

Chapter 19

Children

"THE NATURE-NURTURE DEBATE IS OVER." So begins a recent article with a title—"Three Laws of Behavior Genetics and What They Mean"—as audacious as its opening sentence.¹ The nature-nurture debate is, of course, far from over when it comes to identifying the endowment shared by all human beings and understanding how it allows us to learn, which is the main topic of the preceding chapters. But when it comes to the question of what makes people within the mainstream of a society different from one another—whether they are smarter or duller, nicer or nastier, bolder or shyer—the nature-nurture debate, as it has been played out for millennia, really is over, or ought to be.

In announcing that the nature-nurture debate is over, the psychologist Eric Turkheimer was not just using the traditional mule-trainer's technique of getting his subjects' attention, namely whacking them over the head with a two-by-four. He was summarizing a body of empirical results that are unusually robust by the standards of psychology. They have been replicated in many studies, several countries, and over four decades. As the samples grew (often to many thousands), the tools were improved, and the objections were addressed, the results, like the Star-Spangled Banner, were still there.

The three laws of behavioral genetics may be the most important discoveries in the history of psychology. Yet most psychologists have not come to grips with them, and most intellectuals do not understand them, even when they have been explained in the cover stories of newsmagazines. It is not because the laws are abstruse: each can be stated in a sentence, without mathematical paraphernalia. Rather, it is because the laws run roughshod over the Blank Slate, and the Blank Slate is so entrenched that many intellectuals cannot comprehend an alternative to it, let alone argue about whether it is right or wrong.

Here are the three laws:

- The First Law: All human behavioral traits are heritable.
- The Second Law: The effect of being raised in the same family is smaller than the effect of the genes.
- The Third Law: A substantial portion of the variation in complex human behavioral traits is not accounted for by the effects of genes or families.

The laws are about what make us what we are (compared with our compatriots) and thus they are about the forces that impinge on us in childhood, the stage of life in which it is thought that our intellects and personalities are formed. "Just as the twig is bent, the tree's inclined," wrote Alexander Pope. "The child is father of the man," wrote Wordsworth, echoing Milton's "The childhood shows the man as morning shows the day." The Jesuits used to say, "Give me the child for the first seven years, and I'll give you the man," and the motto was used as the tag line of the documentary film series by Michael Apted that follows a cohort of British children every seven years (*Seven Up*, *Fourteen Up*, and so on). In this chapter I will walk you through the laws and explore what they mean for nature, nurture, and none of the above.

THE FIRST LAW: *All human behavioral traits are heritable.* Let's begin at the beginning. What is a "behavioral trait"? In many studies it is a stable property of a person that can be measured by standardized psychological tests. Intelligence tests ask people to recite a string of digits backwards, define words like *reluctant* and *remorse*, identify what an egg and a seed have in common, assemble four triangles into a square, and extrapolate sequences of geometric patterns. Personality tests ask people to agree or disagree with statements like "Often I cross the street in order not to meet someone I know," "I do not blame a person for taking advantage of someone who lays himself open to it," "Before I do something I try to consider how my friends will react to it," and "People say insulting and vulgar things about me." It sounds dodgy, but the tests have been amply validated: they give pretty much the same result each time a person is tested, and they statistically predict what they ought to predict reasonably well. IQ tests predict performance in school and on the job, and personality profiles correlate with other people's judgments of the person and with life outcomes such as psychiatric diagnoses, marriage stability, and brushes with the law.²

In other studies behavior is recorded more directly. Graduate students hang out in a schoolyard with a stopwatch and clipboard observing what the children do. Pupils are rated for aggressiveness by several teachers, and the ratings are averaged. People report how much television they watch or how many cigarettes they smoke. Researchers tally cut-and-dried outcomes such as high school graduation rates, criminal convictions, or divorces.

Once the measurements are made, the *variance* of the sample may be

calculated: the average squared deviation of each person's score from the group mean. The variance is a number that captures the degree to which the members of a group differ from one another. For example, the variance in weight in a sample of Labrador retrievers will be smaller than the variance in weight in a sample that contains dogs of different breeds. Variance can be carved into pieces. It is mathematically meaningful to say that a certain percentage of the variance in a group overlaps with one factor (perhaps, though not necessarily, its cause), another percentage overlaps with a second factor, and so on, the percentages adding up to 100. The degree of overlap may be measured as a correlation coefficient, a number between -1 and $+1$ that captures the degree to which people who are high on one measurement are also high on another measurement. It is used in behavioral genetic research as an estimate of the proportion of variance accounted for by some factor.³

Heritability is the proportion of variance in a trait that correlates with genetic differences. It can be measured in several ways.⁴ The simplest is to take the correlation between identical twins who were separated at birth and reared apart. They share all their genes and none of their environment (relative to the variation among environments in the sample), so any correlation between them must be an effect of their genes. Alternatively, one can compare identical twins reared together, who share all their genes and most of their environment, with fraternal twins reared together, who share half their genes and most of their environment (to be exact, they share half of the genes that vary among the people within the sample—obviously they share *all* the genes that are universal across the human species). If the correlation is higher for pairs of identical twins, it presumably reflects an effect of the extra genes they have in common. The bigger the difference between the two correlations, the higher the heritability estimate. Yet another technique is to compare biological siblings, who share half their genes and most of their environment, with adoptive siblings, who share none of their genes (among those that vary) and most of their environment.

The results come out roughly the same no matter what is measured or how it is measured. Identical twins reared apart are highly similar; identical twins reared together are more similar than fraternal twins reared together; biological siblings are far more similar than adoptive siblings.⁵ All this translates into substantial heritability values, generally between .25 and .75. A conventional summary is that about half of the variation in intelligence, personality, and life outcomes is heritable—a correlate or an indirect product of the genes. It's hard to be much more precise than that, because heritability values vary within this range for a number of reasons.⁶ One is whether measurement error (random noise) is included in the total variance to be explained or is estimated and pulled out of the equation. Another is whether *all* the effects of the genes are being estimated or only the *additive* effects: the ones that exert the same influ-

ence regardless of the person's other genes (in other words, the genes for traits that breed true). A third is how much variation there was in the sample to begin with: samples with homogeneous environments give large heritability estimates, those with varied environments give smaller ones. A fourth is when in the person's lifetime a trait is measured. The heritability of intelligence, for example, *increases* over the lifespan, and can be as high as .8 late in life.⁷ Forget "As the twig is bent"; think "Omgod, I'm turning into my parents!"

"All traits are heritable" is a bit of an exaggeration, but not by much.⁸ Concrete behavioral traits that patently depend on content provided by the home or culture are, of course, not heritable at all: which language you speak, which religion you worship in, which political party you belong to. But behavioral traits that reflect the underlying talents and temperaments *are* heritable: how proficient with language you are, how religious, how liberal or conservative. General intelligence is heritable, and so are the five major ways in which personality can vary (summarized by the acronym OCEAN): openness to experience, conscientiousness, extroversion-introversion, antagonism-agreeableness, and neuroticism. And traits that are surprisingly specific turn out to be heritable, too, such as dependence on nicotine or alcohol, number of hours of television watched, and likelihood of divorcing. Finally there are the Mallifert brothers in Chas Addams's patent office and their real-world counterparts: the identical twins separated at birth who both grew up to be captains of their volunteer fire departments, who both twirled their necklaces when answering questions, or who both told the researcher picking them up at the airport (separately) that a wheel bearing in his car needed to be replaced.

