

Major Personality Study Finds That Traits are Mostly Inherited

Daniel Goleman

Dec. 2, 1986

The New York Times

THE genetic makeup of a child is a stronger influence on personality than child rearing, according to the first study to examine identical twins reared in different families. The findings shatter a widespread belief among experts and laymen alike in the primacy of family influence and are sure to engender fierce debate.

The findings are the first major results to emerge from a longterm project at the University of Minnesota in which, since 1979, more than 350 pairs of twins have gone through six days of extensive testing that has included analysis of blood, brain waves, intelligence and allergies.

The results on personality are being reviewed for publication by the Journal of Personality and Social Psychology. Although there has been wide press coverage of pairs of twins reared apart who met for the first time in the course of the study, the personality results are the first significant scientific data to be announced.

For most of the traits measured, more than half the variation was found to be due to heredity, leaving less than half determined by the influence of parents, home environment and other experiences in life.

The Minnesota findings stand in sharp contradiction to standard wisdom on nature versus nurture in forming adult personality. Virtually all major theories since Freud have given far more importance to environment, or nurture, than to genes, or nature.

Even though the findings point to the strong influence of heredity, the family still shapes the broad suggestion of personality offered by heredity; for example, a family might tend to make an innately timid child either more timid or less so. But the inference from this study is that the family would be unlikely to make the child brave.

The 350 pairs of twins studied included some who were raised apart. Among these separately reared twins were 44 pairs of identical twins and 21 pairs of fraternal twins. Comparing twins raised separately with those raised in the same home allows researchers to determine the relative importance of heredity and of environment in their development. Although some twins go out of their way to emphasize differences between them, in general identical twins are very much alike in personality.

But what accounts for that similarity? If environment were the major influence in personality, then identical twins raised in the same home would be expected to show more similarity than would the twins reared apart. But the study of 11 personality traits found differences between the kinds of twins were far smaller than had been assumed.

"If in fact twins reared apart are that similar, this study is extremely important for understanding how personality is shaped," commented Jerome Kagan, a developmental psychologist at Harvard University. "It implies that some aspects of personality are under a great degree of genetic control."

The traits were measured using a personality questionnaire developed by Auke Tellegen, a psychologist at the University of Minnesota who was one of the principal researchers. The questionnaire assesses many major aspects of personality, including aggressiveness, striving for achievement, and the need for personal intimacy.

For example, agreement with the statement "When I work with others, I like to take charge" is an indication of the trait called social potency, or leadership, while agreement with the sentence "I often keep working on a problem, even if I am very tired" indicates the need for achievement.

Among traits found most strongly determined by heredity were leadership and, surprisingly, traditionalism or obedience to authority. "One would not expect the tendency to believe in traditional values and the strict enforcement of rules to be more an inherited than learned trait," said David Lykken, a psychologist in the Minnesota project. "But we found that, in some mysterious way, it is one of traits with the strongest genetic influence."

Other traits that the study concludes were more than 50 percent determined by heredity included a sense of well-being and zest for life; alienation; vulnerability or resistance to stress, and fearfulness or risk-seeking. Another highly inherited trait, though one not commonly thought of as part of personality, was the capacity for becoming rapt in an aesthetic experience, such as a concert.

Vulnerability to stress, as measured on the Tellegen test, reflects what is commonly thought of as "neuroticism," according to Dr. Lykken. "People high in this trait are nervous and jumpy, easily irritated, highly sensitive to stimuli, and generally dissatisfied with themselves, while those low on the trait are resilient and see themselves in a positive light," he said. "Therapy may help vulnerable people to some extent, but they seem to have a built-in susceptibility that may mean, in general, they would be more content with a life low in stress."

The need to achieve, including ambition and an inclination to work hard toward goals, also was found to be genetically influenced, but more than half of this trait seemed determined by life experience. The same lower degree of hereditary influence was found for impulsiveness and its opposite, caution.

The need for personal intimacy appeared the least determined by heredity among the traits tested; about two-thirds of that tendency was found to depend on experience. People high in this trait have a strong desire for emotionally intense relationships; those low in the trait tend to be loners who keep their troubles to themselves.

