

Kids near airports don't read as well because they tune out speech, Cornell study finds

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ITHACA, N.Y. -- Children in schools bombarded by frequent aircraft noise don't learn to read as well as children in quiet schools, Cornell University researchers have confirmed. And they have discovered one major reason: kids tune out speech in the racket.

"We've known for a long time that chronic noise is having a devastating effect on the academic performance of children in noisy homes and schools," says Gary Evans, an international expert on environmental stress, such as noise, crowding and air pollution. "This study shows that children don't tune out sound per se, rather they have difficulty acquiring speech recognition skills."

Evans and his collaborator, Lorraine Maxwell, both environmental psychologists, are in the Department of Design and Environmental Analysis in the College of Human Ecology at Cornell.

Evans and Maxwell compared children in a noisy school (in the flight path of a New York international airport) with similar children in a quiet school. Unlike in other studies, both groups of children were tested in quiet conditions. By doing so, the researchers showed that the link between chronic noise and reading scores is the chronic noise exposure -- not noisy episodes that might have occurred during the testing sessions.

Evans and Maxwell, whose study will be published in *Environment and Behavior* later this year, compared a total of 116 first and second graders from two elementary schools. One school was battered by peaks of up to 90 decibels of noise every 6.6 minutes by low-flying planes passing overhead. The other school, closely matched for ethnicity and percentage of children receiving subsidized school lunches and speaking English as a second language, was in the same urban area but in a quiet neighborhood. Only children for whom English was their first language were included in the study.

Each child was first given an auditory screening test. They were subsequently tested for abilities to read, distinguish words with background noise, distinguish sounds with background noise and distinguish word sounds (phonemes) under quiet conditions. The tests, with the exception of the initial auditory test, were conducted by Elissa Tolle and Pegauy Santil, 1996 Cornell graduates in human ecology, who were both seniors at the time. When the data were analyzed, the researchers controlled for mother's education.

"Interestingly, the findings were only significant for speech perception amidst noise, not sound perception" says Maxwell. "This implies that language acquisition is an

underlying, intervening mechanism that accounts for some of the noise-reading deficit link."

Evans and Maxwell also suspect that other factors may be at work in noisy schools and neighborhoods, such as teacher and parent irritability and their reluctance to talk as much, use as many complete sentences and read aloud as often as other teachers and parents.

Both researchers stress the need to reestablish an office of noise abatement within the Environmental Protection Agency; such an office was abolished during the Reagan administration. They point to other health concerns related to chronic noise, including hearing damage, chronic cardiovascular activation, elevated annoyance and irritation, motivation problems such as learned helplessness, and impaired cognitive development and reading achievement.

"These effects have all been well documented," says Evans. "Unfortunately, we're experiencing exponential increases in worldwide, ambient noise levels that are a byproduct of economic development, particularly prevalent among economically underdeveloped countries."

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