I once watched an interview in which Marlon Brando was asked about the childhood influences that made him an actor. He replied that identical twins separated at birth may both use the same hair tonic, smoke the same brand of cigarettes, vacation on the same beach, and so on. The interviewer, Connie Chung, pretended to snore as if she were sitting through a boring lecture, not realizing that he was answering her question—or, more accurately, explaining why he couldn't answer it. As long as the heritability of talents and tastes is not zero, none of us has any way of knowing whether a trait has been influenced by our genes, our childhood experiences, both, or neither. Chung is not alone in her failure to understand this point. The First Law implies that any study that measures something in parents and something in their biological children and then draws conclusions about the effects of parenting is worthless, because the correlations may simply reflect their shared genes (aggressive parents may breed aggressive children, talkative parents talkative children). But these expensive studies continue to be done and continue to be translated into parenting advice as if the heritability of all traits were zero. Perhaps Brando should be asked to serve on grant review panels.

Behavioral genetics does have its critics, who have tried to find alternative

interpretations for the First Law. Perhaps children separated at birth are deliberately placed in similar adoptive families. Perhaps they have contact with each other during their separation. Perhaps parents expect identical twins to be more alike and so treat them more alike. Twins share a womb, not just their genes, and identical twins sometimes share a chorion (the membrane surrounding the fetus) and a placenta as well. Perhaps it is their shared prenatal experience, not their shared genes, that makes them more alike.

These possibilities have been tested, and though in some cases they may knock down a heritability estimate by a few points, they cannot reduce it by much.⁹ The properties of adoptive parents and homes have been measured (their education, socioeconomic status, personalities, and so on), and they are not homogeneous enough to force identical twins into the same personalities and temperaments.¹⁰ Identical twins are not earmarked for homes that both encourage twirling necklaces or sneezing in elevators. More important, the homes of identical twins who were separated at birth are no more similar than the homes of fraternal twins who were separated at birth, yet the identical twins are far more similar.¹¹ And most important of all, differences in home environments do not produce differences in grown children's intelligence and personality anyway (as we shall see in examining the Second Law), so the argument is moot.

As for contact between separated twins, it is unlikely that an occasional encounter between two people could revamp their personality and intelligence, but in any case the amount of contact turns out to have no correlation with the twins' degree of similarity.¹² What about the expectations of parents, friends, and peers? A neat test is provided by identical twins who are mistakenly thought to be fraternal until a genetic test shows otherwise. If it is expectations that make identical twins alike, these twins should not be alike; if it is the genes, they should be. In fact the twins are as alike as when the parents know they are identical.¹³ And direct measures of how similarly twins are treated by their parents do not correlate with measures of how similar they are in intelligence or personality.¹⁴ Finally, sharing a placenta can make identical twins more *different*, not just more similar (since one twin can crowd out the other), which is why studies have shown little or no consistent effect of sharing a placenta.¹⁵ But even if it were to make them more similar, the inflation of heritability would be modest. As the behavioral geneticist Matt McGue noted of a recent mathematical model that tried to use prenatal effects to push down heritability estimates as much as possible, "That the IQ debate now centers on whether IQ is 50% or 70% heritable is a remarkable indication of how the nature-nurture debate has shifted over the past two decades."¹⁶ In any case, studies comparing adoptees with biological siblings don't look at twins at all, and they come to the same conclusions as the twin studies, so no peculiarity of twinhood is likely to overturn the First Law.

Behavioral genetic methods do have three built-in limitations. First, studies of twins, siblings, and adoptees can help explain what makes people different, but they cannot explain what people have in common, that is, universal human nature. To say that the heritability of intelligence is .5, for example, does not imply that half of a person's intelligence is inherited (whatever that would mean); it implies only that half of the *variation* among people is inherited. Behavioral genetic studies of pathological conditions, such as those discussed in Chapters 3 and 4, *can* shed light on universal human nature, but they are not relevant to the topics of this chapter.

Second, behavioral genetic methods address variation within the group of people being examined, not variation *between* groups of people. If the twins or adoptees in a sample are all middle-class American whites, a heritability estimate can tell us about why middle-class American whites differ from other middle-class American whites, but not why the middle class differs from the lower or upper class, why Americans differ from non-Americans, or why whites differ from Asians or blacks.

Third, behavioral genetic methods can show only that traits *correlate* with genes, not that they are directly caused by them. The methods cannot distinguish traits that are relatively direct products of the genes—the result of genes that affect the wiring or metabolism of the brain—from traits that are highly indirect products, say, the result of having genes for a certain physical appearance. We know that tall men on average are promoted in their jobs more rapidly than short men, and that attractive people on average are more assertive than unattractive ones.¹⁷ (In one experiment, subjects undergoing a fake interview had to cool their heels when the interviewer was called out of the room by a staged interruption. The plain-looking subjects waited nine minutes before complaining; the attractive ones waited three minutes and twenty seconds.)¹⁸ Presumably people defer to tall and good-looking people, and that makes them more successful and entitled. Height and looks are obviously heritable, so if we didn't know about the effects of looks, we might think that these people's success comes directly from genes for ambition and assertiveness instead of coming indirectly from genes for long legs or a cute nose. The moral is that heritability always has to be interpreted in the light of all the evidence; it does not wear its meaning on its sleeve. That having been said, we know that the heritability of personality cannot, in fact, be reduced to genes for appearance. The effects of looks on personality are small and limited; blond jokes notwithstanding, not all attractive women are vain and entitled. The heritability of personality traits, in contrast, is large and pervasive, too large to be explained away as a by-product of looks.¹⁹ And as we saw in Chapter 3, personality traits can in some cases be tied to actual genes with products in the nervous system. With the completion of the Human Genome Project, it is likely that geneticists soon will be discovering more of those linkages.

The First Law is a pain in the neck for radical scientists, who have tried unsuccessfully to discredit it. In 1974, Leon Kamin wrote that "there exist no data which should lead a prudent man to accept the hypothesis that IQ test scores are in any degree heritable," a conclusion he reiterated with Lewontin and Rose a decade later.²⁰ Even in the 1970s the argument was tortuous, but by the 1980s it was desperate and today it is a historical curiosity.²¹ As usual, the attacks have not always come in dispassionate scholarly analyses. Thomas Bouchard, who directed the first large-scale study of twins reared apart, is one of the pioneers of the study of the genetics of personality. Campus activists at the University of Minnesota distributed handouts calling him a racist and linking him to "German fascism," spray-painted slogans calling him a Nazi, and demanded that he be fired. The psychologist Barry Mehler accused him of "rehabilitating" the work of Josef Mengele, the doctor who tormented twins in the Nazi death camps under the guise of research. As usual, the charges were unfair not just intellectually but personally: far from being a fascist, Bouchard was a participant in the Berkeley Free Speech Movement of the 1960s, was briefly jailed for his activism, and says he would do it again today.²²

These attacks are transparently political and easy to discount. More pernicious is the way that the First Law is commonly interpreted: "So you're saying it's all in the genes," or, more angrily, "Genetic determinism!" I have already commented on this odd reflex in modern intellectual life: when it comes to genes, people suddenly lose their ability to distinguish 50 percent from 100 percent, "some" from "all," "affects" from "determines." The diagnosis for this intellectual crippling is clear: if the effects of the genes must, on theological grounds, be zero, then all nonzero values are equivalently heretical.

But the worst fallout from the Blank Slate is not that people misunderstand the effects of the genes. It is that they misunderstand the effects of the environment.

THE SECOND LAW: *The effect of being raised in the same family is smaller than the effect of the genes.* By now you appreciate that our genes play a role in making us different from our neighbors, and that our environments play an equally important role. At this point everyone draws the same conclusion. We are shaped both by our genes and by our family upbringing: how our parents treated us and what kind of home we grew up in.

Not so fast. Behavioral genetics allows us to distinguish two very different ways in which our environments might affect us.²³ The *shared* environment is what impinges on us and our siblings alike: our parents, our home life, and our neighborhood (as compared with other parents and neighborhoods in the sample). The *nonshared* or *unique* environment is everything else: anything that impinges on one sibling but not another, including parental favoritism (Mom always liked you best), the presence of the other siblings, unique experi-

ences like falling off a bicycle or being infected by a virus, and for that matter anything that happens to us over the course of our lives that does not necessarily happen to our siblings.

