

# The Allure of Infant Determinism

"X fears Y," where agents, targets, and contexts are unspecified can assume very different meanings when the agents are specified and a number of different arguments are created. Arguments of the arguments "Boys fear authoritarian fathers," "Sit examinations," "Women fear aging," and "Men fear war" are very different meanings.

Psychology, sociology, and anthropology are not fundamentally different from biology; and the history of biology is not the history of these more youthful social sciences. Only chromosomes, only germ cells undergo meiosis; only neurons synapse; only pigment cells in the retina bleach. But learn, communicate, avoid, regulate, and mate are possible in ants, frogs, rats, cats, chimps, and humans. The physiological and psychological processes that are the referents for these predicates can be different across such diverse species. If we wish to compose meaningful sentences about behavior, we must specify the class of agent, the situation in which those and so many other psychological processes are engaged.

How far forward can the deep past extend its hand? Physicists believe that the current temperature of the universe—about three degrees Kelvin—resulted inevitably from dissipation of the intense radiation created by the Big Bang. No other scientific discipline so confidently awards so much explanatory power to an initial event in the distant past.

There is far less agreement among psychologists regarding the primacy of early events. Consider a twenty-year-old in profound anguish over failing an examination, a forty-year-old who has been arrested by the police, or a sixty-year-old in a mood of suicidal depression. At what stage in development did the probability of each of these events rise significantly above chance, and what experiences created that higher probability?

Every society speculates about the causes of variation among its members. Some attribute special power to a person's date of birth or to sorcery. Other cultures award influence to more materialistic factors, like climate, diet, and the individual's biology. A much smaller number of societies, including our own, have decided that experiences during the early years (especially the biological mother's affectionate care and interactive play with her infant) are the most potent force in shaping a life.

European and American writers have been insistent, since the beginning of the eighteenth century, that the habits wrought by the events of infancy could not be abrogated. Rousseau hyperbolically asserted that mothers are responsible for the health of their society. "When mothers design to nurse their own children, then will be a reform in morals . . . natural feeling will revive in every heart . . . When women become good mothers, men will be good husbands and fathers." These views became especially popular during the opening decades of this century. One commentator wrote in 1929, "The powerful significance of the intellectual processes—perception, fantasy, thinking and their social results in science, art, and philosophy in the human being—have their first roots in the specifically human mental structures of the 3 month old child . . . Historically, all phenomena of adult mental life must be traceable to birth."<sup>2</sup>

Some self-appointed experts warned that even "public entertainments" were dangerous toxins to young minds. "It is not only the ignorant who take their babies to movie and picture shows or other entertainments, they may be found at concerts and lectures which draw their audiences from the most cultured. The baby may show no signs of restlessness and be as good as you please, or may make up for lost sleep by an extra nap the next day, and yet be harmed thereby. No serious immediate symptoms of nervous over-stimulation may appear, but someday the accounting must come—it may be 20 or 40 years later before it is paid in full, but paid in full it will be."<sup>3</sup>

The anthropologist *Clifford Geertz* in presenting a consensual view of the basic postulates of the social sciences in the period following the end of the Second World War, stated, first, that all habits are established through the administration of rewards and punishments. His second principle affirmed the potency of early experience: "The habits established early in the life of the individual influence all subsequent learning and, therefore, the experiences of early childhood are of predominant importance." Recent textbooks in child development continue to insist that parents "start by giving the infant as much predictability and social interaction as possible" in order to influence the child's future.<sup>4</sup> Two respected authors, Michael Lamb and Marc Bornstein, inform students, "Events in infancy are important because they

initiate multiple processes of development... Infancy must have a manifest and inevitable impact on development... By studying infancy we learn about processes and experiences that have long-term implications for psychological development."

Why have so many been persuaded of the permanent psychological power of the early years? One clue can be found in eighteenth-century Europe, where a growing number of wives of merchants and skilled artisans were gradually freed of the responsibility of gathering wood, picking berries, tending domestic animals, and weeding vegetable plots. Society assigned to these women, idled by historical change, the task of shaping the future of their infants. A perfectly nurtured child who married well or mastered the skills that led to a position of prestige in the larger community would enhance the family's status. As the children of the bourgeoisie lost their economic value, they became investments in the family's future, and parents began to view them as objects of sentiment and pleasure.

Eighteenth-century European society had become more mobile, and it was now possible for the son of a tailor or blacksmith to rise in the social hierarchy, and for the son of a squire or parson to fall. Change in social class became simultaneously a hope and a fear, and therefore a source of uncertainty for families located on the middle, most vulnerable rungs of the class ladder. When a source of uncertainty permeates the consciousness of large segments of a society, some explanation will be invented that is both reasonable and suggests actions that can be taken to mute the uncomfortable feeling. The popular notion that certain parental behaviors guaranteed the development of character traits necessary for a successful future, and therefore protected the family against a descent in status, rationalized ritual practices that swept some of the worry away. But this idea meant that the complementary hypothesis must also be true: If mothers did not nurture their infants properly, their children would be vulnerable to a dull mind, a wild spirit, and a downward spiral. Thus, it was morally incumbent on parents to implement the best rearing practices as early as possible.

Somewhere in America today a mother-to-be is playing a cassette recording of a Beethoven sonata near her abdomen in the hope that her unborn child will become sensitized to good music. Another expectant

woman is reading aloud from Keats or Dickens so that her fetus might catch enough words to place her ahead of her peers in kindergarten. Some mothers insist on being in skin contact with their newborn during the first postnatal hour to ensure an emotional bonding they believe is necessary for their child's long-term mental health. These parents, who have taken the writings of John Bowlby and Erik Erikson seriously, are convinced that their infant's future is controlled in a nontrivial way by the events of the first hours, weeks, and months of life.<sup>7</sup>

The rituals that flow from this conviction absorb anxiety like a sponge. If future happiness, talent, and success are formed in the first years of life, and if careful attention to this stage guarantees a subburst of joyous outcomes, then parents who conscientiously perform their child-rearing duties have less reason to be apprehensive. The relatively uncritical acceptance of these assumptions requires a deep faith in an unbroken connectedness between past and present and a view of each life as a highway that connects the first day to the last. This view of development rests on the assumption that every experience produces a permanent physical change somewhere in the central nervous system, and therefore the earliest experiences provide the scaffolding for the child's future thought and behavior. Development becomes analogous to building a house: just as the form and quality of the foundation determine the integrity of the subsequent frame, first experiences have an overwhelming priority in determining the form and quality of the mature adult's emotional and mental life. The fresh tape that is a metaphor for the infant brain is altered permanently by each experience, and these messages are preserved with fidelity for an indefinite period.

