

Early Family Experience Can Reverse the Effects of Genes

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Early family experience can reverse the effect of a genetic variant linked to depression, UCLA researchers report in the current issue of the journal *Biological Psychiatry*.

Among children from supportive, nurturing families, those with the short form of the serotonin transporter gene (known as 5-HTTLPR) had a significantly reduced risk for depression, found the UCLA team, under the direction of Shelley E. Taylor, UCLA distinguished professor of psychology and an expert in the field of stress and health. The research team also found that among children from emotionally cold, unsupportive homes marked by conflict and anger, those with the short form of the 5-HTTLPR gene were at greater risk for depression, as some previous research has also shown.

The 118 young adult men and women who participated in the study completed assessments of depression, early family environment and current stress. They were asked, for example, how often they had been loved and cared for, shown physical affection or insulted and sworn at by their families. Saliva samples were used to determine if the participants' standing on the 5-HTTLPR had two short alleles (s/s), a short and a long allele (s/l) or two long alleles (l/l) for the serotonin transporter gene. (An allele is any of several forms of a gene.)

The research showed that a person's likelihood of developing symptoms of depression was not predicted by the particular combination of alleles alone; rather, it was the combination of the person's environment and

genetic variant s/s that determined whether the person experienced symptoms of depression, said Taylor, principal investigator on the study.

Among the study's implications is that the short form of the 5-HTTLPR is "highly responsive to environmental influence" and, rather than predicting risk for depression, its effects vary substantially, depending on how supportive the external environment is, Taylor said.

These conclusions were bolstered by parallel evidence collected by the team showing that a supportive environment reduced the risk of depression among those with the s/s form of the 5-HTTLPR gene, while those experiencing a great deal of stress in their lives had an increased risk of depressive symptoms if they had the s/s variant of the gene.

"Genes are not destiny," Taylor said. "Although some genes confer particular risks, others, such as variants of the 5-HTTLPR, are clearly highly responsive to input from the early and current environment. That means, among other conclusions, that there is an important role that parents and even friends can play in providing protection against the risk of depression that stress can confer." The study adds a new component to evidence that the environment can regulate biology and steer the effects of genetic predispositions.

"It indicates just how important a loving and caring family can be," said Baldwin Way, a co-investigator on the project. The other members of the research team, from UCLA's department of psychology and department of psychiatry and biobehavioral sciences, are William Welch, Clayton Hilmert, Barbara Lehman and Naomi Eisenberger.

Taylor was honored Oct. 7 with the inaugural Clifton Strengths Prize, which recognizes the life and work of Donald O. Clifton, past chairman of The Gallup Organization. The prize, which will be presented every two years, recognizes groundbreaking theory, research and practice in

"strengths-based psychology." Clifton's philosophy was for people to focus on what was positive and right with themselves and to build on their strengths to achieve their full potential, Gallup said. Taylor's research showing how a supportive environment reverses the impact of a genetic risk factor is an example of the work for which she was honored.

The research published in *Biological Psychiatry* was federally funded by the National Institute of Mental Health, and the National Science Foundation, with additional funding from and UCLA's Center for Psychoneuroimmunology.

In previous research, Taylor and UCLA colleagues, including psychology professor Rena Repetti, reported strong evidence that children who grow up in risky families often suffer lifelong health problems, including cancer, heart disease, hypertension, diabetes, obesity, depression and anxiety disorders, as well as early death (*Psychological Bulletin*, March 2002, Vol. 128, No. 2, pp. 330–366). A child's genetic predispositions may be exacerbated by the family environment, and this combination can lead to the faster development of health problems in risky families, which may be more debilitating than they would be in a more nurturing family, the researchers found.

Source: UCLA

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