The effects of the shared environment can be measured in twin studies by subtracting the heritability value from the correlation between the identical twins. The rationale is that identical twins are alike (measured by the correlation) because of their shared genes (measured by the heritability) and their shared environment, so the effects of the shared environment can be estimated by subtracting the heritability from the correlation. Alternatively, the effects can be estimated in adoption studies simply by looking at the correlation between two adoptive siblings: they do not share genes, so any similarities (relative to the sample) must come from the experiences they shared growing up in the same home. A third technique is to compare the correlation between siblings reared together (who share genes and a home environment) with the correlation between siblings reared apart (who share only genes).

The effects of the *unique* environment can be measured by subtracting the correlation between identical twins (who share genes and an environment) from 1 (which is the sum of the effects of the genes, the shared environment, and the unique environment). By the same reasoning, it can be measured in adoption studies by subtracting the heritability estimate and the shared-environment estimate from 1. In practice all these calculations are more complicated, because they may try to account for nonadditive effects, where the whole is not the sum of the parts, and for noise in the measurements. But you now have the basic logic behind them.

So what do we find? The effects of shared environment are small (less than 10 percent of the variance), often not statistically significant, often not replicated in other studies, and often a big fat zero.²⁴ Turkheimer was cautious in saying that the effects are smaller than those of the genes. Many behavioral geneticists go farther and say that they are negligible, particularly in adulthood. (IQ is affected by the shared environment in childhood, but over the years the effect peters out to nothing.)

Where do these conclusions come from? The actual findings are easy to understand. First, adult siblings are equally similar whether they grew up together or apart. Second, adoptive siblings are no more similar than two people plucked off the street at random. And third, identical twins are no more similar than one would expect from the effects of their shared genes. As with the First Law, the sheer consistency of the outcome across three completely different methods (comparisons of identical with fraternal twins, of siblings raised together with siblings raised apart, of adoptive siblings with biological siblings) emboldens one to conclude that the pattern is real. Whatever experiences siblings share by growing up in the same home makes little or no difference in the kind of people they turn out to be.

An important proviso: Differences among homes don't matter *within* the samples of homes netted by these studies, which tend to be more middle-class than the population as a whole. But differences between those samples and other kinds of homes *could* matter. The studies exclude cases of criminal neglect, physical and sexual abuse, and abandonment in a bleak orphanage, so they do not show that extreme cases fail to leave scars. Nor can they say anything about the differences between *cultures*—about what makes a child a middle-class American as opposed to a Yanomamö warrior or a Tibetan monk or even a member of an urban street gang. In general, if a sample comes from a restricted range of homes, it may underestimate effects of homes across a wider range.²⁵

Despite these caveats, the Second Law is by no means trivial. The “middle class” (which includes most adoptive parents) can embrace a wide range of lifestyles, from fundamentalist Christians in the rural Midwest to Jewish doctors in Manhattan, with very different home environments and childrearing philosophies. Behavioral geneticists have found that their samples of parents in fact span a full range of personality types. And even if adoptive parents are unrepresentative in some other way, the Second Law would survive because it emerges from large studies of twins as well.²⁶ Though samples of adoptive parents span a narrower (and higher) range of IQs than the population at large, that cannot explain why the IQs of their adult children are uncorrelated, because they *were* correlated when the children were young.²⁷ Before exploring the revolutionary implications of these discoveries, let's turn to the Third Law.

THE THIRD LAW: *A substantial portion of the variation in complex human behavioral traits is not accounted for by the effects of genes or families.* This follows directly from the First Law, assuming that heritabilities are less than one, and the Second Law. If we carve up the variation among people into the effects of the genes, the shared environment, and the unique environment, and if the effects of the genes are greater than zero and less than one, and if the effects of the shared environment hover around zero, then the effects of the unique environment must be greater than zero. In fact, they are around 50 percent, depending as always on what is being measured and exactly how it is estimated. Concretely, this means that identical twins reared together (who share both their genes *and* a family environment) are far from identical in their intellects and personalities. There must be causes that are neither genetic *nor* common to the family that make identical twins different and, more generally, make people what they are.²⁸ As with Bob Dylan's Mister Jones, something is happening here but we don't know what it is.

A handy summary of the three laws is this: Genes 50 percent, Shared Environment 0 percent, Unique Environment 50 percent (or if you want to be charitable, Genes 40–50 percent, Shared Environment 0–10 percent, Unique

Environment 50 percent). A simple way of remembering what we are trying to explain is this: identical twins are 50 percent similar whether they grow up together or apart. Keep this in mind and watch what happens to your favorite ideas about the effects of upbringing in childhood.

THOUGH BEHAVIORAL GENETICISTS have known about the heritability of mental traits (First Law) for decades, it took a while for the absence of effects of the shared environment (Second Law) and the magnitude of the effects of the unique environment (Third Law) to sink in. Robert Plomin and Denise Daniels first sounded the alarm in a 1987 article called “Why Are Children in the Same Family So Different from One Another?” The enigma was noted by other behavioral geneticists such as Thomas Bouchard, Sandra Scarr, and David Lykken and spotlighted again by David Rowe in his 1994 book *The Limits of Family Influence*. It was also the springboard for the historian Frank Sulloway's widely discussed 1996 book on birth order and revolutionary temperament, *Born to Rebel*. Still, few people outside behavioral genetics really appreciated the importance of the Second and Third Laws.

It all hit the fan in 1998 when Judith Rich Harris, an unaffiliated scholar (whom the press quickly dubbed “a grandmother from New Jersey”), published *The Nurture Assumption*. A *Newsweek* cover story summed up the topic: “Do Parents Matter? A Heated Debate About How Kids Develop.” Harris brought the three laws out of the journals and tried to get people to recognize their implications: that the conventional wisdom about childrearing among experts and laypeople alike is wrong.

It was Rousseau who made parents and children the main actors in the human drama.²⁹ Children are noble savages, and their upbringing and education can either allow their essential nature to blossom or can saddle them with the corrupt baggage of civilization. Twentieth-century versions of the Noble Savage and the Blank Slate kept parents and children at center stage. The behaviorists claimed that children are shaped by contingencies of reinforcement, and advised parents not to respond to their children's distress because it would only reward them for crying and increase the frequency of crying behavior. Freudians theorized that we are shaped by our degree of success in weaning, toilet training, and identification with the parent of the same sex, and advised parents not to bring infants into their beds because it would arouse damaging sexual desires. Everyone theorized that psychological disorders could be blamed on mothers: autism on their coldness, schizophrenia on their “double binds,” anorexia on their pressure on girls to be perfect. Low self-esteem was attributed to “toxic parents” and every other problem to “dysfunctional families.” Patients in many forms of psychotherapy while away their fifty minutes reliving childhood conflicts, and most biographies scavenge through the subject's childhood for the roots of the grownup's tragedies and triumphs.

By now most well-educated parents believe that their children's fates are in their hands. They want their children to be popular and self-confident, to get good grades and stay in school, to avoid drugs, alcohol, and cigarettes, to avoid getting pregnant or fathering a child while a teenager, to stay on the right side of the law, and to become happily married and professionally successful. A parade of parenting experts has furnished them with advice, ever changing in content, never changing in certitude, on how to attain that outcome. The current recipe runs something like this. Parents should stimulate their babies with colorful toys and varied experiences. ("Take them outside. Let them feel tree bark," advised a pediatrician who shared a couch with me on a morning television show.) They should read and talk to their babies as much as possible to foster their language development. They should interact and communicate with their children at all ages, and no amount of time is too much. ("Quality time," the idea that working parents could spend an intense interlude with their children between dinner and bedtime to make up for their absence during the day, quickly became a national joke; it was seen as a rationalization by mothers who would not admit that their careers were compromising their children's welfare.) Parents should set firm but reasonable limits, neither bossing their children around nor giving them complete license. Physical punishment of any kind is out, because that perpetuates a cycle of violence. Nor should parents belittle their children or say that they are bad, because that will damage their self-esteem. On the contrary, they should shower them with hugs and unconditional affirmations of love and approval. And parents should communicate intensively with their adolescent children and take an interest in every aspect of their lives.