Other life scientists tell a different story, however. The evolutionists Niles Eldredge and Stephen Gould created a mild stir among some of their colleagues when they suggested that the emergence of a new species could occur in a relatively short period of time. The pace of evolution need not, as Darwin believed, mimic the production of eggs in a rural English county.<sup>8</sup> The transformation of a fertilized egg into the trunk and limbs of an embryo, the onset of a winter flu epidemic, and the paralysis following a massive cerebral stroke are discontinuous events that transform what was prior in a dramatic way.

New discoveries in genetics also challenge the premise of infant determinists. A pragmatic "waste not, want not" philosophy had been part of the geneticists' credo only twenty-five years ago. How could a mutation, biologists asked, not have some consequences, either for good or for ill? Yet we now know that most amino acid substitutions caused by mutations appear to have no consequences for the vitality or viability of the organism.<sup>9</sup> Similarly, psychological determinists have assumed that every kiss, hug, lullaby, or scolding alters the child's brain in ways that will influence his future. But if slight changes in synapses, like some amino acid substitutions, are without functional consequence, then every smile at an infant is not to be viewed as a bank deposit accumulating psychic dividends.

A faith in connectedness has been associated with a belief in critical periods in development. This concept, which was popular fifty years ago but lost some of its appeal, has begun to return in some quarters. The idea of a critical period has a clear meaning in animals. Imprinting in precocial birds provides an excellent example. There is an initial period after hatching when a duckling or gosling will follow the first moving object it sees, normally the mother. Several days later, following brain growth, the young bird avoids unfamiliar objects. As a result, it becomes imprinted on its mother or, if reared in a laboratory, on the first moving person or object it sees.<sup>10</sup> During a critical interval early in life, certain experiences can affect the animal's future behavior permanently.

The neuroscientists David Hubel and Torsten Wiesel discovered another dramatic example of a critical period, this time in the development of newborn kittens. In a series of experiments, the investigators closed one eye of newborn kittens, so that only one side of the visual cortex received visual stimulation. In a kitten whose eyes are closed on a particular day between fourteen and 30 days, when the neurochemistry of the visual cortex is in a special state, the anomaly in that part of the brain influenced permanently and the cat will be functionally blind in one eye. However, in a kitten whose eye is closed a month after birth, no change in the brain occurs and the animal's vision will be normal after the eye is opened. Hubel and Wiesel concluded that during a brief,

critical interval, both sides of the visual cortex require equivalent visual stimulation. If it is denied, visual functioning is affected permanently. The notion of critical periods captured the imagination of many developmental psychologists, who assumed that there must be such periods in human development. Scientists speculated about critical periods in the acquisition of language and of attachment bonds to parents; the latter being regarded as analogous to imprinting in ducklings. Marshall Klaus and John Kennell claimed, over twenty-five years ago, that maternal bonding to the infant must occur during the first critical hours after birth if development is to proceed normally. That bold statement, which worried the many mothers who had missed this experience, was based on one study of twenty-eight poor, unmarried women—hardly a sample that warranted such a provocative conclusion.<sup>12</sup>

To the disappointment of many, it has proven difficult to find equivalent periods in human development that are as robust as the discoveries of ducklings and rats. The orphans produced by World War II and the Korean conflict, who had fragile bonds to adults during their first years, developed well after adoption by nurturant foster parents.<sup>13</sup> In one study, a group of frightened, quiet two-to-four-year-olds who had been raised in an overcrowded institution with too few caretakers were enrolled in regular play sessions with adults and children. The veil of indifference lifted after less than two years, and the typical emotional vitality of four-year-olds emerged. One investigator, who was unprepared for such a dramatic change, wrote,

We had not anticipated the older children who had suffered deprivation for periods of 2½ to 4 years to show swift response to treatment. That they did so amazed us. These inarticulate underdeveloped youngsters who had formed no relationships in their lives, who were aimless and without a capacity to concentrate on anything, had resembled a pack of animals more than a group of human beings. . . . As we worked with the children, it became apparent that their inadequacy was not the result of damage but, rather, was due to a dearth of normal experiences without which development of human qualities is impossible. After a year of treatment,

pas  
I  
aca  
to  
cla  
the  
for  
Ev  
th  
to  
ne  
de  
di  
ex  
gr  
w  
bl  
sl  
re  
s  
I  
M

many of these older children were showing a trusting dependency toward the staff of volunteers and . . . self-reliance in play and routines.<sup>14</sup>

These demonstrations of developmental malleability motivated psychologists to replace the term critical period with the more permissive notion of sensitive period. This concept implies that, for each important human function, an optimal time exists when certain experiences are the most beneficial. A child could develop a particular competence even if she missed the relevant experience, but the adult function might be compromised. The idea of a sensitive period has intuitive appeal and is almost impossible to disprove, and in the case of language may actually be valid. If a child is not exposed to any spoken language during the first three years of life, future linguistic competence will be impaired to some degree. While some evidence has been collected, this hypothesis is hard to prove with certainty, for a child who has heard no human speech at all during the first three years of life is difficult to find. And those who are discovered may be developmentally retarded in other ways, owing to the special circumstances that brought about the language deprivation.

The concept of critical periods is beginning to return to the field of education, but the reasons are more political than scientific. Many children of poor urban families arrive in school minimally prepared for academic instruction. Some have no knowledge of the alphabet; some have never been read a bedtime story. Many of these children have great difficulty learning to read, and those who fail to acquire reading skill by the fourth grade are at risk for becoming adolescent delinquents. Everyone agrees on the necessity of benevolent intervention long before these children enter school, and one obvious strategy is to persuade the mothers of these children to adopt the regular practices of middle-class parents, namely, playing with and talking to their infants, reading to their three-year-olds, and promoting the importance of success at academic tasks.<sup>15</sup>

But how does one persuade them? Should they be shamed for their past failures, in the hope that the resulting feelings will motivate the

desired behavior? This approach is unattractive for several reasons. First, shame and guilt have lost a great deal of power in this century. Americans from diverse ethnic groups. Many Americans have become tolerant of individual preferences and are reluctant to condemn less typical family practices. Second, economically stressed mothers who feel oppressed by the majority society have become either angry, fatalistic, or both. It is not easy to generate guilt in a parent who is mad at the messenger or unconvinced that she can change her children's lives. Most important, the decision to generate shame or guilt implies that poor mothers are morally flawed. Most middle-class adults are understandably reluctant to blame these victims by suggesting that they did not care enough about their children's welfare.

