only of the emotional but also of the physiological balance of basic systems that are maintained by the mother's proximity. This is similar if not identical to the kind of loss adults experience at the death of a life companion or a great love. One's entire physiological system may go into shock. We find ourselves unable to eat or eating too much, unable to sleep or sleeping too much, lacking energy or highly agitated, and experiencing heart palpitations, high blood pressure, and memory lapses. As Dr. Hofer says:

Insofar as mutual homeostatic regulation characterizes our first relationship and insofar as mental representations are built on this experience, some of the characteristics or later mental derivatives from this preverbal stage may be more readily understood. For example, affect states associated with the experience of separation later in life involve sensations of fragmentation and loss of control that may derive from the early experience of regulation of so many infant systems by the first relationship. The biological, symbiotic aspects of the early mother-infant interaction may also help us understand the power of some of the many bodily sensations—the sensations in heart and stomach so familiar in everyday speech—that are experienced in connection with memories associated with important people in our lives.⁵⁶

The implications of this information for the expression of violence are attracting growing concern. Dr. Gary Kraemer, of the Harlow Primate

Laboratory at the University of Wisconsin at Madison, defines violence as "unregulated aggression,"⁵⁷ pointing out that society accepts and even encourages some forms of regulated aggression, such as in sports, movies, and video games. But when violence occurs outside socially approved channels, it is culturally categorized as antisocial behavior.

Attachment behavior is the developmental process whereby social regulation of emotion and behavior is first embedded in the human species. Early caregivers are the linchpin in this process. Kraemer, like Hofer, focuses on the neurobiology of these processes. His research on rhesus monkeys, described in chapter 4, demonstrates that deprivation of adequate nurturing in early life leads to the dysregulation of neurobiological processes, one result of which can be violence. When little monkeys are separated from their mothers, there is alteration of the neurobiological mechanisms that the baby uses to deal with stress. The result is exaggerated or blunted emotional responses and enduring changes in the infant monkeys' performance of cognitive tasks. Specifically, when baby monkeys were separated from their mothers and raised in cages with other little monkeys but no mother, they showed several social deficits that placed them at risk for aggressive behavior. When exposed to a social group, they were not as playful, and they clumped or clung more to each other than mother-reared monkeys. They showed less grooming and approaching with other monkeys and were generally less outgoing. When stressed as adults, these monkeys became hypo or hyper responsive—their responses were unpredictable. They were both retiring and antagonistic without provocation. They were often self-injuring. The aggression they showed in reaction to the triggering event was out of proportion in both severity and duration and was directed toward improbable objects. From a temperament perspective, the monkeys were either shy or reckless (extremely "inhibited" or "uninhibited").⁵⁸

Kraemer attributes these extreme behaviors to the dysregulation of the system of neurotransmitters in the brain. The usual biological coping responses were not adequately stimulated by early learning from the caregiver and will remain impaired in future social encounters. In addition, the cognitive performances of mother-deprived monkeys differed substantially from that of the mother-reared monkeys. Mother-deprived monkeys were actually better and quicker than mother-reared monkeys at finding raisins hidden under novel objects. But when the task changed to finding a raisin under a familiar object, mother-deprived monkeys had great difficulty shifting to the new task. They were, in short, able to learn one problem-solving approach "too well." As a result, they appeared to be more rigid and less flexible in learning new tasks.

Dr. Kraemer is concerned that children who are deprived of adequate early caregiving due to abuse or neglect are now flooding school systems across the country.⁵⁹ He sees clear parallels between some children

requiring special education in public schools and the behavior of mother-deprived monkeys he observes in the laboratory. He believes that many mother-deprived or neglected children are entering classrooms designed for mother-nurtured children, where the coping skills these children have learned are likely to fail. In addition, their neurobiologically based differences are reinforced by peer rejection. Kraemer's research points toward the fact that the traditional approach to educating children who have been deprived of early nurturing by placing them in environments designed for nondeprived youngsters ignores their totally different neurobiological wiring—an oversight that contributes to their growing alienation and aggression.

