

Chronic stress seems linked to achievement gap

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(PhysOrg.com) -- Children in low-income families lag behind their higher-income counterparts on virtually all measures of achievement, and this gap tends to increase over time. There are many reasons why, but a Cornell environmental psychologist and his colleagues add a new culprit to the list: chronic stress from adverse neighborhood and family conditions.

Chronic stress, in addition to parents not investing much time in cognitively stimulating their children, "can hinder children's [cognitive functioning](#) and undermine development of the skills necessary to perform well in school," says Gary Evans, professor of design and environmental analysis and of human development, who has been studying the effects of [poverty](#) on children for more than two decades.

"Their homes, schools and neighborhoods are much more chaotic than those of their higher-income counterparts," he added. "They live with such stressors as pollution, noise, crowding, poor housing, inadequate school buildings, schools and neighborhoods with high turn-over, [family conflict](#), family separation, and exposure to violence and crime. These conditions can produce toxic stress capable of damaging areas of the brain associated with attention, memory and language that form the foundation for academic success."

Writing in the winter issue of the magazine *Pathways*, a magazine on poverty, inequality and social policy published by the Center for the Study of Poverty and Inequality at Stanford University, Evans and

Columbia University's Jeanne Brooks-Gunn and Princeton's Pamela Kato Kabanov describe their Risk-Stress Model. They point to research that shows how growing up in poverty is linked with dramatically increased risk factors and how this elevated risk is linked to higher [stress levels](#) among poor children.

They also describe their reanalysis of a national dataset of very young at-risk children to explore the relationship between family income and blood pressure and [body mass index](#). Both are measures of stress, reflecting wear and tear on the body and are precursors of lifelong health problems.

The researchers found that babies growing up in low-income neighborhoods had health trajectories indicative of elevated [chronic stress](#). Disturbingly, these patterns emerged very early in the lives of these children.

The authors also examined the link between chronic stress and achievement. There is some evidence that several areas of the brain -- language, long-term memory, working memory and executive control -- are sensitive to childhood poverty. New data are beginning to shed light on the question of whether these differences are attributable to cumulative risk and stress, Evans said.

In a recent follow-up in a longitudinal study of children in poverty, Evans and colleagues found that working memory at age 17 deteriorated in direct relation to the number of years the children lived in poverty. Importantly, this effect only occurred among the low-income children with chronically elevated physiological stress. Early childhood poverty did not lead to [working memory](#) deficits among children who had somehow escaped the stress that usually accompanies poverty.

Childhood poverty leads to lower academic and occupational

achievement, in part, because the multiple risks typically faced by [children](#) growing up in poverty lead to chronic stress, which in turn, negatively affects children's cognitive abilities to succeed in school.

"We don't dispute the important roles of cognitive stimulation and parenting styles in socio-economic status differences in children's cognitive development," Evans says. "However if this new pathway is confirmed, it suggests new ways of understanding and ultimately intervening to break the income-achievement gap."

Provided by Cornell University

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