Hence, a preferred, and more benign, approach acknowledges that poor mothers love their children but do not know the basic facts of human development. If they were aware of the importance of playing with, talking to, and reading to their children, they would implement these rituals at once. In order to make this message more urgent, educators have exploited the current prestige of the neurosciences and told parents that the first two years of life are a critical period in infant development; if parents do not provide proper stimulation during this time, their child will be harmed permanently.

This tactic was used in the cover story of the February 3, 1997, issue of *Time* magazine, which stated boldly that new synapses are established every time a parent looks down at the infant's face, moving the brain a bit closer to perfection. The article quoted a child psychologist: "Experience in the first year of life lays the basis for networks of neurons that enable us to be smart, creative, and adaptable in all the years that follow."<sup>16</sup> There is nothing novel in these declarations. A 1914 government pamphlet for mothers contained exactly the same warning with even less scientific evidence. "The first nervous impulses which pass through the baby's eyes, ears, fingers, or mouth to the tender brain makes a pathway for itself; the next time another impulse travels over the same path, it deepens the impression of the first."<sup>17</sup>

This advice—whether given in 1914 or 1997—is well intentioned. Infants who are played with regularly are cognitively advanced over

those who are ignored. However, it is a bit dishonest to suggest to poor parents that playing with and talking to their infant will protect the child from future academic failure and guarantee life success. The quality of the school, the motivation of the teachers, the values of peers, the mores of the neighborhood, and the child's identification with his socioeconomic class will exert important influence during the childhood years. Yes, of course, parents should be affectionate, playful, and conversational with their infants, but there are no guarantees.

Every American infant born in 1998 will be ranked with over three million other children when that age cohort enters elementary school. From first grade through high school graduation, each child's relative ability on varied academic tasks, compared with all others in that large group, will shape his future in a major way. The experiences of infancy represent only one of many factors that will contribute to the adolescent's relative rank. The education and income of the parents, place of residence, peer group values, and quality of school attended are among the most important determinants of later academic success.

A famous longitudinal study of children born and reared on the Hawaiian island of Kauai revealed that about 15 percent of the sample had serious academic or conduct problems during adolescence. The predictor of which children would develop these problems was the social class of their family—over 80 percent of the children with problems came from the poorest segment of the sample, and only one child from an upper-middle-class home developed a psychological problem. It is considerably more expensive to improve the quality of housing, education, and health of the approximately one million children living in poverty in America today than to urge their mothers to kiss, talk to, and play with them more consistently. Although a change in maternal behavior in this direction will have benevolent effects, those effects will be slim compared with the effect of changing current social policies.

Consider a thought experiment. A group of five hundred uneducated others living in poverty talk to and play with their children four hours a day, while a group of five hundred college-trained professional mothers living in economic affluence talk and play with their infants only twenty minutes a day. I am certain that more children in the former

SES

group will fail to graduate from high school or will serve time in prison while more of the latter group will go on to professional vocations. Should that prediction be correct, it does not imply that the early parental play had no benevolent effect; rather, the correct inference is that other conditions correlated with social class have greater influence on school attendance and vocational choice.

The concept of relative fitness in evolutionary biology assumes that the success of any one individual or species in a locale depends not only on its genes and biological-behavioral characteristics but also on the competences of the other individuals or species living in the same ecological niche with whom it competes. Dark-winged moths won out over light-winged ones in the industrial areas of England because their dark color protected them from predation from birds when they alighted on soot-darkened tree trunks. But in rural England, where there was no black soot on the bark of trees, the opposite survival pattern was seen.<sup>19</sup> Similarly, the probability of a child attaining a challenging vocation with dignity and economic security—the analogue of a moth avoiding predation—is enhanced more by rearing in a home with college-educated parents than in a home with parents who were high school dropouts, independent of the experiences of infancy.

Unfortunately every society needs a small number of chiefs but a great many warriors. I recall an anecdote about an older professor and a student who were running from a bear. The student yelled to the professor, who was a few feet in front of him, "The bear is going to catch us and we will be killed unless we run faster." The older man replied, "It is not necessary for me to run faster than the bear, only faster than you."

### Attachment and Uncertainty

The current concern with an infant's attachment to its parent requires a strong faith in connectedness, sensitive periods, and the significance of early social bonds. Although modern Americans believe that a bond of love between an infant and its caretaker is absolutely necessary for healthy development, not every observer of children came to that strong conclusion. Ancient Greeks and Romans were more concerned

with the quality of a nurse's milk than with her affection for the infant. Although Montaigne and Darwin wrote about the human infant, neither bothered to note that an emotional bond to the mother was of special significance. A fifteenth-century wealthy Florentine, Leon Batista Alberti, did not think it important whether a mother or a wet nurse cared for the infant, for it was the father's vigilance and display of proper behavior that determined whether the child would become a virtuous adult.<sup>20</sup>

The seventeenth-century Dutch minister John Robinson was certain that a child needed parental severity more than affection; therefore, fathers were a more significant influence on their children than mothers. "There is running in the breasts of most parents a strong stream of parental affection toward . . . their children . . . which is always dangerous and also harmful."<sup>21</sup> Francis Wayland, an early president of Brown University, published a psychological text in 1835 called *The Elements of Moral Science* which sold over 75,000 copies. The section devoted to the obligations of parents urged them to keep the infant alive, healthy, intellectually vital, and, above all, moral: "Mr. Wayland never mentioned obligation to love them."<sup>22</sup>

These beliefs by presumably intelligent, thoughtful commentators suggest that our contemporary preoccupation with the image of nursing mothers tenderly kissing their serene infants to communicate their love is a product of special historical conditions. One such condition is the anxiety among middle-class Americans created by the large number of working mothers. The idea of paid strangers caring for vulnerable infants deviates from the nature of family life during the first half of this century and violates the notion that infants ought to be—some would say have a right to be—cared for by their biological mothers. Some commentators believe that to do otherwise risks compromising a child's mental health. John Bowlby fed these anxieties in the 1960s: "Crawling uncertainty about the accessibility of responsive attachment figures is a principal condition for the development of an unstable and anxious personality."<sup>23</sup> Bowlby's affirmation of the belief that the infant's secure attachment to the mother influenced the child's future seized the minds and hearts of parents and psychologists.

The swell of enthusiasm for attachment theory was also, in part, an understandable reaction to the excessive cruelties of the Second World War. The atrocities generated a desire among psychologists and psychiatrists for a conception of human nature with less dark, Freudian pessimism. Erik Erikson's creative intuition to replace Freud's oral stage with a stage of trust satisfied this hunger for a more humane, less selfish infant who needed and was receptive to parental love. However, economists and political scientists expressed their revulsion at wartime atrocities in exactly the opposite way. These scholars invented rational choice theory, which claimed that humans always acted to maximize their personal satisfaction. Thus, the Second World War forced Western intellectuals to confront the human capacity for cruelty. Psychologists defended against that raw fact by projecting trust and need for love onto the innocent infant; economists chose to intellectualize this sad insight by projecting selfishness onto adults.