Chapter 8: The Hand That Rocks—The Impact of Emotional Deprivation

THE LOOK OF LOVE: THE EFFECTS OF MATERNAL DEPRESSION

Emotional as well as physical unavailability of caretakers takes a huge toll on babies. Dr. T. Berry Brazelton, demonstrating the impact of even short-term loss by the infant of his mother's accustomed attending behaviors, shows an unforgettable series of videotaped encounters between a handsome four-month-old infant and his mother. The film features a split screen. On the left side we see a beautiful baby boy in an infant seat, propped on a table. On the right side we see his mother's head and shoulders as she faces her baby. For the first minutes, we watch this mother engage her baby in their normal way. The baby widens his eyes, raises his eyebrows, and smiles as she sits down in front of him. His arms and legs move fluidly in a regular rhythm toward her as she talks to him. He coos back at her greeting. He is animated, happy, eager to continue their "conversation." When his mother talks to him, he "talks" back. Her words are timed so that she waits for his response, and then she delightedly continues. The pair take turns with sounds and smiles and touches. The audience is enthralled. Then the scene changes. Dr. Brazelton explains that the mother has been instructed to get up and leave and that when she returns, she is to keep her face stilled, without expression. She is asked not to engage her little boy at all and not to respond to his attempts to engage her. Brazelton explains that she is asked to violate the baby's expectancy, to prove that the expectancy was set.

The baby greets his mother's return with the same smiles and coos and enthusiastic kicks we saw in the first sequence. He clearly expects her involvement. As his mother's face remains unmoved, he stops briefly to look at her and furrows his brow. Then he begins again to engage her as he had before, with even more energy and excitement. When she does

nothing, the baby grows louder and kicks harder, causing his little seat to wobble precariously. We see mother's restrained face, still sober and without expression. As the baby heightens his efforts, he cries, looks frightened, and kicks harder, gradually almost throwing himself out of the seat. The mother stays with her task, though her face looks pained. The audience is groaning. Finally, in the last frames, the baby almost falls forward as he tries to sit up, folding his trunk over his legs, as if to throw himself out of the seat to engage his mother's action. He will even risk hurting himself to "get her back." Brazelton notes, "Little girls will withdraw; boys will become violent in their efforts to reengage their mothers." This amazing sequence, lasting only a few minutes, is a condensed version of the progression researchers are now studying in the infants of depressed mothers.

Children like Jeffrey whose mothers are seriously depressed during their first two years of life show dramatic differences in their emotional behavior and in their neural physiology by comparison with children of nondepressed parents. When depression prevails in the first years, by school age the children typically show problems in self-control, peer relationships, attention, and focus.⁶⁰ There is also a high correlation between maternal depression and both abuse and neglect.⁶¹ Children of depressed parents are at increased risk of developing depression and anxiety disorders of their own.⁶² Preschool-age boys whose mothers are depressed tend to act out, showing more aggression, refusing to mind, and often having problems with toilet training. Girls at the same age tend to internalize their anxiety and often withdraw, though either gender may reverse this pattern.⁶³

Dr. Geraldine Dawson, at the University of Washington, is currently examining the links between maternal depression and disruptions in children's early social and emotional development. Depressed mothers find it hard to show immediate positive responses to their babies' efforts, and to engage in interesting and stimulating interactions with them. Because of their depression, they show generally more negative moods. They smile infrequently, their faces are often still, flat, or frowning. These mothers rarely laugh or use animated voices or variety in their vocal tones.⁶⁴ Here we see the influence of the hand that rocks reluctantly.

As early as three months of age, when babies are observed in interaction with their depressed mothers, the babies begin to mimic their mothers' depressed mood. They show lower levels of motoric activity, vocalize less, look away from eye contact more frequently, and protest more often.⁶⁵ Dr. Ed Tronick, of Children's Hospital in Boston, who has been studying these depressed pairs for more than a decade, says that the mothers' moods appear contagious. The same contagion appears to also influence the interactions between nondepressed mother-child pairs who spend more time in playful states. When normal infants were tested to

compare the negative impact of still-face situations (as in Dr. Brazelton's tape) to the effects of brief physical separations from their mothers, they exhibited more protest and despair and were actually more difficult to console following the still-face than the separation situation.⁶⁶ The implication is that the impact of emotional unavailability may be even more stressful on the infant than physical separation.⁶⁷ When infants of depressed mothers are paired with nondepressed adults, their depressed style of interacting persists, suggesting that they generalize their expectations with even nondepressed adults. Dr. Tiffany Field, of the University of Miami Medical School, has found that babies whose mothers' depression subsides by the baby's sixth month showed normal motoric and mental development by their first birthday. But children of mothers who continue to be depressed for the child's first three years show the strong patterns of emotional dysregulation discussed earlier. Some researchers speculate that these symptoms may be inherited. Others believe that the patterns are learned and can be offset by the early involvement of a nondepressed parent or consistent supplementary caregiver.⁶⁸