A few parents have begun to question the imperative to become round-the-clock parenting machines. A recent cover story in *Newsweek* entitled "The Parent Trap" reported on the frazzled mothers and fathers who devote every nonworking minute to entertaining and chauffeuring their children for fear that they will otherwise turn into ne'er-do-wells or cafeteria snipers. A similar story in the *Boston Globe Magazine* with the ironic title "How to Raise a Perfect Child . . ." elaborates:

"I'm overwhelmed with parenting advice," says Alice Kelly of Newton. "I read all about how I'm supposed to be providing my children with enriching play experiences. I'm supposed to do lots of physical activity with them so I can instill in them a physical fitness habit so they'll grow up to be healthy, fit adults. And I'm supposed to do all kinds of intellectual play so they'll grow up smart. Also, there are all kinds of play, and I'm supposed to do each—clay for finger dexterity, word games for reading success, large-motor play, small-motor play. I feel like I could devote my life to figuring out what to play with my kids." . . .

Elizabeth Ward, a Stoneham dietician, has been puzzling over why parents are so "willing to be short-order cooks, preparing two or three meals at a time" in order to please the kids. . . . [One reason] is a belief that forcing a kid to choose between eating what's presented or skipping a meal will lead to eating disorders—a thought that probably never occurred to parents in earlier decades.³⁰

The humorist Dave Barry comments on the experts' advice to parents of adolescents:

In addition to watching for warning signs, you must "keep the lines of communication open" between yourself and your child. Make a point of taking an interest in the things your child is interested in so that you can develop a rapport, as we see in this dialogue:

FATHER: What's that music you're listening to, son?

SON: It's a band called "Limp Bizkit," Dad.

FATHER: They suck.

. . . You should strive for this kind of closeness in your relationship with your child. And remember: If worse comes to worst, there is no parenting tool more powerful than a good hug. If you sense that your child is getting into trouble, you must give that child a great big fat hug in a public place with other young people around, while saying, in a loud, piercing voice, "You are MY LITTLE BABY and I love you NO MATTER WHAT!" That will embarrass your child so much that he or she may immediately run off and join a strict religious order whose entire diet consists of gravel. If one hug doesn't work, threaten to give your child another.³¹

Backlash aside, is it possible that the experts' advice might be sound? Perhaps the parent trap is the mixed blessing of scientists' knowing more and more about the effects of parenting. Parents can be forgiven for carving out some time for themselves, but if the experts are right they must realize that every such decision is a compromise.

So what do we really know about the long-term effects of parenting? Natural variation among parents, the raw material of behavioral genetics, offers one way of finding out. In any large sample of families, parents vary in how well they adhere to the ideals of parenting (if some didn't stray from the ideal, there would be no point in offering advice). Some mothers stay at home, others are workaholics. Some parents lose their tempers, others are infinitely patient. Some are garrulous, others taciturn; some unreserved in their affection, others more guarded. (As one academic said to me after pulling out a picture of her toddler, "We virtually adore her.") Some homes are filled with books, others with hilarious

TV sets; some couples are lovey-dovey, others fight like Maggie and Jiggs. Some mothers are like June Cleaver, others are depressed or histrionic or disorganized. According to the conventional wisdom, these differences should make a difference. At a bare minimum, two children growing up in one of these homes—with the same mother, father, books, TVs, and everything else—should turn out more similar, on average, than two children growing up in different homes. Seeing whether they do is a remarkably direct and powerful test. It does not depend on any hypothesis about what parents have to do to change their children or how their children will respond. It does not depend on how well we measure the home environments. If *anything* that parents do affects their children in *any* systematic way, then children growing up with the same parents will turn out more similar than children growing up with different parents.

But they don't. Remember the discoveries behind the Second Law. Siblings reared together end up no more similar than siblings separated at birth. Adopted siblings are no more similar than strangers. And the similarities between siblings can be completely accounted for by their shared genes. All those differences among parents and homes have no predictable long-term effects on the personalities of their children. Not to put too fine a point on it, but much of the advice from the parenting experts is flabdoodle.

But surely the advice is grounded in research on children's development? Yes, from the many useless studies that show a correlation between the behavior of parents and the behavior of their biological children and conclude that the parenting shaped the child, as if there were no such thing as heredity. And in fact the studies are even worse than that. Even if there *were* no such thing as heredity, a correlation between parents and children would not imply that parenting practices shape children. It could imply that children shape parenting practices.³² As any parent of more than one child knows, children are not indistinguishable lumps of raw material waiting to be shaped. They are little people, born with personalities. And people react to the personalities of other people, even if one is a parent and the other a child. The parents of an affectionate child may return that affection and thereby act differently from the parents of a child who squirms and wipes off his parents' kisses. The parents of a quiet, spacey child might feel they are talking to a wall and jabber at him less. The parents of a docile child can get away with setting firm but reasonable limits; the parents of a hellion might find themselves at their wits' end and either lay down the law or give up. In other words, correlation does not imply causation. A correlation between parents and children does not mean that parents affect children; it could mean that children affect parents, that genes affect both parents and children, or both.

It gets worse. In many studies, the same parties (in some studies the parents, in others the children) supply the data on both the parents' behavior and the child's. Parents tell the experimenter how they treat their children *and*

what their children are like, or adolescents tell the experimenter what they are like *and* how their parents treat them. Those studies—suspiciously—show much stronger correlations than ones in which a third party assesses the parents and the child.³³ The problem is not just that people tend to look at themselves and at their families through the same rose-colored or jaundiced lenses, but also that the relationship between parents and adolescents is a two-way street. Harris sums up the problems when commenting on a widely publicized 1997 study. The authors claimed, solely on the basis of teenagers' responses to a questionnaire about themselves and their families, that "parent-family connectedness"—close bonds, high expectations, lots of affection—is "protective" against adolescent ills such as drugs, cigarettes, and unsafe sex. Harris notes:

A happy person tends to check off upbeat answers to all the questions: Yes, my parents are good to me; yes, I'm doing fine. A person who cares about presenting a socially acceptable face to the world checks off socially acceptable responses: Yes, my parents are good to me; no, I haven't been in any fights or smoked anything illegal. A person who is angry or depressed checks off angry or depressed responses: My parents are jerks and I flunked the algebra test and to hell with your questionnaire. . . .

. . . Perhaps what misled those eighteen federal agencies into thinking they were getting their 25 million dollars worth was the positive way the researchers phrased their findings: *good* relationships with parents exert a *protective* effect. Expressed in a different (but equally accurate) way, the results sound less interesting: adolescents who don't get along well with their parents are more likely to use drugs or engage in risky sex. The results sound still less interesting expressed this way: adolescents who use drugs or engage in risky sex don't get along well with their parents.³⁴

Yet another problem crops up when researchers direct all their questions to the parents rather than to the offspring. People behave differently in different settings. That includes children, who tend to behave differently inside and outside the home. So even if parents' behavior does affect how their children behave *with them*, it may not affect how their children behave with other people. When parents describe their children's behavior, they describe the behavior they see in the home. To show that parents shape their children, then, a study would have to control for genes (by testing twins or adoptees), distinguish between parents affecting children and children affecting parents, measure the parents and the children independently, look at how children behave outside the home rather than inside, and test older children and young adults to see whether any effects are transient or permanent. No study that has claimed to show effects of parenting has met these standards.³⁵

If behavioral genetic studies show no lasting effects of the home, and stud-

ies of parenting practices are uninformative, what about studies that compare radically different childhood milieus? The results, again, are bracing. Decades of studies have shown that, all things being equal, children turn out pretty much the same way whether their mothers work or stay at home, whether they are placed in daycare or not, whether they have siblings or are only children, whether their parents have a conventional or an open marriage, whether they grow up in an Ozzie-and-Harriet home or a hippie commune, whether their conceptions were planned, were accidental, or took place in a test tube, and whether they have two parents of the same sex or one of each.³⁶

Even growing up without a father in the house, which does correlate with troubles such as dropping out of school, remaining idle, and having babies while a teenager, may not *cause* the troubles directly.³⁷ Children with experiences that should make up for the missing father, such as having a stepfather, a live-in grandmother, or frequent contact with the birth father, are no better off. The number of years that the father was in the house before leaving makes no difference. And children whose fathers died do not have the poor outcomes of children whose fathers walked out or were never there. The absence of a father may not be a cause of adolescent problems but a correlate of the true causes, which may include poverty, neighborhoods with lots of unattached men (who live in de facto polygyny and hence compete violently for status), frequent moves (which force children to start from the bottom of the pecking order in new peer groups), and genes that make both fathers and children more impulsive and quarrelsome.