Finally, the economically parasitic role of modern children renders them more needy of reassurance that they are loved than children who perform daily chores. The ten-year-old in a fifteenth-century farming village realized that he was an object of value because he could see that his work made a material contribution to the family's welfare. The ten-year-old son of a middle-class official in eighteenth-century London could not point to a plowed field or high wood pile as a sign of his worthiness and, being more uncertain of his value, was more dependent upon symbolic signs of affection that assured him of his beloved place in his parents' eyes.

Bowlby's decision to use the idea of security to describe the infant's relation to its caretaker was dictated by the same historical conditions that led the poet W. H. Auden to name our century the Age of Anxiety. After the need for food, warmth, sleep, and relief of pain is satisfied, uncertainty fixes the spot where the roving mind dwells. The major source of uncertainty in fifteenth-century European societies, and in many current Third World villages, was whether the infant would live. That worry is muted in industrialized cultures, which have safer water and effective vaccines, and has been replaced with worry over the child's psychological vitality.

A state of uncertainty—Benjamin Franklin used the word *uneasiness*—originates in unexpected or unfamiliar events that are not understood easily or immediately. A mother's continued presence in the home, loyal friends, trusted employers, and faithful spouses, which were more regular features of nineteenth-century life, lost some of their certainty during this century. Adults did not know whom to trust when they moved to new cities next to neighbors they might never meet. The additional threats of world wars, nuclear destruction, violence on the streets, and pollution of air, water, and food made the nurturing of adult certainty imperative. Bowlby sensed that the angst of his historical era was a rupture of family and social bonds, and he guessed that a child's secure attachment to a parent protected her from fear and inculcated her against future uneasiness. Seventeenth-century European parents also wanted their children to be able to cope with anxiety, but they were certain that forcing children to deal with difficulty was a better way to teach resilience than to shower them with affectionate care and protect them from moments of worry.

Different sources of uncertainty became salient during the last half of the century. The cruelties of World War II and Vietnam, increased violence, and the willingness among a majority to accept hedonistic self-interest as an ethical posture have replaced "Man as Machine" with the more chilling metaphor of "Man as Gorilla." We would like to believe that the human wildness we are witnessing around us can be tamed with a few more we have given up the hope that empathy will be sufficient. The loss of attachment serves the same therapeutic function that the philosophy of holism did during the earlier decades of this century. That suggestion does not mean that either idea is without validity. But it does mean that the popularity of the concept of attachment rests on much more than scientific evidence. It thrives on the deep assumption that humans require love more than any other resource and the illusion that we can prevent men from hating others to death by loving them and they are young children. The Japanese rape of Nanking in 1937, cultural revolution in the People's Republic of China in the late 1960s, the mass murders in Bosnia, and the butchery in Rwanda put a final lie to that hope. I suspect that most of the men who committed

those terrible atrocities had loving parents during their childhood

years.

As I indicated in Chapter I, unfamiliar or discrepant events share

some elements with what one knows but are different enough to be

alarming. During the Depression of the 1930s rich families were rare,

and Hollywood took advantage of the natural curiosity about them by

making films about the wealthy. During the last decade poor families of

color have become a discrepant minority, and Hollywood makes films

about these disadvantaged youth in order to attract viewers. The most

acclaimed artists of any historical era are those who anticipated themes

that were about to become nodes of uncertainty in the larger society.

The mood of alienation in T. S. Eliot's *Waste Land*, which was enhanced

among Europeans following the First World War, has become so preva-

lent that the poem has lost some of its initial power. An act of incest be-

tween a caring middle-class Caucasian father and his adolescent daugh-

ter would have threatened American audiences before the Second

World War. But by 1984 the anxiety surrounding this theme had be-

come tame enough to allow a major television network to attract mil-

lions of viewers to a one-hour drama called "Something about Amelia."

And when *Lolita* was first published in Paris in 1955, it was banned in

France the following year. When it was published in the United States

in 1958, *The New York Times* reviewer found it repulsive. Forty-three

years later *Lolita* became a Hollywood movie for the second time.

Shakespeare is rarely boring because his plots deal with universally dis-

crepant ideas—a jealousy that provokes strangling a beloved, incest,

and treachery. Over time the mind/heart, like a butterfly skipping from

flower to flower, finds a new atypicality which recruits attention and

arouses feeling.

One of the new atypicalities is an interest in spirituality. I suspect that

the recent interest in this idea among both scientists and the general

public is due in part to a failure of most new facts to arouse a level of

emotion that was more common a half century ago. Before the Second

World War, and indisputably before the turn of the century, when there

was no World Wide Web and far fewer PhDs, new facts of broad signif-

icance occurred with less frequency; hence each discovery had a greater

...to generate a moment of wonder, awe, or delight. The day after major newspapers reported to the world in 1919 that Arthur Eddington and his research team had discovered that light from the stars appeared to bend as it brushed the sun, affirming a critical prediction of relativity, Einstein became a world hero. The rate of occurrence of equally stunning facts has been far faster during the second half of this century. The contemporary public is barraged weekly with dramatic scientific discoveries, from the pictures of Mars' surface to cloned sheep. There are also retractions of older statements; cosmologists happily report that new evidence indicates that the universe is older than the oldest stars, whereas a few years ago they were embarrassed by data which suggested the opposite. Americans who remain hungry for more knowledge can surf the Web until fully sated. However, the appeal of a fresh fact is correlated with its capacity to generate a tiny jolt of emotion. The plentitude of new knowledge almost guarantees that, except for the small number of scholars working in the field of discovery, most new facts will not provoke much emotion in a majority of citizens. NASA's space missions have become almost routine, and it is unlikely that 5 percent of the public knows the name of anyone who was on the last Apollo mission to the moon. But people remain attracted to ideas that can arouse them. One reason for the new interest in human spirituality is that its source in intuition is radically different from the rational, densely factual nature of science and therefore generates feeling.