With the dawning of the psychobiological research that illuminates the neurological counterparts of observable behavior, researchers like Dr. Dawson are looking increasingly to brain physiology to comprehend the path of depressed moods in infancy. Several studies using EEG measures have now provided evidence that the expression of different emotions is associated with activation of the right or left frontal lobes in the brain. The left frontal region is believed to be relatively more activated during the experience of joy, interest, and anger—emotions associated with "approach" toward the external environment,⁶⁹ while the right frontal lobe is activated when experiencing the emotions associated with withdrawal from the environment, including distress, sadness, and disgust. Depression is associated with relatively more EEG measured activity in the right frontal region. In even very young infants, researchers have found right frontal activation during crying and left frontal activation during expressions of happiness.⁷⁰

When infants had much greater right than left frontal activation during normal conditions, they were more likely to cry upon separation from their mothers. These individual differences in frontal EEG activities under normal conditions are predictive of differences in children's tendencies to express primarily positive or depressed feelings.⁷¹ When there is generalized increased frontal lobe activity, researchers believe that it indicates a tendency toward the intense expression of emotions of all kinds.⁷² Over time, it may be that the preponderant activation of the right frontal lobe is reinforced by the depressed mother. When the infant's display of positive emotions goes unnoticed or unrewarded, patterns of neuronal activity associated with pleasure may rarely or never be stimulated, while negative, angry, or sad patterns may be built. Some researchers speculate that a critical period may exist for this aspect of

cortical mapping and its consequent connections with the limbic system. This process and pattern of right or left brain activation is the biological underpinning of future expectations of reward and punishment within relationships.⁷³

An additional underlying concern for children of depressed mothers is that they are generally experiencing greater stress than children of nondepressed mothers—stress that leads to increased cognitive and social problems in school. Rather than being available to their infants for reciprocal eye contact, touch, and verbal exchanges and being attuned to the subtle cues initiated by the baby to maintain emotional and physical modulation, depressed mothers respond to their babies from behind the wall of their own unmet needs. As Geraldine Dawson, reporting on Tiffany Field's work, wrote:

Depressed mothers and their infants spend more time engaged in mutual negative states, such as mother "anger-poke" and infant "protest," or mother "disengage" and infant "look away." These infants joined their mothers in inattentive or negative states, resonating with their mothers' depressed behavior. With repeated dyadic exchanges of negative mood, inattention, and inadequate responsiveness, these infants may develop abnormal, stressful responses to social interactions.⁷⁴

The stressful responses measured by Dawson and Field register as early as three months, when babies of depressed mothers showed elevated heart rates.⁷⁵ Interestingly enough, these infants did not visibly behave as though distressed, according to the trained observers. Several subsequent studies found higher salivary cortisol levels in the children of depressed mothers, an indication of the activation of the adrenocortical system, which is activated in emotionally stressful situations.

The psychological unavailability of a depressed mother renders her infant emotionally, socially, and cognitively vulnerable. These babies have a limited range of secure experiences in stressful situations and have little practice in drawing upon others to receive emotional support. With poor models for self-soothing, feeling helpless and emotionally disorganized places these infants at high risk of later aggressive or self-destructive behavior. Without confidence in their ability to elicit soothing from a trusted adult, such children may attempt to soothe themselves by rocking or head banging.⁷⁶

By preschool, unless the child's caretaking is balanced by a competent nondepressed caregiver, children of depressed mothers may develop a tendency to focus on negative emotions and thoughts, show little ability to initiate or even engage in play, and develop rigid or inflexible emotional and cognitive patterns in an effort to maintain control.⁷⁷ The present hypothesis being examined by researchers studying children of

depressed mothers is that there is a sensitive if not critical period in earliest development, particularly from the child's eighth through eighteenth month, when children are vulnerable to establishing enduring behavioral and neurological patterns from exposure to maternal depression.⁷⁸

As the research has uncovered the implications of maternal depression, new directions in treatment for depressed mothers and their babies are being explored. Particularly effective for both mothers and babies is massage therapy—massage given to mothers and taught to them as a way of positively engaging their babies. Various nurturing efforts to alter the mother's mood to more positive thoughts and emotions are also employed, including music, aerobics, yoga, and visual imagery. In a study by Dr. Field, mothers' anxiety levels and salivary cortisol levels decreased after a thirty-minute massage. After a month of two massages a week, mothers' depression levels were significantly decreased, as were urinary cortisol levels.⁷⁹ To increase the mother's sensitivity to her baby's cues and to positively affect the baby's mood, mothers were also trained to massage their infants. Two groups of mothers were compared, one group giving their babies fifteen-minute massages, and a second group rocking their babies for fifteen minutes. Each group performed these tasks twice a week for six weeks. Babies who received massages spent more time than the rocked infants in active, alert states; they cried less and had lower levels of salivary cortisol following massage. The massaged babies also fell asleep more easily after massage than the rocked babies did after rocking. They gained more weight, were more easily soothed, and showed more positive mood in face-to-face interactions with their mothers.⁸⁰ Another line of early intervention for depressed mothers is simply the availability of a nondepressed partner: a father, a friend or relative, even a familiar and consistent professional mentor. Field's data suggests that nondepressed fathers and even nursery teachers can compensate for the potential negative impact of maternal depression.⁸¹

