Is Noise Detrimental to Health and Well-Being?
Sheldon Cohen, Psychology

More than 70 million Americans live in noisy neighborhoods. The din in these neighborhoods comes from aircraft overflights, traffic, construction, and industrial machinery, as well as from lawn mowers, appliances, neighbors, children, and pets. But, are high levels of community noise detrimental to residents' health and well-being? It is clear that community noise often disrupts communication and irritates and annoys residents, but up to now, there has been little convincing evidence that noise directly affects other aspects of one's behavior and health.

In 1977, a group of psychologists under my direction collaborated on a study of the effects of high-intensity noise in community settings. The project was funded by grants from the National Science Foundation, the National Institute of Environmental Health Sciences, the Society for the Psychological Study of Social Issues, and the University of Oregon Biomedical Fund. The research examined the possible effects of aircraft overflight noise on the young children living and attending school in a community next to a busy metropolitan airport. We studied children because we felt continuous exposure to high-intensity noise might be a greater threat to the young than to adults. In addition, we specifically chose aircraft overflight noise because it is a very high-intensity noise source that affects more than 8 million Americans.

Laboratory research had already established the potentially harmful

Children attending noisy schools had higher blood pressure, performed more poorly on complex tasks, and were more likely to give up when presented with a difficult task than were similar children attending quiet schools.
impact of high-intensity noise on behavior and health. In laboratory studies, exposure to loud noise caused elevations in blood pressure and other physiological changes typically found in people experiencing stress. These studies also showed that noise causes people to perform poorly in certain demanding tasks. Moreover, when laboratory subjects were unable to shut off loud bursts of noise that occurred at unpredictable intervals, they showed symptoms of depression and helplessness, including a tendency to “give up” easily when assigned a difficult task. Surprisingly, the effects of lab noise on physiological response, performance, and helplessness persisted even after the noise was turned off.

Our research project tried to find out whether those who live and work in high-intensity noise environments show the same effects as those exposed to noise in laboratory settings. Laboratory studies typically last for only an hour or so, and subjects are aware that their exposure is only temporary. Thus it is difficult to tell whether similar effects would occur in natural settings, with prolonged noise exposure that residents have little chance of totally escaping.

The subjects for our project were children attending the four noisiest elementary schools under the runway approaches to Los Angeles International Airport and children attending three similar schools in quiet Los Angeles neighborhoods. The noisy and quiet schools were nearly identical in terms of the race, ethnic background, and socioeconomic status of the children’s families. Since we were primarily interested in the effects of noise that persist when the children are removed from their noisy environment, all the tests were administered in a sound-proofed room.

In general, the results of the first study (more than 270 children) confirmed what had been found in laboratory studies. Children attending noisy schools had higher blood pressure, performed more poorly on complex tasks, and were more likely to give up when presented with a difficult task, than were similar children attending quiet schools.

Although people eventually get used to the noise levels in lab experiments, it was not clear to us whether this was also true of people living in constantly noisy neighborhoods. In order to see, we tested the same children again one year later. In general, the one-year follow-up showed the same effects of noise on the children’s behavior and health as were found during the first year of the study. Apparently, unlike laboratory subjects, the children did not adapt to the noise.

We also felt the noise in school classrooms would interfere with the learning process, making it difficult for students and teachers to communicate with one another. Since there were a number of sound-proofed classrooms in the noisy schools, it was possible to compare the scholastic performance of children in the sound-proofed classrooms with children in the noisy classrooms. We found that children assigned to sound-proofed classrooms did better on a math achievement test and marginally better on a reading achievement test than their schoolmates assigned to unabated, noisy classrooms, indicating some advantage in insulating classrooms from outside noise sources.

Additional data on the health and behavior of the children in the noise project were collected over a two-year period. We plan to present a complete description of the project and its implications for understanding the effects of community noise in a book entitled Behavior, Health, and Environmental Stress, which will be published in 1982.

Sheldon Cohen is associate professor of psychology in the College of Arts and Sciences.