The 1990s was the Decade of the Brain and the decade in which parents were told they were in charge of their babies' brains. The first three years of life was described as a critical window of opportunity in which the child's brain had to be constantly stimulated to keep it growing properly. Parents of late-talking children were blamed for not blanketing them in enough verbiage; the ills of the inner city were blamed on children's having to stare at empty walls. Bill and Hillary Clinton convened a conference at the White House to learn about the research, at which Mrs. Clinton said that the experiences of the first three years "can determine whether children will grow up to be peaceful or violent citizens, focused or undisciplined workers, attentive or detached parents themselves."³⁸ The governors of Georgia and Missouri asked their legislators for millions of dollars to issue every new mother with a Mozart CD. (They had confused experiments on infant brain development with experiments—since discredited—alleging that *adults* benefit from listening to a few minutes of Mozart.)³⁹ The pediatrician and childcare guru T. Berry Brazelton had the most hopeful suggestion of all: that nurturance during the first three years will protect children from the lure of tobacco when they become adolescents.⁴⁰

In his book *The Myth of the First Three Years*, the cognitive neuroscience expert Jon Bruer showed that there was no science behind these astonishing

claims.⁴¹ No psychologist has ever documented a critical period for cognitive or language development that ends at three. And though *depriving* an animal of stimulation (by sewing an eye shut or keeping it in a barren cage) may hurt its brain growth, there is no evidence that providing *extra* stimulation (beyond what the organism would encounter in its normal habitat) *enhances* its brain growth.

So nothing in the research on family environments contradicts the behavioral geneticists' Second Law, which says that growing up in a particular family has little or no systematic effect on one's intellect and personality. And this leaves us with a maddening puzzle. No, it's not all in the genes; around half the variation in personality, intelligence, and behavior comes from something in the environment. But whatever that something is, it cannot be shared by two children growing up in the same home with the same parents. And that rules out all the obvious somethings. What is the elusive Mister Jones factor?

REFUSING TO GIVE up on parents, some developmental psychologists have trained their sights on the only remaining possibility that gives parents a starring role. The impotence of the shared environment says only that what parents do to *all* their children is powerless to shape them. But obviously parents don't treat their children alike. Perhaps the individualized parenting that mothers and fathers adapt to each child does have the power to shape them. It is the *interaction* between parents and children that affects them, not a one-size-fits-all parenting philosophy.⁴²

At first this looks reasonable. But when you think it through, it does not restore a shaping role for parents, or for parenting advice, after all.⁴³

What would individualized parenting look like? Presumably parents would tailor their parenting to the needs and talents of each child. A headstrong child would elicit firmer discipline than a compliant one; a fearful child would elicit more protectiveness than a bold one. The problem, as we saw in an earlier section, is that the differences in parenting cannot be separated from the preexisting differences in the children. If the fearful child turns into a fearful adult, we don't know whether it was an effect of the overprotective parent or a continuation of the fearfulness the child was born with.

And surprisingly, if children do elicit systematic differences in parenting it would show up as an effect of the *genes*: it would go into the heritability term, not the unique-environment term. The reason is that heritability is a measure of correlation and cannot distinguish direct effects of the genes (proteins that help wire the brain or trigger hormones) from indirect effects that operate many links away. Earlier I mentioned that attractive people are more assertive, presumably because they get accustomed to other people's kissing up to them. That is a highly indirect effect of the genes and would make assertiveness heritable even if there were no genes for assertive brains, just genes for violet eyes

to be 100% similar, if children with certain innate traits make their parents more patient, or encouraging, or strict, then parental patience, encouragement, and strictness would also count as "heritable." Now, if such individualized parenting does affect the way children turn out, a critic could legitimately say that the direct effects of the genes had been overestimated, because some of them would really be indirect effects of the children's genes on traits of the children that affect their parents' behavior, which in turn affects the children. (The hypothesis is baroque, and I will soon show why it is unlikely to be true, but let's assume it is true for argument's sake.) But at best, the effects of parenting would be fighting with other genetic effects (direct and indirect) for some portion of the 40 to 50 percent of the variation attributed to the genes. The 50 percent attributable to the unique environment would still be up for grabs.

Here is what would have to happen if the effects of the unique environment are to be explained by an interaction between parents and children (using the statistician's technical sense of the word "interaction," which is the one relevant to our puzzle). A given practice would have to affect some children one way, and other children another way, and the two effects would have to cancel out. For example, sparing the rod would have to spoil some children (making them more violent) and teach others that violence is not a solution (making them less violent). Displays of affection would have to make some children more affectionate (because they identify with their parents) and others less affectionate (because they react against their parents). The reason the effects have to go in opposite directions is that if a parenting practice had a consistent effect, on average, across all children, it would turn up as an effect of the shared environment. Adopted siblings would be similar, sibs growing up together would be more similar than sibs growing up apart—neither of which happens. And if it was applied successfully to some kinds of children and was avoided, or was ineffective, with other kinds, that would turn up as an effect of the genes.

The problems with the parent-child interaction idea now become obvious. It is implausible that any parenting process would have such radically different effects on different children that the sum of the effects (the shared environment) would add up to zero. If hugging merely makes some children more confident and has no effect on others, then the huggers should still have more confident children *on average* (some becoming more confident, others showing no change) than the cold fish. But, holding genes constant, they don't. (To put it in technical terms familiar to psychologists: it is rare to find a perfect crossover interaction, that is, an interaction with no main effects.) This is also, by the way, one of the reasons that heritability itself almost certainly cannot be reduced to child-specific parenting. Unless parents' behavior is *completely* determined by their child's inborn traits, some parents will behave somewhat differently from others across the board, and that would turn up in effects of the shared environment—which in fact are negligible.

But let's say that these parent-child interactions (in the technical sense) really do exist, and really do shape the child. The moral would be that across-the-board parenting advice is useless. Anything that parents do to make some children better will make an equal number of children worse.

In any case, the parent-child interaction theory can be tested directly. Psychologists can measure how parents treat the different children within a family, and see if the treatments correlate with how the children turn out, holding genes constant. The answer is that in almost every case they don't. Virtually all the differences in parenting within a family can be explained as reactions to genetic differences that the children were born with. And parental behavior that does differ among children for nongenetic reasons, such as marital conflict triggered by some siblings but not by others, or more parenting effort directed at one sibling than at another, has no effect.⁴⁴ The leader of a recent heroic study, who had hoped to prove that differences in parenting do affect how children turn out, confessed that he was "shocked" by his own results.⁴⁵

There is another way that a home environment could differ among children in the same family for reasons having nothing to do with their genes: birth order. A firstborn usually has several years of undivided parental attention with no annoying siblings around. Laterborns have to compete with their siblings for parental attention and other family resources, and have to figure out how to hold their own against stronger and more entrenched competitors.