Chapter 8: The Hand That Rocks—The Impact of Emotional Deprivation

THE HAND THAT GUIDES

We are living in a time when parenting skills and discipline techniques are sold in kits, books, videotapes, and television shows. "Canned" approaches to getting children to mind are proliferating and have been for several decades. The implication of these approaches is that once you learn the system, it's all downhill. Neighbors, friends, and family members may also offer well-meaning advice, generally based on a set of skills that worked with their child or children. When all else fails, most of

us resort to what we know best—how it was done when we were little—the ways of our own parents.

For the majority of parents, skills learned from families of origin and from packaged approaches usually work just fine. But for parents who have themselves been abused or neglected, or whose families of origin have been encumbered with emotionally destructive patterns, a deeper level of education together with outside support or therapy may be essential for constructive parenting. In addition, children with unique emotional or physical needs challenge these "one size fits all" systems as well as everything that seemed to work before in the family experience. As we learn more about the individual differences that characterize children at greater risk of impulsive-aggressive behavior, such as ADHD children, and those with bold, uninhibited temperaments who are insensitive to punishment, we are also becoming more knowledgeable about the importance of matching parenting skills—particularly discipline skills—to the individual needs of parents and children. This matching becomes important shortly after birth as the reality of the individual child is recognized by parents. No one set of techniques for motivating and disciplining children works across the board for all toddlers and preschoolers. As temperament research has examined the effectiveness of parenting skills with varying temperaments to assure "goodness of fit," we have learned some surprising things about the importance of knowing and accepting children's different needs prior to learning a system that will enable a child to mind.

ADHD children, for example, inevitably provide even seasoned parents with serious challenges. With these children, parents who attempt to use a communication-based system for discipline will be seriously frustrated as will the child. Such systems as Dr. Thomas Gordon's Parent Effectiveness Training (P.E.T.) work well with many children but rely on focused listening. ADHD children lack the ability to screen multiple sources of stimulation and discern a command, let alone follow through on it. With ADHD children, the need is for clear structure of the child's environment and a regimented, well-explained, and well-rehearsed reward system. Children who are bold or relatively undeterred by parental disapproval also need a clear, reward-based system; punishment-based systems don't work well with children who are unfazed by social disapproval.⁸² On the other hand, children who are very sensitive, inhibited, or shy will respond easily to gentle, communication-based discipline systems. Even as babies, such children may immediately be deterred by a loud voice; serious consequences such as a loss of privileges or time out may be overkill, necessary only in rare circumstances.

The basis for any system of discipline begins with first relationships, in which primary caregivers pay attention to and articulate the child's positive behaviors. Conscious awareness by both parents and child of the child's capabilities, strengths, and assets is the first step in a discipline

system. For the child's security and self-esteem and for the parents, belief in the core goodness of the child needs to come first. Only when this shared perception is in place is the next step—a disciplinary system—going to be optimally effective. The hand that rocks the cradle first needs to embrace the child.

Chapter 8: The Hand That Rocks—The Impact of Emotional Deprivation

HOW DOES OUR GARDEN GROW?

The interactive "dance"—the timing and degree of reciprocity and sensitivity between an infant and first caregiver—lays the foundation for the exchanges that the baby, then child, then adult will echo throughout life. How we relate to others is birthed in this subtle flow of tiny behaviors exchanged between parents and infants and becoming over time the subterranean sea of learned expectations of self and other. Adult relationships—be they between politicians or business people or a shopper and the grocery clerk in the checkout line—are all influenced by this, our first and most profound relationship. The interchanges between caregivers and infants ripple out to all levels of society, affecting relationships from the playground to the Supreme Court.

On April 22, 1997, an advertisement in *The New York Times* featured a full-page photograph of a baby's face. Scrolling down the left side of the bottom half of the advertisement were the phrases: "Every hug. Every lullaby. Every kiss. Every peek-a-boo. Every word. Every touch. Every warm blanket. Every giggle. Every smile. Everything you do in these first three years becomes a part of them."⁸³

Our children are the barometers of our nation's strength, their caregivers charged with a role of fundamental significance. Here in the arms of those first rocking our future lies the potential to protect against the rending of society by unsocialized aggression. In order that our babies grow into voting adults who care about such issues and who have the capacities for complex problem solving, the basic ability to connect with other people, to empathize, to regulate strong emotions, and to perform higher cognitive functions must be the intended lessons of the hands that rock the cradles.