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By SHARON BEGLEY

Parents Can Counteract 'Environments' Created By Children's Genes

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Sigmund Freud had been dead for four years before a scientist proved in 1943 that DNA carries genetic information. It was probably just as well. The founder of psychoanalysis surely would have rolled over in his grave if he'd seen how the genetic revolution played out when it comes to understanding human behavior.

As tough as neuroscientists have been on Freud -- replacing his quaint notions of ego and id with neurotransmitters and brain circuits -- geneticists have struck the unkindest blow, linking depression, neuroticism, impulsivity, sexual orientation and more to people's 25,000 or so genes. The complicated tapestry of the mind woven by Freud, a respected neuroscientist in his day, has been reduced to a four-letter genetic code.

But when it comes to child development, Freud is back. Or at least psychoanalysts and their focus on interactions between parents and children are, and in a way that few foresaw. The childhood experiences that so riveted Freud affect the expression or suppression of gene-based personality traits for a fascinating reason: Genes create environments.

"We analysts actually have a place at the table of genetics," David Reiss, director of psychiatric research at the George Washington University Medical Center, told the annual meeting of the American Psychoanalytic Association last month.

He is leading an ambitious study of 310 (so far) adopted children. He and colleagues are, first, identifying whether the adopted babies are bubbly and all smiles, or solemn and dour. Next, they are observing how the adoptive parents respond to the children. This response is the "environment" the babies' (presumably) gene-based traits create. The goal is to see whether the parental response alters expression of the traits.

Even the preliminary findings of the study, which is funded by the National Institutes of Health, will ring true to parents. Some kids seem to emerge from the womb with a jolly disposition. Others seem congenitally cranky, refusing to crack a smile no matter how clownishly you act in an attempt to make them giggle. Because solemn babies aren't as much fun as giggly ones, many parents respond to them more impatiently, coldly and even harshly, particularly if the parents are under stress.

In a very real sense, the child's innate disposition -- solemnity -- elicits a certain parental behavior -- harshness and lack of warmth. Genes, in other words, create an environment. This one-two punch can lead to the worst

outcome, says Dr. Reiss. Studies hint that when solemn babies reach school age, they have a greater chance of developing conduct disorders, especially oppositional behavior. These are the kids who become bullies and firebugs. They also have a higher risk of anxiety disorders, which can pave the way to depression and substance abuse.

But the new research suggests that none of this is inevitable. If parents resist responding to a dour baby with harshness, says Dr. Reiss, the genes that underlie solemnity in infancy and oppositional behavior in the teen years may go quiet.

Genes seem to create environments throughout life. An unresponsive child elicits less affection from parents, reinforcing her innate lack of sociability. Impulsive, aggressive kids elicit threats and coercion, reinforcing problem behavior. On a happier note, a sociable and verbal child is a delight to talk to and read to, reinforcing his inherent cognitive edge. "We're talking about the genome as a product of social interactions," says Dr. Reiss. "Genes are fully expressed in some social environments, while in others they never get expressed."

That is a fundamentally hopeful message, because it suggests that genes are not destiny. Yes, a toddler's innate dourness will elicit a certain response from even the best-intentioned parents. But if parents understand that this instinctive response is the very environment that can reinforce a genetic tendency, they have an incentive to respond differently. Studies find that showing parents videos of their cold, impatient or angry responses -- and offering coaching in how to respond less harshly -- helps many change, breaking the link from infant temperament to adolescent trouble.

Genes also create an environment when a child's oppositional, aggressive behavior breeds marital conflict. That environment then induces stronger expression of the problematic traits, raising the child's risk for academic and behavioral problems in adolescence. "Kids are contributing to the creation of an environment that then affects them," says psychology researcher Tom O'Connor of the University of Rochester.

Attributing adolescent problems to the inexorable force of genetics may be appealing (it lets parents off the hook), but ignores the role of family environment, which is far from inevitable. Says Prof. O'Connor, "The family environment has been wrongly downplayed."

"If these findings hold up," adds Dr. Reiss, "it would provide an opportunity to forestall genetically influenced adverse outcomes. If you can alter the parent's responses, these genes might never express themselves. When I say that analysts have a place in genetics, I mean that they have a deep appreciation of the importance of relationships in shaping people."

Freud, who would have been 150 this year, is surely smiling down from his couch in the clouds.

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