In *Born to Rebel*, Sulloway predicted that firstborns should parlay their advantages into a more assertive personality.⁴⁶ And because they identify with their parents, and by extension with the status quo, they should grow up to be more conservative and conscientious. Laterborns, in contrast, should be more conciliatory and open to new ideas and experiences. Though family therapists and laypeople have had these impressions for a long time, Sulloway tried to explain them in terms of Trivers's theory of parent-offspring conflict and its corollary, sibling rivalry. He found some support for these ideas in a meta-analysis (a quantitative literature review) of studies of birth order and personality.⁴⁷

Sulloway's theory, however, also requires that children use the same strategies *outside* the home—with their peers and colleagues—as the ones that served them well *inside* the home. That does not follow from Trivers's theory; indeed, it contradicts the larger theory from evolutionary psychology that relationships with blood relatives should be very different from relationships with nonrelatives. Tactics that work on a sibling or parent may not work so well on a colleague or stranger. And in fact subsequent analyses have shown that any effects of birth order on personality turn up in the studies that ask siblings or parents to rate one another, or to rate themselves with respect to a sibling, which of course can assess only their family relationships. When personality is measured by neutral parties outside the family, birth-order ef-

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fects diminish or disappear.⁴⁸ Any differences in the parenting of firstborns and laterborns—novice or experienced parents, divided or undivided attention, pressure to carry on the family legacy or indulgent babying—seem to have little or no effect on personality outside the home.

Similarities within a home don't shape children; differences within a home don't shape children. Perhaps, Harris says, we should look outside the home.

IF YOU GREW up in a different part of the world from where your parents grew up, consider this question: Do you sound like your parents, or like the people you grew up with? What about the way you dress, or the music you listen to, or the way you spend your free time? Consider the same question about your children if they grew up in a different part of the world from where you grew up—or for that matter, even if they didn't. In almost every case, people model themselves after their peers, not their parents.

This is Harris's explanation of the elusive environmental shaper of personality, which she calls Group Socialization theory. It's not all in the genes, but what isn't in the genes isn't from the parents either. Socialization—acquiring the norms and skills necessary to function in society—takes place in the peer group. Children have cultures, too, which absorb parts of the adult culture and also develop values and norms of their own. Children do not spend their waking hours trying to become better and better approximations of adults. They strive to be better and better children, ones that function well in their *own* society. It is in this crucible that our personalities are formed.

Multidecade, child-obsessed parenting, Harris points out, is an evolutionarily recent practice. In foraging societies, mothers carry their children on their hips or backs and nurse them on demand until the next child arrives two to four years later.⁴⁹ The child is then dumped into a play group with his older siblings and cousins, switching from being the beneficiary of almost all of the mother's attention to almost none of it. Children sink or swim in the milieu of other children.

Children are not just attracted to the norms of their peers; to some degree they are immune to the expectations of their parents. The theory of parent-offspring conflict predicts that parents do not always socialize a child in the child's best interests. So even if children acquiesce to their parents' rewards, punishments, examples, and naggings for the time being—because they are smaller and have no choice—they should not, according to the theory, allow their personalities to be shaped by these tactics. Children must learn what it takes to gain status among their peers, because status at one age gives them a leg up in the struggle for status at the next, including the young-adult stages in which they first compete for the attention of the opposite sex.⁵⁰

What first attracted me to Harris's theory was its ability to explain a half-

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dozen puzzling facts in the part of psychology I work in the most, language.⁵¹ Psycholinguists argue a lot about heredity and environment, but they all equate "the environment" with "parents." But many phenomena of children's language development just don't fit that equation. In traditional cultures, mothers don't say much to their children until they are old enough to hold up their end of the conversation; the children pick up language from other children. People's accents almost always resemble the accents of their childhood peers, not the accents of their parents. Children of immigrants acquire the language of their adopted homeland perfectly, without a foreign accent, as long as they have access to native speaking peers. They then try to force their parents to switch to the new language, and if they succeed, they may forget the mother tongue entirely. The same is true of hearing children of deaf parents, who learn the spoken language of their community without a hitch. Children thrown together without a common language from the grownups will quickly invent one; that is how creole languages, and the signed languages of the deaf, came into being. Now, a particular language like English or Japanese (as opposed to the instinct for language in general) is an example of learned social behavior par excellence. If children cultivate a fine ear for the nuances of their peers' speech, and if they cast their lot with their peers' language over their parents', it suggests that their social antennae are aimed peerward.

Children of immigrants soak up not just the language of their adopted homeland but the culture as well. For their entire lives, my shtetl-born grandparents were strangers in a strange land. Cars, banks, doctors, schools, and the urban concept of time left them baffled, and if the term "dysfunctional family" had been around in the 1930s and 1940s it would surely have applied to them. Nevertheless, my father, growing up in a community of immigrants who had arrived in different decades, gravitated to other children and families who knew the ropes, and ended up happy and successful. Such stories are common in chronicles of the immigrant experience.⁵² So why do we insist that children's parents are the key to how they turn out?

Studies also confirm what every parent knows but what no one bothers to reconcile with theories of child development: that whether adolescents smoke, get into scrapes with the law, or commit serious crimes depends far more on what their peers do than on what their parents do.⁵³ Harris comments on a popular theory that children become delinquents to achieve "mature status," that is, adult power and privilege: "If teenagers wanted to be like adults they wouldn't be shoplifting nailpolish from drugstores or hanging off overpasses to spray I LOVE YOU LIZA on the arch. If they really aspired to 'mature status' they would be doing boring adult things like sorting the laundry and figuring out their income taxes."⁵⁴

Even the rare finding of an effect of the shared environment, and the equally elusive finding of an interaction between parents and chil-

emerge only when we substitute peers for parents in the "environment" part of the equation. Children who grow up in the same home tend to resemble each other in their vulnerability to delinquency, regardless of how closely related they are. But that similarity only holds if they are close in age and spend time together outside the home—which suggests they belong to the same peer group.⁵⁵ And in a large Danish adoption study, the biological children of convicts were somewhat more likely to get into trouble than the biological children of law-abiding citizens, which suggests a small across-the-board effect of the genes. But the susceptibility to crime was multiplied if they were adopted by parents who were criminals themselves *and* who lived in a large city, which suggests that the genetically at-risk children grew up in a high-crime neighborhood.⁵⁶

It's not that parents "don't matter." In many ways parents matter a great deal. For most of human existence, the most important thing parents did for their children was keep them alive. Parents can certainly harm their children by abusing or neglecting them. Children appear to need some kind of nurturing figure in their early years, though it needn't be a parent, and possibly not even an adult: young orphans and refugees often turn out relatively well if they had the comfort of other children, even if they had no parents or other adults around them.⁵⁷ (This does not mean that the children were *happy*, but contrary to popular belief, unhappy children do not necessarily turn into dysfunctional adults.) Parents select an environment for their children and thereby select a peer group. They provide their children with skills and knowledge, such as reading and playing a musical instrument. And they certainly may affect their children's behavior in the home, just as any powerful people can affect behavior within their fiefdom. But parents' behavior does not seem to shape their children's intelligence or personality over the long term. Upon hearing this, many people ask, "So you're saying it doesn't matter how I treat my child?" It is a revealing question, and I will consider it at the end of the chapter. But first, the public reaction to Harris's theory, and my own assessment.

THE *NURTURE ASSUMPTION* was, by any standard, a major contribution to modern intellectual life. Though the main idea is at first counterintuitive, the book has the ring of truth, with real children running through it, not compliant little theoretical constructs that no one ever meets in real life. Harris backed up her hypothesis with voluminous data from many fields, interpreted with a keen analytical eye, and with a rarity in the social sciences: proposals for new empirical tests that might falsify it. The book also contains original policy suggestions on tough problems for which we sorely need new ideas, such as failing schools, teenage smoking, and juvenile delinquency. Even if major parts turn out to be wrong, the book forces one to think about childhood, and therefore what makes us what we are, in a fresh and insightful way.