A second, independent historical change contributing to the new curiosity about the spiritual face of humanity is that many discoveries in molecular biology and neuroscience appear, on the surface, to mechanize human processes, like reproduction and consciousness, and to rob them of some of the mystery on which their emotional power rests. If a donor ovum from Mary Smith can be fertilized in a petri dish with a sperm from Richard Jones and then implanted in the uterus of surrogate mother Ruth Williams so that Richard Jones's wife can be a mother nine months later, the meaning of parenthood is changed sufficiently to make many citizens feel that the mystery of human existence is disappearing, and with it the feeling of *agape* that infuses the concept of humanness with a sacred quality. It is not surprising therefore that the

erater  
ignif-  
there  
second  
vel of  
eneral  
ct that  
n and  
g from  
incest,  
lly dis-  
I time  
y-three  
d States  
ned in  
mehere  
act mi  
had be  
-Scor  
danger  
voesti  
so pres  
nhamo  
r soci  
d have  
The  
lives  
and  
ctive  
wote  
ugh  
ents  
The  
duty

The gold standard for measuring the quality of attachment in one-to-two-year-old children—called the Strange Situation—is based on Bowlby's assumption that the caretaker's most critical function is to reduce the infant's fear. In this experimental procedure, a mother and child come to an unfamiliar laboratory room for an initial acclimation. The mother then leaves and returns over a series of three-minute episodes. If the child becomes mildly distressed when the mother leaves, but is soothed easily when she returns, the child is said to be "securely attached."

### The Measurement of Attachment

and jet plane is surrounded by a halo of uncertainty. In Europe, even though the functioning of every brain, roof support, structure by their surgeon, architect, or the pilot that flies them to a holiday tensions. These scholars would not tolerate an equally permissive position. Fictional additions make the text more interesting or resolve social willful imagination does not violate any moral constraint, especially if it is not possible to know exactly what happened in the deep past, a little cant feature. Surprisingly, some historians have decided that because truthfulness of a scientific or historical discovery becomes a less significant and, in addition, a title dehumanizing, then the accuracy of empirical truth. If the density of new facts has made each one less part of a sequence of information that is a more permissive attitude toward ited human trait, and that humans will soon be cloned. A second coming that infants can do simple arithmetic, that taking risks is an inherent The media, naturally friendly to exaggeration, have obliged by reporting whisper; contemporary scientists have to scream in order to be heard might have a chance of being heard above the din. Darwin only had a reputation among a small number to hype an empirical discovery so that One unfortunate consequence of the rush of new facts is the temptation Einstein regarded as his greatest pleasure. expected simplicity and the savoring of that aesthetically satisfying alone cannot generate the feeling that accompanies detection of an and a bit of the awe that cannot be felt by surfing the Web. Lists of the community is eager for a return of a sense of specialness to humanity

attached." But if the child seems unconcerned with the mother's departure and, as a result, ignores her when she returns, or if the child becomes very distressed and is not easily soothed upon her return, the child is said to be "insecurely attached" and something is assumed to be wrong with the relationship.<sup>24</sup>

There are several reasons to question these conclusions. The first is that the original study which suggested a relation between maternal sensitivity and a secure attachment in the child was based on 23 infants, of whom only 7 were classified as insecurely attached. A second basis for doubt is that the attachment classifications are not very stable over intervals as short as six months. The third is that the claim that the mother and infant, who have been together for over a year, have experienced pain, pleasure, joy, and distress, and the infants' representations of and behavioral reactions to the mother must contain aspects of all these experiences. Is it reasonable to believe that a half-hour sample of behavior in an unfamiliar laboratory room could reveal the history of all these experiences with the mother? Could any thirty-minute observation uncover psychological products created from over six thousand hours of interaction between these partners?

But there are other problems. When a mother leaves her infant in an unfamiliar place, between about 15 and 20 percent are temperamentally leveled to become extremely fearful when faced with this discrepancy, especially if a stranger is in the room. These excessively fearful infants are not easily soothed when the mother returns and are labeled insecurely attached, even though they may have had sensitive, predictable mothers. They are simply temperamentally prone to become very fearful when unfamiliar events occur. In Mary Ainsworth's original study, sensitive irritability at home was the best predictor of a resistant-hour attachment. Further, children who have been attending day-care centers from an early age have become accustomed to their mothers leaving them in an unfamiliar place and are less likely to cry when the mother leaves. Because they are minimally fearful during the mother's brief absence, they continue to play when she returns. However, they, too, are called insecurely attached.

MS

One investigator who observed mother-infant pairs in their homes during the first year found that the children's behavior in the Strange Situation—whether securely or insecurely attached—was not related to the mother's sensitivity but rather to the child's temperament. The extremely irritable, fearful infants were most likely to be classified as resistant-insecurely attached, while those who were easy to care for were more often classified as securely attached. Indeed, the best predictor of this type of attachment was the display of wariness to the stranger:<sup>25</sup>

Another reason for skepticism is that serious differences in forms of rearing do not always affect the child's behavior in the Strange Situation. About two-thirds of a sample of over one thousand children from ten different cities behaved in the Strange Situation as if they were securely attached. But, surprisingly, it made no difference whether these children were cared for at home, attended a day care center, or were sent to a relative for most of the day.<sup>26</sup> This result is glaringly inconsistent with the belief that this laboratory procedure measures the quality of a young child's emotional attachment to a mother who was or was not sensitive and predictable. Indeed, over half of a large number of studies conducted by scientists working in different cities found no significant relation between the sensitivity of the mother's care and the security of her child's attachment.<sup>27</sup>

Robert Le Vine, a cultural anthropologist, argues that the child's behavior in the Strange Situation can be the product of the socialization received during the prior months. For example, mothers living in a town in northern Germany, who love their infants, nevertheless believe that children must learn to be self-reliant—the word in German is *Selbstständigkeit*—and they worry about spoiling them. (Sixteenth-century German parents held the same ethic, for ten- and eleven-year-old sons of wealthy families were often sent to apprentice in families living several hundred miles away in order to prepare them for life.)<sup>28</sup> The German mothers typically do not go into the bedroom when the infant wakes so that the child will learn to comfort herself. These mothers also leave their infants alone for an hour or two when they go shopping or do an errand; no one in the community criticizes this practice.

