Behavior

An early start for panic

Ann is 8 years old and no stranger to panic. At school and at other places outside of home, she often starts to breathe quickly, her heart races, her stomach throbs and she suddenly feels "out of control." Crowded areas frighten her, and she frequently calls her parents from school, pleading to be taken home. Ann once fled a building after panicking in a cafeteria line. The prospect of further frightening episodes haunts her.

Ann's recurrent panic attacks are typical of what, in adults, is termed panic disorder with agoraphobia, a fear of being alone or in public places. Although panic disorder is rarely diagnosed in children, it may be more common among school-aged youngsters than often assumed, according to a report in the July AMERICAN JOURNAL OF PSYCHIATRY.

Ann and two other children with panic symptoms were treated over several years by psychiatrist James C. Ballenger and his colleagues at the Medical University of South Carolina in Charleston. Such children usually receive a diagnosis specific to childhood such as separation anxiety, which is marked by intense fears surrounding separation from a parent and refusal to attend school or other activities outside home.

But Ann and the other two children clearly met adult criteria for panic disorder with varying degrees of agoraphobia, Ballenger and his co-workers contend. Furthermore, the children significantly improved when treated with drugs that ease the panic and agoraphobia of adults. Each child also attended psychotherapy sessions.

Panic disorder and agoraphobia in children may go unnoticed, the researchers suggest, because a youngster's forlorn appearance distracts clinicians from underlying anxiety. In addition, children are more likely than adults to emphasize physical symptoms over feelings of anxiety.

Given recent revelations that other adult psychiatric disorders, such as obsessive-compulsive disorder, can begin in childhood, the South Carolina investigators call for expanded research into the nature of panic among children.

Child abuse: A 'cycle of violence'?

Researchers are increasingly questioning the popular notion that abused or neglected children often become abusive parents and violent criminals. In fact, says psychologist Cathy Spatz Widom of Indiana University in Bloomington, new data suggest the relationship between child abuse and later crimes of violence is neither straightforward nor certain.

Widom identified 908 cases of child abuse (physical and sexual) or neglect in county court records from a midwestern metropolitan area during the years 1967 through 1971. County birth records from the same time period provided a control group of 667 children, matched with the sample for age, sex, race and social class. Most subjects are now between 18 and 32 years old.

Nearly 29 percent of those abused and neglected as children were arrested for a criminal offense as an adult, compared to 21 percent of the controls, reports Widom in the July AMERICAN JOURNAL OF ORTHOPSYCHIATRY. While arrests for violent crimes were greater among abused or neglected subjects, particularly males, the difference was not statistically significant. Arrests for child abuse were comparable in the two groups. Seven out of 10 of the abused and neglected subjects had no record of adult crimes, Widom points out.

The findings apply only to the most extreme cases of abuse that come to the attention of juvenile or adult courts, she notes. Nevertheless, the evidence underscores the need to study factors deterring many abused and neglected children from carrying out a "cycle of violence." Less obvious psychological consequences of early abuse (SN:4/22/89, p.246) also deserve more attention, Widom says.

Geology

Richard Monastersky reports from Washington, D.C., at the 28th International Geological Congress

Spotting erosion from space

Billions of tons of dirt wash into the oceans each year, making soil one of the world's most endangered resources. Not only does topsoil erosion steal precious nutrients away from fields, it also increases the cost of farming and lowers food production. Now scientists are using satellite images to spot areas facing the greatest erosion danger.

Department of Agriculture researchers exploit the muddy side-effects of erosion in their search. As soil particles wash into lakes and rivers, they change water color by adding red hues, says Jerry C. Ritchie with the USDA in Beltsville, Md. The earthy tones allow Ritchie and his colleagues to find soil-filled lakes on images from the U.S. Landsat satellite, which carries several cameras, each recording a specific color of light.

The scientists start by subtracting all land areas from the satellite images, then examine the colors of the remaining lakes and reservoirs. By comparing the colors against a theoretical model they devised, the researchers can estimate with about 90 percent accuracy the total amount of suspended sediment in the water, Ritchie says. If used several times a year, this technique would quickly tell conservation officers which watersheds suffer the greatest erosion.

The model is based on over a decade's worth of comparisons between satellite images and water samples from a lake in Mississippi and another in nearby Arkansas. Since developing the system, the USDA scientists have tried it out on several more lakes and investigators in Oklahoma are currently testing it on a statewide basis, Ritchie says.

Ancient ocean upheaval marks the spot

Imagine that Christmas did not officially fall on December 25 but that everyone knew the holiday belonged sometime near the end of the year. With some people celebrating on December 27 and others a week earlier, confusion would ensue. In a sense geologists face a similar situation when studying the oldest known animals with skeletons. These organisms began appearing in the fossil record near the opening of Earth's Cambrian period 570 million years ago, but geologists lack an official signpost for the period. Researchers now propose that evidence of an ocean upheaval can help solve the problem.

A committee of scientists is trying to pick a single geologic "type" section that will serve as a worldwide example of the boundary, and most attention is focused on a site in the Yunnan province of China. Once they choose, researchers will need a means of locating the same boundary elsewhere. Normally, fossils can aid in finding a geologic boundary, but the situation is particularly confused at the Precambrian-Cambrian transition, because fossils from that period are not so numerous.

A geochemical fingerprint could come to the rescue, says Martin Brasier of Oxford University in England, one of the committee members. Brasier and his colleagues report the Chinese locale and other sites in Asia share a similar chemical marker. Within the rocks, the ratio of carbon isotopes swings dramatically at the time of the approximate boundary, reflecting a dramatic change in the world's oceans, says Brasier. Although the researchers cannot yet explain the isotope changes, the chemical marker may represent times when the ocean turned over, bringing unusual amounts of nutrient-rich water to the surface. Scientists had previously identified these isotopic shifts in Moroccan rocks. But because the rocks lacked fossils, it remained unclear how the timing of the shifts related to the appearance of certain animals.

Brasier says the isotopic shifts appear to have occurred concurrently from Morocco to Siberia, which apparently sat on the coastline of a giant supercontinent at the time. If so, the geochemical signature will allow geologists to locate the beginning of the Cambrian period even in fossil-poor rocks.

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