So what was the public reaction? The first popular presentation of the theory was in a few pages of my book *How the Mind Works*, in which I presented the research behind the three laws of behavioral genetics and Harris's 1995 paper explaining them. Many reviews singled out those pages for discussion, such as the following analysis by Margaret Wertheim:

Never in my fifteen years as a science writer have I seen the subject I love so dearly abused so greatly. . . . What is so appalling here—quite aside from the laughable grasp of family dynamics—is the misrepresentation of science. Science can never prove what percentage of personality is caused by upbringing. . . . By suggesting that it can and does, he invites us to see scientists as at best naïve and at worst fascistic. It is precisely this kind of claim that, in my opinion, is giving science a bad name and is helping to fuel a significant backlash against it.⁵⁸

Wertheim, of course, confused "the percentage of personality that is caused by upbringing," which is indeed meaningless, with the percentage of *variance* in personality that is caused by variation in upbringing, which behavioral geneticists study all the time. And scientists can show, and have shown, that siblings are as similar when reared apart as when reared together and that adoptive siblings are not similar at all, which means that the conventional wisdom about "family dynamics" is simply wrong.

Wertheim is sympathetic to radical science and social constructionism. Her reaction is a sign of how behavioral genetics—and Harris's theory, which aims to explain its findings—touches a nerve on the political left, with its traditional emphasis on the malleability of children. The psychologist Oliver James wrote, "Harris's book can be safely ignored as yet another application of Friedmanite economics to the social realm" (an allusion to the economist who, according to James, stands for the idea that individuals should assume responsibility for their own lives). He suggested that Harris was downplaying research on parenting because it "would indirectly pose a real challenge to the theories of advanced consumer capitalism: if what parents do is critical, it calls into question the low priority given to it, compared with the pursuit of profit."⁵⁹ Actually, this fanciful diagnosis has it backwards. The most vehement propagandists for the importance of parents are the beer and tobacco companies, which sponsor ad campaigns such as "Family Talk About Drinking" and "Parents Should Talk to Kids About Not Smoking." (A sample ad: "Daughter speaks to the camera, as if it were her mother, reassuring her that her words about not smoking are with her, even when her mother is not with her.")⁶⁰ By putting the onus on parents to keep teens sober and smoke-free, these advanced consumer capitalists can divert attention from their own massive influence on adolescent peer culture.

In any case, Harris drew even more venom from the political right. The columnist John Leo called her theory "stupid," ridiculed her lack of a Ph.D. and a university affiliation, and compared her to deniers of the Holocaust. He ended his column, "It's not time to celebrate a foolish book that justifies self-absorption and makes non-parenting a respectable, mainstream activity."⁶¹

Why do conservatives hate the theory too? An axiom of the contemporary American right is that the traditional family is under assault from feminists, a licentious popular culture, and left-wing social analysts. The root of social ills, conservatives believe, is the failure of parents to teach their children discipline and values, a failure that can be traced to working mothers, absent fathers, easy divorce, and a welfare system that rewards young women for having babies out of wedlock. When the unmarried sitcom character Murphy Brown had a child, Vice President Dan Quayle denounced her for setting a bad example for American women (a headline of the time: "Murphy Has a Baby; Quayle Has a Cow"). Harris's review showing that Murphy's baby would probably have turned out fine was not welcome. (To be fair, concerns about fatherlessness may not be ill founded, but the problem may be the absence of fathers from all the families in a neighborhood rather than the absence of a father from an individual family. These fatherless children lack access to *other* families in which an adult male is present, and worse, they have access to packs of single men, whose values trickle down to their own peer groups.) Also, the Great Satan, Hillary Clinton, had written a book on childhood called *It Takes a Village*, based on the African saying "It takes a village to raise a child." Conservatives despised it because they thought the whole idea was a pretext for social engineers to take childrearing out of the hands of parents and give it to the government. But Harris quoted the saying too, and her theory implies there is some truth to it.

And then there were the experts. Brazelton called the thesis "absurd."⁶² Jerome Kagan, one of the deans of scholarly research on children, said, "I'm embarrassed for psychology."⁶³ Another developmental psychologist, Frank Farley, told *Newsweek*:

She's all wrong. She's taking an extreme position based on a limited set of data. Her thesis is absurd on its face, but consider what might happen if parents believe this stuff! Will it free some to mistreat their kids, since "it doesn't matter"? Will it tell parents who are tired after a long day that they needn't bother even paying any attention to their kid since "it doesn't matter"?⁶⁴

Kagan and other developmentalists told reporters about the "many, many good studies that show parents can affect how children turn out."

What were these "many, many good studies"? In the *Boston Globe*, Kagan

laid out what he called the "ample evidence."⁶⁵ He mentioned the usual see-no-genetics studies showing that smart parents have smart children, verbal parents have verbal children, and so on. He observed that "a 6-year-old raised in New England will be very different from a 6-year-old raised in Malaysia, Uganda, or the southern tip of Argentina. The reason is that they experience different child-rearing practices by their parents." But of course a child growing up in Malaysia has both Malaysian parents *and* Malaysian peers. If Kagan had considered what would happen to a six-year-old child of Malaysian parents who grew up in a New England town, he might have thought twice before using the example to illustrate the power of parenting. The other "evidence" was that when authors write their memoirs, they credit their parents, never their childhood friends, with making them what they are. An irony in these feeble arguments is that Kagan himself, in the course of a distinguished career, often chided his fellow psychologists for overlooking genetics and for accepting their culture's folk theories on childhood instead of holding them up to scientific scrutiny. I can only imagine that on this occasion he felt compelled to defend his field against an exposé by a grandmother from New Jersey. In any case, the other "good studies" produced by defensive psychologists were no more informative.⁶⁶

SO HAS HARRIS solved the mystery of the Third Law, the unique environment that comes neither from the genes nor from the family? Not exactly. I am convinced that children are socialized—that they acquire the values and skills of the culture—in their peer groups, not their families. But I am not convinced, at least not yet, that peer groups explain how children develop their *personalities*: why they turn out shy or bold, anxious or confident, open-minded or old-school. Socialization and the development of personality are not the same thing, and peers may explain the first without necessarily explaining the second.

One way that peers could explain personality is that children in the same family may join different peer groups—the jocks, the brains, the preppies, the punks, the Goths—and assimilate their values. But then how do children get sorted into peer groups? If it is by their inborn traits—smart kids join the brains, aggressive kids join the punks, and so on—then effects of the peer group would show up as indirect effects of the genes, not as effects of the unique environment. If it is their parents' choice of neighborhoods, it would turn up as effects of the shared environment, because siblings growing up together share a neighborhood as well as a set of parents. In some cases, as with delinquency and smoking, the missing variance might be explained as an interaction between genes and peers: violence-prone adolescents become violent only in dangerous neighborhoods, addiction-prone children become smokers only in the company of peers who think smoking is cool. But those

interactions are unlikely to explain most of the differences among children. Let's return to our touchstone: identical twins growing up together. They share their genes, they share their family environments, *and they share their peer groups*, at least on average. But the correlations between them are only around 50 percent. Ergo, neither genes nor families nor peer groups can explain what makes them different.

Harris is forthcoming about this limitation, and suggests that children differentiate themselves *within* a peer group, not by their *choice* of a peer group. Within each group, some become leaders, others foot soldiers, still others jesters, loose cannons, punching bags, or peacemakers, depending on what niche is available, how suited a child is to filling it, and chance. Once a child acquires a role, it is hard to shake it off, both because other children force the child to stay in the niche and because the child specializes in the skills necessary to prosper in it. This part of the theory, Harris notes, is untested, and difficult to test, because the crucial first step—which child fills which niche in which group—is so capricious.