These experiences teach infants that catastrophe does not occur

cf  
Scheffer  
2002

when the mother is absent; hence, most infants extinguish a tendency to cry when the mother is not present. It should not be surprising, therefore, that about one-half of these infants were classified as Type A-insecurely attached—whereas only 25 percent of middle-class American infants receive this classification. When we add the Type C-insecurely attached children to those in Type A, then two-thirds of German children in this town would be classified as insecurely attached, compared with one-third for the United States. It is unlikely that two-thirds of these German children are at risk for future anxiety or maladaptive symptoms because of insecure attachments. Hence, the claim that insecurely attached children are at psychological risk because they do not have sensitive mothers is an ethical judgment as to which maternal behaviors and infant reactions to parental absence are considered the most virtuous.<sup>29</sup>

There are many reasons, therefore, to question the claim that a one-year-old child's behavior in the Strange Situation captures accurately the complexity of the infant's emotional relationship to its parents over the prior twelve months. This skeptical conclusion leaves psychologists in the uncomfortable position of believing in the usefulness of the concept of attachment but of having no sensitive way to measure it. This state of affairs illustrates a truth that applies to all of the sciences: namely facts, theories, and procedures are inextricably bound together. Some one-to-two-year-old children do not cry when their mother leaves them and do not look at or approach the parent when she returns a few minutes later. That fact is subject to different interpretations. If the context is an unfamiliar laboratory, then the psychologists fond of attachment theory claim that the child's behavior reflects a history of insensitive parenting. That claim has meaning only when the observed behavior occurs as part of the technical procedure called the Strange Situation. If we changed the context of observation to the home or changed the theory so that it referred to the parental practices that lead a child to adapt to temporary separation, a different, equally reasonable, interpretation is possible.

Some psychologists have become persuaded that the nature of the infant's attachment is transformed over time into a set of beliefs, called a

"working model," that can be detected by asking adults to reminisce about their childhood.<sup>30</sup> The belief that the coherence of a woman's narration of her childhood memories might contain transformations of experiences that occurred during her infancy, and that this narrative might, in turn, be a useful tool for determining how the woman herself would respond to her infant, has met minimal opposition because the concept of attachment has become so attractive. Yet no scientist would look for remnants of the one-word sentences of eighteenth-month-olds in the linguistic competence of adults. Nor would most psychologists claim that an adult's conception of friendship contained derivatives of their experiences in a day care center. Yet the reasonableness of these assumptions about working models often goes unquestioned. Few investigators have bothered to ask whether the mother's verbal sophistication, temperament, and ease or tension with an unfamiliar interviewer might influence the form of her narrative. These problems have been ignored because of the wish to believe that the quality of the mother's recall of her past provides a deep insight into her current personality and how she cares for her infant.

This speculative hypothesis demands, first, that the sentences spoken to an interviewer correspond closely to the psychological structures that are at the foundation of her personality. This assumption invites serious skepticism. Most sentences, spoken or written, are novel and constructed from components whose form still eludes us. The exceptions are well-rehearsed units like "Thank you" or "How are you?" as well as sentences that had been memorized like, "Four score and seven years ago." But most of the sentences that represent a person's memories of the past are novel creations. They did not exist before they were uttered and were patched together from psychological structures that do not resemble the structure of the spoken sentences. Further, it is well known that some adults possess a personality that exaggerates the stressful and dysphoric qualities of past experience. These four meta-choices will recall less satisfying childhoods but not necessarily because they actually had a less loving family.

The words alone, without information on tone of voice, facial expression, and bodily posture, do not possess a clear, unequivocal meaning.

That is why novelists always add this information. Imagine *Anna Karenina* as consisting only of a series of speeches by the characters. No printed text of a great play comes close to conveying the author's intention—that is why we go to the theater.

A person's narrative of her past does not always reveal the mental states that produced the story. Wittgenstein's two great insights were that there need not be a complex meaning behind every utterance nor a referent in experience for every sentence. Consider facial expressions as

an analogy. A mother's frown intended to communicate disapproval of her child's actions is the product of changes in the neurons of the motor cortex which innervate the facial nerve which, in turn, produces a contraction of the facial muscles. The intention to communicate disapproval is missing from this description of the neuroanatomy and neurophysiology of the facial expression.

Similarly, it is not obviously true that the ideas which lie behind the sentences "My mother was loving" or "I was anxious as a child" are either memory traces from an earlier time or a reflection of the person's feelings at the moment. We acknowledge that seducers and politicians utter flattering sentences that are not faithful either to their beliefs or to their feelings. Kind parents will smile and praise a child who has failed a task several times, even though their initial impulse is to be critical and their mood is one of sadness.

We perceive an American flag fluttering in the wind as a unity, but neuroscientists have learned that the shape, color, and movement of the flag are initially processed in different parts of the brain. Similarly, the explicit meanings, implicit associations, and feelings that are linked to the words strung together in a sentence probably originate in different parts of the mind/brain. Sentences are opaque with respect to their psychological origins. When a 25-year-old woman says, "My mother was loyal to all of her family," the interviewer cannot know the feelings associated with that sentence nor the speaker's implicit associations with the term "loyal," nor even whether the phrase "all of the family" refers to the children and husband, or perhaps all of the mother's relatives. If the latter, the speaker may intend to say that her mother gave too much attention to her parents and siblings and not enough to her own

children. Scientists who rely only on verbal evidence have been ingenious in assuming, without supporting evidence, that the psychological meanings of sentences are transparent.

None of the few studies that actually followed a large group of white middle-class children from infancy to age eighteen supports this skepticism. One-year-old children were observed in the Strange Situation and classified as having either a secure or an insecure attachment to their parents. When these children were eighteen years old, they were asked to reminisce about their earlier lives, and these narratives were scored for the adolescent's working model. Two important results emerged: First, the child's security of attachment at one year did not reliably predict the quality of the eighteen-year-old narratives; securely attached adults were not especially likely to produce coherently organized memories of the past that were full of serenity, predictability, and care. However, if the parents had been divorced during later childhood—which occurred for 16 percent of the group—the adult narratives revealed insecurity, and the eighteen-year-olds described themselves as anxious. Thus, stressful experiences during later childhood were the primary determinants of the young adult's memories, not the security of their attachment at one year of age.<sup>31</sup>

The scholars who ask parents to talk about their past believe that these memories are correlated with psychological structures that control the parents' ministrations to her infant. This premise resembles the belief held by psychologists in the 1950s that a parent who perceived female genitals on Card 10 of the Rorschach ink blot test was a schizophrenic. The age, social class, ethnicity, temperament, and verbal sophistication of the parent are assumed, without evidence, to have minimal influence on the coherence of the mother's reminiscence—a flagrant display of unconstrained predicates. It brings to mind a Harvard student who in 1964 was seeking admission to a New York medical school and who told me that the faculty member interviewing him asked him to draw a person. He did not understand the reason for the request and asked himself what kind of drawing might impress the interviewer. He remembered from a freshman psychology course taken four years earlier a procedure called the Goodenough Draw-A-

Man Test. Unfortunately, he had forgotten that it was a test of children's intelligence, and was inappropriate for adults. He only remembered that the more items placed in a drawing, the more intelligent the person. Therefore the student put everything into the drawing—teeth, mustache, eyeglasses, belt buckle, suspenders, shoelaces—and did not understand why the interviewer looked so serious when he handed him the drawing. The student did not realize that the faculty member had administered the Machover Draw-A-Person Test, which assumed that the addition of many elements was indicative of a serious neurosis.

