

PALM BEACH POST
(W. Palm Beach, Fla.)
Dec. 15, 1986, pp. E1+

DEC 3 1986

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Mental Health

The Roots of Personality

By DANIEL GOLEMAN
New York Times News Service

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 long-term 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, the first significant scientific data from the study to be announced, are being reviewed for publication by the *Journal of Personality and Social Psychology*.

For most of the traits measured, more than half the variation was found to be due to heredity — not the influence of parents, home environment and other experiences.

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

Barbra Bose

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.

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.

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

Parents: Heed children's natural traits

"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," psychologist David Lykken said. "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."

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.

Hereditary strong points

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 the traits with the strongest genetic influence."

Other traits that the study concludes were more determined by heredity included a sense of well-being and zest for life; alienation; vulnerability or resistance to stress and fearfulness.

Another highly inherited trait, though one not commonly thought of as part of personality, was the

capacity for becoming rapt in an aesthetic experience.

Vulnerability to stress, as measured on the Tellegen test, reflects what is commonly thought of as "neuroticism," according to 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."

Experience counts

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

The Genetic Influence

The degree to which eleven key traits of the personality are estimated to be inherited, as gauged by tests with twins. Traits were measured by the Multidimensional Personality Questionnaire, developed by Auke Tellegen at the University of Minnesota.

61% SOCIAL POTENCY
A person high in this trait is masterful, forceful leader who likes to be the center of attention.

60% TRADITIONALISM
Follows rules and authority, endorses high moral standards and strict discipline.

55% STRESS REACTION
Feels vulnerable and sensitive and is given

55% ABSORPTION
Has a vivid imagination readily captured by rich experience; relinquishes sense of reality.

54% ALIENATION
Feels mistreated and used, that "the world is out to get me."

54% WELL-BEING
Has a cheerful disposition, feels confident

51% HARM AVOIDANCE
Shuns the excitement of risk and danger, prefers the safe route even if it is tedious.

48% AGGRESSION
Is physically aggressive and vindictive, has taste for violence and is "out to get the world."

45% ACHIEVEMENT
Works hard, strives for mastery and puts work and accomplishments ahead of other things.

43% CONTROL
Is cautious and plodding, rational and sensible, likes carefully planned events.

33% SOCIAL CLOSENESS
Prefers emotional intimacy and close ties, turns to

appeared the least determined by heredity among the traits tested; about two-thirds of that tendency was found to depend on experience.

"This is one trait that can be greatly strengthened by the quality of interactions in a family," Lykken said. "The more physical and emotional intimacy, the more likely this trait will be developed in children, and those with the strongest inherited tendency will have the greatest need for social closeness as adults."

Gene ensembles

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.

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 components of complex behavior 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.

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.

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

"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 Psychoanalytic Institute at New York University Medical Center.