

Airport noise is harmful to the health and well-being of children and may cause lifelong problems, Cornell study shows

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ITHACA, N.Y. -- The constant roar from jet aircraft can seriously affect the health and psychological well-being of children, according to a new Cornell University study. The health problems resulting from chronic airport noise, including higher blood pressure and boosted levels of stress hormones, the researchers say, may have lifelong effects.

"This study is probably the most definitive proof that noise causes stress and is harmful to humans," says Gary Evans, a professor of design and environmental analysis in Cornell's College of Human Ecology. This is, he says, the first longitudinal study of noise and human beings to look at the same group of individuals before and after noise pollution.

Other studies have been cross sectional, comparing people exposed to noise to well-matched controls who were not subjected to noise. Evans, an environmental psychologist and an international expert on environmental stress (such as noise, crowding and air pollution) and his German and Swedish colleagues, Monika Bullinger and Staffan Hygge, respectively, reported their findings in the January issue of *Psychological Science*, published by the American Psychological Association.

The researchers looked at 217 third- and fourth-grade children in rural areas 22 miles from Munich, Germany, before and after the opening of a new airport.

About half the children live in an area under the flight path of the new international airport; the others, who were matched for age, parental jobs, family size and socioeconomic status, live in quiet areas. The children were tested for blood pressure, stress hormone levels and quality of life six months before the airport was completed as well as six and 18 months after it opened.

The children in the chronic noise group experienced modest but significant increases in blood pressure and significant increases in stress hormones (epinephrine, norepinephrine and cortisol) while the children in the quiet areas experienced no significant changes. Eighteen months after the airport opened, the children exposed to the chronic aircraft noise also reported a significant decline in their quality of life.

"Although the increases in blood pressure were modest in the children living under the flight path, they may predict a greater likelihood of having higher blood pressure throughout adulthood," says Evans. There are indications, he says, that elevated blood pressure in childhood predicts higher blood pressure later in life.

Boosts in stress hormones also are of concern because they indicate that noise induces physiological stress. These hormones are linked to adult illnesses, some of which are life-threatening, including high blood pressure, elevated lipids and cholesterol, heart disease and a reduction in the body's supply of disease-fighting immune cells.

Evans' and his colleagues' new study adds powerful evidence to cross-sectional and animals studies which have shown higher stress levels in children and adults working and living in chronically noisy environments.

Evans also reported last year that New York children living near an international airport tended to be poor listeners and did not read as well as matched children in quiet schools. Later this year, Evans hopes to report on how chronic noise affects reading, learning and mental health in the Munich study group.

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