Some attachment theorists acknowledge that the state of being securely or insecurely attached in a one-year-old can be altered by subsequent experiences. Alan Sroufe notes: "We would not expect a child to be permanently scarred by early experiences or permanently protected from environmental assaults. Early experience can not be more important than later experience and life in a changing environment should alter the quality of a child's adaptation." But in another place, Sroufe and Elizabeth Carlson write that the different patterns of infant attachment can influence later self-regulation of emotion: "What is incorporated from the caregiving experiences are not specific behavioral features, but the quality and patterning of relationships, mediated by affect." "Attachment organization is . . . a system of internal structures . . . that emerge with development and provide the basis of personality functioning."<sup>12</sup> These last two statements retreat a bit from the belief in malleability implied in the first quotation. However, these inconsistencies are common in scientific fields, like psychology, that rest on weak evidence. Biologists at the turn of the century believed in both localization of brain function and holism.

### The Difficulties of Rejecting Determinism

Sciences differ in the robustness of their most fundamental assumptions and empirically based principles. Physics is always held up as the model of good science. If the moon's position in the sky for the next seven nights deviated from its expected place, the universality of the inverse

square law would be questioned. If water failed to boil after being placed on a hot fire for an hour, the gas laws would be reexamined. Hundreds of other imagined anomalies would threaten the foundations of the physical sciences if they were actually observed. Even in the life sciences, where fewer universal laws pertain, some events would shock all of us. If a cat gave birth to piglets, we would question the genetic principles of inheritance; if a person did not age, we would question the theory of cell metabolism.

When we ask the same question of psychology, however, we are embarrassed by the dearth of anomalies that would pose a threat to the field's fundamental principles. The concept of conditioning is among the most robust ideas in psychological science. Yet some animals do not condition easily, some habits cannot be conditioned, and the conditioning of motor behavior and heart rate does not follow the same time course. Thus, if a scientist discovered that a certain strain of mice could not be conditioned to freeze at the sound of a tone that was previously associated with shock, no one would reject the principles of conditioning. They would simply note an exception to the rule.

Many scientists would be surprised if someone reported that the occurrence of a particular reaction in a fetus predicted, better than chance, criminal behavior in adulthood. But that claim would not require questioning of any current assumptions. Unfortunately, neither would the opposite claim—that no fetal reaction predicted criminality. The challenge is to think of *any* human behavior that would force psychologists to question a current premise. I can think of very few, other than a small number of phenomena in human perception and memory. If this evaluation is correct, then psychology has a degree of immaturity that makes it easy for a theorist to declare that the events of the first year have a continuing influence on the child's future.

The absence of consensus on a small set of psychological outcomes we wish to explain makes it easy to award influence to early experience. Nineteenth-century naturalists agreed that it was important to understand the enormous variety among plants and animals. That was the problem Darwin tried to solve. No comparable agreement has been reached on the derivatives of early experience that should be given the

highest priority: Are they specific cognitive abilities, psychiatric symptoms, fame, wealth, a good marriage, parenting success, a satisfying sex-life, capacity for love, meaningful work, loyal friends, or simply a subjective feeling of well-being? The lack of accord among clinicians, humanists, or scientists as to which quality—or qualities—has the tightest link to specific early experiences makes either refuting the determinist's claim or proving it correct impossible. Psychologists are left in the unhappy position of suspecting that some parts of the adult profile are traceable to the early years but being unsure which aspects of that profile have the tightest connections to the past. The absence of specificity makes it easy to treat as true the vague claim, "Early experience affects the adult's future."

The most convincing evidence in favor of infant determinism comes from experiments with laboratory animals. In a few experiments taken

from the hippocampus of the animal is altered permanently, and the adult is less easily stressed by new surroundings than rat pups who were left with their mother undisturbed.<sup>33</sup> In another experiment, scientists painted the tears of nursing rats with a distinct orange scent so that the infants would associate the scent with whatever state accompanied feeding. When these rats reached puberty and were placed with sexually females who had been painted with the same scent, they were sexually more aroused by these scented females than were males who had been nursed by unscented mothers.<sup>34</sup> Once again, early experience influenced the future in a measurable way.

However, these rats lived in quiet laboratory rooms, with a regular supply of food and water and no predators. They were protected from the events that normally occur in the animal's natural habitat. If the rats had been returned to their natural environments, perhaps the products of their infant experience would not have been preserved; artificial conditions can create artificial facts.

Equally strong connections between the experiences of human infants and later outcomes are more difficult to demonstrate because children cannot be subjected to this degree of experimental control. Some natural experiments are suggestive, however. For example, many

middle-class mothers living in parts of Holland follow their doctors' advice and place their tightly swaddled infants in bedrooms with closed doors and no toys because they believe that an austere environment creates good character. Although the one-year-olds reared under these conditions are a trifle less mature in the attainment of the milestones of infancy than children in other parts of the country who are not reared this way, by five years of age no psychological effect of the early experience can be found.<sup>35</sup>

A group of institutionalized infants in Iowa were cared for by over two dozen different adults in the first year of life before they were adopted. However, these children did not differ from normally reared children when both groups were assessed between eight and seventeen years of age. Further, if infants reared in an unstimulating institutionalized environment without a stable attachment figure were adopted before the second birthday, their future development appeared to be normal.

Similarly, some young children orphaned during the Second World War were adopted by middle-class Americans. When psychiatrists and psychologists assessed them several years after they had been living in their new families, most were free of anxiety and appeared to resemble normally reared American children. "The thing that is most impressive is that with only a few exceptions they do not seem to be suffering either from frozen affects or the indiscriminate friendliness that Bowlby describes . . . The relationships to their adopted families are genuinely affectionate . . . The present results indicate that for the child suffering extreme loss the chances for recovery are far better than had previously been expected."<sup>36</sup>

More recently, a group of children who had spent their first year in orphanages in Romania<sup>37</sup> were adopted by nurturant British parents. When they arrived in London, they were emaciated and psychologically retarded, as one would expect, given their harsh experiences. However, when they were evaluated several years after their adoption, a majority, though not all, were similar in their intellectual profile to the average British child.<sup>37</sup>

Although the evidence does not support infant determinism, an appeal to reason is also persuasive. The thousands of infants who will be

born today across the world will experience very different environments in their first two years. Some will be raised by surrogate caretakers on kibbutzim; some will be cared for by grandmothers or older sisters; some will attend day care centers; some will remain at home with their mothers. Some will have many toys; some will have none. Some will spend the first year in a dark, quiet hut wrapped in old rags; some will crawl in brightly lit rooms full of toys, picture books, and television images. But despite this extraordinary variation in early experience, excluding the small proportion with serious brain damage or a genetic defect, most will speak before they are two years old; become self-conscious by the third birthday, and be able to assume some family responsibilities by age seven. The psychological differences among these children are trivial when compared with the long list of similarities: the prevalence of serious mental disorders like schizophrenia and depression, as well as the less impairing anxiety disorders, is surprisingly similar around the world; even though children are being reared in different environments. This fact is not consistent with the awarding of significance to the first two years, at least for the development of these particular symptoms.