"This is one trait that can be greatly strengthened by the quality of interactions in a family," Dr. Lykken said. "The more physical and emotional intimacy, the more likely

this trait will be developed in children, and those children with the strongest inherited tendency will have the greatest need for social closeness as adults."

No single gene is believed responsible for any one of these traits. Instead, each trait, the Minnesota researchers propose, is determined by a great number of genes in combination, so that the pattern of inheritance is complex and indirect.

No one believes, for instance, that there is a single gene for timidity but rather a host of genetic influences. That may explain, they say, why previous studies have found little connection between the personality traits of parents and their children. Whereas identical twins would share with each other the whole constellation of genes that might be responsible for a particular trait, children might share only some part of that constellation with each parent.

That is why, just as a short parent may have a tall child, an achievement-oriented parent might have a child with little ambition.

The Minnesota findings are sure to stir debate. Though most social scientists accept the careful study of twins, particularly when it includes identical twins reared apart, as the best method of assessing the degree to which a trait is inherited, some object to using these methods for assessing the genetic component of complex behavior patterns or question the conclusions that are drawn from it.

Further, some researchers consider paper-and-pencil tests of personality less reliable than observations of how people act, since people's own reports of their behavior can be biased. "The level of heritability they found is surprisingly high, considering that questionnaires are not the most sensitive index of personality," said Dr. Kagan. "There is often a poor relationship between how people respond on a questionnaire and what they actually do."

"Years ago, when the field was dominated by a psychodynamic view, you could not publish a study like this," Dr. Kagan added. "Now the field is shifting to a greater acceptance of genetic determinants, and there is the danger of being too uncritical of such results."

Seymour Epstein, a personality psychologist at the University of Massachusetts, said he was skeptical of precise estimates of heritability. "The study compared people from a relatively narrow range of cultures and environments," he said. "If the range had been much greater - say Pygmies and Eskimos as well as middle-class Americans - then environment would certainly contribute more to personality. The results might have shown environment to be a far more powerful influence than heredity," he said.

Dr. Tellegen himself said: "Even though the differences between families do not account for much of the unique attributes of their children, a family still exercises important influence. In cases of extreme deprivation or abuse, for instance, the family would have a much larger impact - though a negative one - than any found in the study. Although the twins studied came from widely different environments, there were no extremely deprived families."

Gardner Lindzey, director of the Center for Advanced Studies in the Behavioral Sciences in Palo Alto, Calif., said the Minnesota findings would "no doubt produce impassioned rejoinders."

"They do not in and of themselves say what makes a given character trait emerge," he said, "and they can be disputed and argued about, as have similar studies of intelligence."

For parents, the study points to the importance of treating each child in accord with his innate temperament.

"The message for parents is not that it does not matter how they treat their children, but that it is a big mistake to treat all kids the same," said Dr. Lykken. "To guide and shape a child you have to respect his individuality, adapt to it and cultivate those qualities that will help him in life."

"If there are two brothers in the same family, one fearless and the other timid, a good parent will help the timid one become less so by giving him experiences of doing well at risk-taking, and let the other develop his fearlessness tempered with some intelligent caution. But if the parent shelters the one who is naturally timid, he will likely become more so."

The Minnesota results lend weight and precision to earlier work that pointed to the importance of a child's temperament in development. For instance, the New York Longitudinal Study, conducted by Alexander Thomas and Stella Chess, psychiatrists at New York University Medical Center, identified three basic temperaments in children, each of which could lead to behavioral problems if not handled well.

"Good parenting now must be seen in terms of meeting the special needs of a child's temperament, including dealing with whatever conflicts it creates," said Stanley Grossman, a staff member of the medical center's Psychoanalytic Institute. A version of this article appears in print on Dec. 2, 1986, Section C, Page 1 of the National edition with the headline: MAJOR PERSONALITY STUDY FINDS THAT TRAITS ARE MOSTLY INHERITED.

<https://www.nytimes.com/1986/12/02/science/major-personality-study-finds-that-traits-are-mostly-inherited.html?smid=em-share>