The filling of niches in peer groups, then, is largely a matter of chance. But once we allow Lady Luck into the picture, she can act at other stages in life. When reminiscing on how we got to where we are, we all can think of forks in the road where we could have gone on very different life paths. If I hadn't gone to that party, I wouldn't have met my spouse. If I hadn't picked up that brochure, I wouldn't have known about the field that would become my life's calling. If I hadn't answered the phone, if I hadn't missed that flight, if only I had caught that ball. Life is a pinball game in which we bounce and graze through a gantlet of chutes and bumpers. Perhaps our history of collisions and near misses explains what made us what we are. One twin was once beaten up by a bully, the other was home sick that day. One inhaled a virus, the other didn't. One twin got the top bunk bed, the other got the bottom bunk bed.

We still don't know whether these unique experiences leave their fingerprints on our intellects and personalities. But an even earlier pinball game certainly could do so, the one that wires up our brain in the womb and early childhood. As I have mentioned, the human genome cannot possibly specify every last connection among neurons. But the "environment," in the sense of information encoded by the sense organs, isn't the only other option. Chance is another. One twin lies one way in the womb and stakes out her share of the placenta, the other has to squeeze around her. A cosmic ray mutates a stretch of DNA, a neurotransmitter zigs instead of zags, the growth cone of an axon goes left instead of right, and one identical twin's brain might gel into a slightly different configuration from the other's.⁶⁷

We know this happens in the development of other organisms. Even genetically homogeneous strains of flies, mice, and worms, raised in monotonously controlled laboratories, can differ from one another. A fruit fly may

have more or fewer bristles under one wing than its bottlemates. One mouse may have three times as many oocytes (cells destined to become eggs) as her genetically identical sister reared in the same lab. One roundworm may live three times as long as its virtual clone in the next dish. The biologist Steven Austad commented on the roundworms' lifespans: "Astonishingly, the degree of variability they exhibit in longevity is not much less than that of a genetically mixed population of humans, who eat a variety of diets, attend to or abuse their health, and are subject to all the vagaries of circumstance—car crashes, tainted beef, enraged postal workers—of modern industrialized life."⁶⁸ And a roundworm is composed of only 959 cells! A human brain, with its hundred billion neurons, has even more opportunities to be buffeted by the outcomes of molecular coin flips.

If chance in development is to explain the less-than-perfect similarity of identical twins, it says something interesting about development in general. One can imagine a developmental process in which millions of small chance events cancel one another out, leaving no difference in the end product. One can imagine a different process in which a chance event could derail development entirely, or send it on a chaotic developmental path resulting in a freak or a monster. Neither of these happens to identical twins. They are distinct enough that our crude instruments can pick up the differences, yet both are healthy instances of that staggeringly improbable, exquisitely engineered system we call a human being. The development of organisms must use complex feedback loops rather than prespecified blueprints. Random events can divert the trajectory of growth, but the trajectories are confined within an envelope of functioning designs for the species. Biologists refer to such developmental dynamics as robustness, buffering, or canalization.⁶⁹

If the nongenetic component of personality is the outcome of neurodevelopmental roulette, it would present us with two surprises. One is that just as the "genetic" term in the behavioral geneticist's equation is not necessarily genetic, the "environmental" term is not necessarily environmental. If the unexplained variance is a product of chance events in brain assembly, yet another chunk of our personalities would be "biologically determined" (though not genetic) and beyond the scope of the best-laid plans of parents and society.

The other surprise is that we may have to make room for a pre-scientific explanatory concept in our view of human nature—not free will, as many people have suggested to me, but fate. It is not free will because among the traits that may differ between identical twins reared together are ones that are stubbornly involuntary. No one chooses to become schizophrenic, homosexual, musically gifted, or, for that matter, anxious or self-confident or open to experience. But the old idea of fate—in the sense of uncontrollable fortune, not strict predestination—can be reconciled with modern biology once we remember the many openings for chance to operate in development. Harris

noting how recent and parochial is the belief that we can shape our children, quotes a woman living in a remote village of India in the 1950s. When asked what kind of man she hoped her child would grow into, she shrugged and replied, "It is in his fate, no matter what I want."⁷⁰

NOT EVERYONE IS SO accepting of fate, or of the other forces beyond a parent's control, like genes and peers. "I hope to God this isn't true," one mother said to the *Chicago Tribune*. "The thought that all this love that I'm pouring into him counts for nothing is too terrible to contemplate."⁷¹ As with other discoveries about human nature, people hope to God it isn't true. But the truth doesn't care about our hopes, and sometimes it can force us to revisit those hopes in a liberating way.

Yes, it is disappointing that there is no algorithm for growing a happy and successful child. But would we really want to specify the traits of our children in advance, and never be delighted by the unpredictable gifts and quirks that every child brings into the world? People are appalled by human cloning and its dubious promise that parents can design their children by genetic engineering. But how different is that from the fantasy that parents can design their children by how they bring them up? Realistic parents would be less anxious parents. They could enjoy their time with their children rather than constantly trying to stimulate them, socialize them, and improve their characters. They could read stories to their children for the pleasure of it, not because it's good for their neurons.

Many critics accuse Harris of trying to absolve parents of responsibility for their children's lives: if the kids turn out badly, parents can say it's not their fault. But by the same token she is assigning adults responsibility for their *own* lives: if your life is not going well, stop moaning that it's all your parents' fault. She is rescuing mothers from fatuous theories that blame them for every misfortune that befalls their children, and from the censorious know-it-alls who make them feel like ogres if they slip out of the house to work or skip a reading of *Goodnight Moon*. And the theory assigns us all a collective responsibility for the health of the neighborhoods and culture in which peer groups are embedded.

Finally: "So you're saying it doesn't matter how I treat my children?" What a question! Yes, of course it matters. Harris reminds her readers of the reasons.

First, parents wield enormous power over their children, and their actions can make a big difference to their happiness. Childrearing is above all an ethical responsibility. It is not OK for parents to beat, humiliate, deprive, or neglect their children, because those are awful things for a big strong person to do to a small helpless one. As Harris writes, "We may not hold their tomorrows in our hands but we surely hold their todays, and we have the power to make their todays very miserable."⁷²

Second, a parent and a child have a human relationship. No one ever asks, "So you're saying it doesn't matter how I treat my husband or wife?" even though no one but a newlywed believes that one can change the personality of one's spouse. Husbands and wives are nice to each other (or should be) not to pound the other's personality into a desired shape but to build a deep and satisfying relationship. Imagine being told that one cannot revamp the personality of a husband or wife and replying, "The thought that all this love I'm pouring into him (or her) counts for nothing is too terrible to contemplate." So it is with parents and children: one person's behavior toward another has consequences for the quality of the relationship between them. Over the course of a lifetime the balance of power shifts, and children, complete with memories of how they were treated, have a growing say in their dealings with their parents. As Harris puts it, "If you don't think the moral imperative is a good enough reason to be nice to your kid, try this one: Be nice to your kid when he's young so that he will be nice to you when you're old."⁷³ There are well-functioning adults who still shake with rage when recounting the cruelties their parents inflicted on them as children. There are others who moisten up in private moments when recalling a kindness or sacrifice made for their happiness, perhaps one that the mother or father has long forgotten. If for no other reason, parents should treat their children well to allow them to grow up with such memories.

I have found that when people hear these explanations they lower their eyes and say, somewhat embarrassedly, "Yes. I knew that." The fact that people can forget these simple truths when intellectualizing about children shows how far modern doctrines have taken us. They make it easy to think of children as lumps of putty to be shaped instead of partners in a human relationship. Even the theory that children adapt to their peer group becomes less surprising when we think of them as human beings like ourselves. "Peer group" is a patronizing term we use in connection with children for what we call "friends and colleagues and associates" when we talk about ourselves. We groan when children obsess over wearing the right kind of cargo pants, but we would be just as mortified if a very large person forced us to wear pink overalls to a corporate board meeting or a polyester disco suit to an academic conference. "Being socialized by a peer group" is another way of saying "living successfully within a society," which for a social organism means "living." It is children, above all, who are alleged to be blank slates, and that can make us forget they are people.

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