All animals possess a powerful, genetically based bias to develop the behaviors that are definitive of their species. It is difficult, although possible, to arrange early life conditions so that a bird will not sing its characteristic song or a monkey will fail to mate. Humans are prepared by their biology to form friendships, fall in love, cope with fear, and cry, continually, to move toward their prized goals, despite early experiences that might make these attainments hard to accomplish. These urges are remarkably difficult to subdue.

The advocates of infant determinism, however, insist that a temporal sequence of developmental products, with relatively high transitional probabilities between stages, leads to a particular outcome in adolescence or adulthood. Attachment theorists maintain that an insecurely attached infant has a greater-than-chance probability of being a fearful three-year-old; and, in turn, a fearful three-year-old has a greater-than-chance probability of being a shy, timid seven-year-old. The implicit assumption is that the structures acquired in the first stage influence the

subsequent ones. If the first phase were different, the outcome would necessarily be altered. However, for many sequences in nature, the first stage can be altered without necessarily changing the final result. A fertilized egg normally develops in the womb in which it was fertilized. But we know that if an egg is fertilized outside a uterus and implanted in a woman's body (and not always the body of the woman who supplied the egg), the outcome—a healthy fetus—is very similar to what it would have been if the first stage had been the traditional one.

Let us assume, for the moment, that the attachment theorists are correct in claiming that a mother who is insensitive to her infant's needs will produce an insecurely attached one-year-old. But it does not follow that the insecure attachment in the first year is responsible for a troublesome outcome in adolescence. Mothers who must work full-time to support their family, mothers who did not want the child, and mothers who are depressed should be less sensitive and therefore should create insecurely attached children. If the children born to these three different types of mothers remained in their natal homes, which is usually the case, each would continue to be exposed to a harassed, rejecting, or depressed parent, and the similarity of the continuing environments could produce an anxious, timid older child. But the culprit is a long, repeated history of experience, not simply the events of the first year.

The contents of the mind consist of perceptual representations of experience, which are easily altered by new events, and symbolic concepts, which are more difficult to change. Only one exposure to the beard of an uncle who did not have facial hair a month earlier can transform a four-year-old's perceptual representation of the older man. But her belief that snow is white cannot be changed easily by repeating one hundred times "Snow is red." Infants, unlike four-year-olds, have no symbolic concepts like "Snow is white." They possess only the perceptual representations that are vulnerable to alteration.<sup>38</sup>

Although very few prospective longitudinal studies have followed infants to adulthood, the few investigators who have done so failed to find convincing support for early determinism. One group of scientists followed 89 middle-class children living in southeastern Ohio. The infants and children were observed at home, in school, and in laboratory set-

ings. The small number of adults who displayed serious psychological symptoms later in life did not show atypical behavior in the first two years. One girl who had a schizophrenic breakdown when she went to college could not be distinguished from others in the sample during the first three years of life.<sup>39</sup>

The best predictor of later psychological problems in a group of over six hundred children born on the island of Kauai and followed until they were over thirty years of age was continued residence in a family of poverty, combined with prematurity or other biological stress surrounding birth. But because even this combination was not very predictive of future symptoms, the authors wrote, "As we watched these children grow from babyhood to adulthood, we could not help but respect the self-righting tendencies within them that produced normal development under all but the most persistently adverse circumstances."<sup>40</sup>

A group of 42 adults had been reared in residential nurseries in Great Britain for their first two years. Some were adopted into relatively stable, nurturant homes after the second birthday, while others returned to their biological parents. As adolescents and young adults, the adopted children were less likely to display criminal behavior than those who had been returned to their biological parents. Because both groups of children had similar experiences during the first two years, it is fair to conclude that experiences after age two were more influential in producing the criminal behavior than events of the first two years.<sup>41</sup>

Equally convincing is a study of a large number of Swiss children born to unmarried, poorly educated immigrant parents. They spent their first year in an impoverished residential nursery where stimulation was minimal and caretakers were changed often—risk factors that should be associated with an insecure attachment and later psychological problems. The 137 children were studied again when they were fourteen years old. Although most of these adolescents had average intelligence and were popular with friends, an unexpectedly large number were extremely sensitive, dysphoric, or anxious, compared with most adolescents living in the same city. However, these affective symptoms were most frequent in those who had been physically abused or spent their postnancy years with step-parents or biological parents who

quarrelled frequently. The children who had spent their first year in the same depriving nursery but had been sent later to benevolent homes did not show the dysphoria or anxiety that characterized the former group and were similar to the majority of Swiss children raised with nurturant parents from birth.<sup>42</sup>

Thus, the development of anxiety and depression in some of the adolescents was attributable to experiences that occurred *after* they had left the nursery, that is, after the period of infancy was over. This finding led the author to suggest that pessimism about a child's future because the first year was spent in a less than optimal environment is unwarranted. Even Freud had to recognize the resilience of "Little Hans"—the boy with a phobia of horses. Upon meeting Hans a dozen years later, Freud encountered a well-adjusted youth of nineteen years who suffered from neither excessive conflict nor inhibition.

Jean MacFarlane, who conducted a long-term longitudinal study of children born in Berkeley, California, realized that her predictions of adult personality from the child's characteristics were usually inaccurate. She concluded, "It seems clear that we overweighted the trouble-some and the pathogenic aspects and underweighted elements that were maturity inducing . . . we had not sensed that continuous patterns would be modified or converted into almost the opposite characteristics."<sup>43</sup> The child psychiatrist Michael Rutter agrees: "The ill effects of early traumas are by no means inevitable or irrevocable . . . the evidence runs strongly counter to views that early experiences irrevocably change personal development."<sup>44</sup>

### The Child's Interpretation of Experience

No scientist has demonstrated that particular experiences in the first two years produce a particular adult outcome in even, say, one-fifth of those exposed to that experience. Attendance at an infant day care center does not produce children who are very different from those raised at home, if the children come from the same social class and ethnic background. The few successful predictors of adult psychopathology are more closely associated with the child's biology and continued