Behavior

Youth doesn't make brain injury easier

A new study questions the commonly held view that children's developing brains are less vulnerable to injury and recover more quickly than mature brains.

Researchers examined how well 13 gunshot victims, age 1 to 15, recovered during the 3 years following the shooting. They evaluated the children's intelligence, language and motor skills, memory, attention, academic achievement, and "adaptive behavior" — their competence in such daily matters as dressing and behaving appropriately for their age. The bullets severely injured all but one of the study participants.

"Our data suggest that [gunshot wounds] to the brain are associated with similar levels of disability immediately after and several years after the injury in children, adolescents, and adults," reports coauthor Linda Ewing-Cobbs of the University of Texas Health Science Center at Houston. However, the youngsters' developmental levels when shot influenced what types of disabilities they incurred, she and her colleagues report in the August NEUROSURGERY.

Children over 4 years old suffered primarily from behavioral disorders, while those younger than that had mostly impaired cognitive abilities, says Ewing-Cobbs. The younger victims also had serious problems with language and gross motor skills, such as walking or hopping.

The older kids' IQ scores immediately after their accidents were poor, but they improved to average or low-average. "Disability in older children and adolescents was associated most strongly with impaired attention, adaptive behavior, and behavioral disturbance," Ewing-Cobbs and her colleagues report.

Eight youngsters accidentally shot themselves or were shot by mistake by other kids while playing. One child got hit by a bullet meant for a parent. The others were injured when assaulted, in hunting accidents, or while attempting suicide.

Death comes knocking when you're alone

If you want to cheat death, form friendships, studies suggest. People — including the chronically ill — who have good social networks tend to outlive others who lack that support (SN: 7/2/88, p.4).

A new, 6-year study involving 2,503 Finnish men, ages 42 to 60, provides more details about the relationship between social involvement and longevity.

Not being involved in clubs or volunteer organizations, having poor quality relationships, giving or receiving little social support, and being single increased the men's risk of dying during the 6 years, reports coauthor George A. Kaplan of the California Department of Health Services' Human Population Laboratory in Berkeley. During the study, 167 of the participants died.

For example, those who didn't participate in any organizations were twice as likely to die as the men most involved in groups, the team reports in the September EPIDEMIOLOGY. People who were most dissatisfied with the quality of their relationships had a 1.8 times greater chance of dying than the most satisfied men.

Unlike in other studies, the frequency of interactions with friends appeared unrelated to risk of death, suggesting quality may prove more important than quantity, Kaplan says.

Some researchers question which comes first — the good health or the social involvement? Perhaps people with better social lives are healthier to start. Kaplan's team found that the association between social satisfaction and involvement and risk of death held up even when they looked only at men who rated themselves as in average or better-than-average health.

Money helps ward off death. Men with higher incomes had a lower chance of dying. They also were more involved in organizations and were more likely to be married, Kaplan says.

Earth Science

Finding fault with quake research

When it comes to analyzing seismic hazard, U.S. researchers generally follow a "hidden bomb" strategy. They search for quake-producing faults and then try to assess their threats. But instead of focusing mostly on finding seismic sources, U.S. scientists should redirect some of their efforts toward studying quake effects, argues one federal geologist.

In the Aug. 26 SCIENCE, Thomas L. Holzer of the U.S. Geological Survey in Menlo Park, Calif., urges scientists to identify sections of urban areas with soil conditions that amplify seismic shaking. Such spots will suffer during any nearby earthquake, regardless of the exact fault location, he says. Holzer notes, for example, that parts of San Francisco have sustained damage during each major quake in the last 140 years, even though the shocks originated on different faults.

This approach would work well in the eastern United States, where quakes have occurred in the past but geologists have a difficult time identifying active faults. In such cases, mapping the locations of hazardous soils would help city planners to address quake risks. Holzer says geologists must continue searching for quake-producing faults in many regions. But for cities already well aware of their seismic potential — such as Los Angeles or San Francisco — identifying damage-prone areas can yield more benefits than simply finding more faults.

Tallying the toll of the next quake

While the magnitude 6.7 Northridge earthquake last January wracked up a bill of more than $15 billion in damages, the toll of future tremors in Los Angeles, San Francisco, and Tokyo could reach 10 to 100 times higher, according to a new estimate. Haresh Shah, a civil engineer at Stanford University, incorporated information collected from the Northridge disaster to calculate worst case scenarios for the largest quakes expected to hit these cities in the next several decades.

Shah determined that a jolt similar to the 1906 San Francisco earthquake (estimated magnitude of 8) could cost $115 billion to $135 billion and kill 2,000 to 6,000 people in the Bay area. A magnitude 7 tremor in the Los Angeles basin could do $125 billion to $145 billion in damage and kill 2,000 to 5,000. In Tokyo, a repeat of the magnitude 7.9 Kanto quake in 1923 could wreak $800 billion to $1.2 trillion in damages and cause 40,000 to 60,000 deaths. While the estimated costs exceed those of past studies, the fatality figures fall below those cited in earlier reports, Shah says.

When a hurricane hits New York

Nature doesn't play favorites. While earthquakes plague California, hurricanes occasionally hammer the eastern United States — a fact made all too clear to residents of South Carolina and Florida during Hugo (1989) and Andrew (1992). The recent poundings, however, have done nothing to prepare a particularly vulnerable population of people living in the northeastern states. This region stands to suffer extreme hurricane damage sometime in the next several decades, according to coastal geologist Nicholas K. Coch of Queens College in Flushing, N.Y.

In the summer JOURNAL OF COASTAL RESEARCH, Coch paints a bleak picture of the next strong northeastern hurricane. Although they occur infrequently and lack the power of southern storms, northern hurricanes could cause more damage, in part because they travel faster. The coastal geometry also raises the destructive potential of storms because winds tend to pile water in the corner created between New Jersey and Long Island. A model of a hypothetical category 3 hurricane suggests that storm surge would reach 15 to 19 feet in parts of Brooklyn and Queens. The high population densities in New York and other parts of the northeastern coastline amplify the danger and make evacuation difficult, Coch says.