Behavior

Kindergarten cues to teen drug use

Boys who exhibit a cluster of extreme personality characteristics by age 6 prove far more likely than their peers to smoke cigarettes, get drunk, and use illicit drugs in the first few years of adolescence, a long-term study finds.

"These results suggest that preventive initiatives may use childhood personality dimensions, rated by kindergarten teachers, to identify children at risk for early substance use," propose Louise C. Mâsse of the University of Texas–Houston and Richard E. Tremblay of the University of Montreal.

The two psychologists examined the relation between personality ratings of boys at ages 6 and 10 by their teachers and the same boys' annual self-reports of substance use from ages 11 to 15. All boys came from white, French-speaking, relatively poor families in Montreal. Statistical analyses included from 656 to 784 boys, depending on the availability of responses for the various types of drug use.

Boys who displayed high novelty seeking (marked by impulsive, excitable, and exploratory behaviors) and low harm avoidance (typified by having few worries and showing little fear or apprehension of new things or situations) were much more likely to use cigarettes, alcohol, and other drugs in their early teens. Most of the youngsters described by this apparently risky personality profile at age 6 were also in that category at age 10, the scientists report in the January Archives of General Psychiatry.

To the researchers' surprise, low reward dependence—characterized by emotional aloofness and a lack of concern for others—did not contribute to a propensity for teenage drug use. Further research will address whether this personality measure helps to identify boys likely to become chronic drug users after early teenage exposures, Mâsse and Tremblay say.

Such follow-up investigations are particularly important, they add, because not all kindergarten boys tagged as high in novelty-seeking and low in harm avoidance become teenage drug users, and some of those who do take drugs decide to quit the practice after a few months or years. — *B.B.*

Filling in the brain's line of sight

A curious visual quirk sometimes arises after damage to one or the other side of the brain, usually to tissue near the brain's midpoint. A single object lying in either the right or left visual field is visible, but an item placed in the visual field opposite the ailing hemisphere vanishes if it's shown at the same time as a different item in the adjacent visual field.

Psychologist Jason B. Mattingley of the University of Cambridge in England directed experiments focusing on a 66-year-old female stroke victim. The results suggest that the one-sided disappearing act occurs only after her brain conducts an automatic, relatively thorough three-dimensional analysis of the "invisible" item. A disturbance of brain processes that then direct conscious visual inspection causes her to pay attention to only one of two items positioned in separate visual fields, Mattingley's group contends in the Jan. 31 Science.

The woman they studied had suffered right-brain damage and lost sight of items in her left visual field. Yet when shown a pair of illusory rectangles—each consisting of four open-mouthed Pac-man shapes placed at the corners and facing inwards, yielding the eerie sensation of a bounded rectangle—she usually reported seeing the rectangle in both visual fields. She had similar success when shown a pair of drawings, each of which creates the illusion of a rod running behind a cube.

When her brain performed the complex task of filling in the incomplete image, the woman's conscious detection of items to the left rebounded, the scientists theorize. The perception of an illusory surface was striking enough to engage her attention in both visual fields, they hold. — *B.B.*

Earth Science

Deep ocean is no place to hide

Far below the waves, in the dark reaches of the sea, underwater gardens bloom wherever volcanic fluids seep from the seafloor. These hot, chemical-laden brines sustain an odd collection of microbes and animals, among them tube-shaped worms, giant clams, and blind shrimp. Because these hidden communities seem completely cut off from the rest of the world, some scientists think seafloor vents have sheltered ancient species that were wiped out in other parts of the globe long ago. A fossil discovery in Russia suggests otherwise.

In the Jan. 9 Nature, a team of British and Russian scientists describes the petrified remnants of a vent community that thrived during Earth's Silurian period, which ran from 438 million to 410 million years ago. Found in the southern Ural mountains, this deposit contains the oldest and most diverse set of fossil vent creatures ever discovered, report Crispin T. S. Little of the Natural History Museum in London and his colleagues.

Some denizens of the Silurian seafloor community are familiar, such as the large tubeworms seen at modern vents. Other members of the ancient oasis are unique, however. The Russian deposit includes fossilized brachiopods—clamlike creatures that do not populate any known vents today.

During the Silurian, brachiopods were abundant in the oceans, but they suffered severely during the mass extinction at the end of the Permian period, 250 million years ago. Their absence from modern vents indicates that these ocean bottom communities have not served as protective refuges, contend Little and his colleagues. — *R.M.*

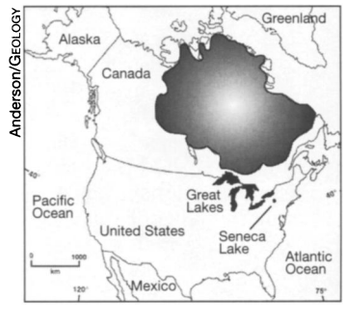
Cold climate lingered after ice age

For generations of geology students, the term Younger Dryas has meant the end of the last ice age. During this period, from 10,800 to 10,300 years ago, the globe shivered through one final cold spell before entering the warm Holocene epoch, according to standard wisdom. Now, a lake in upstate New York is revising scientists' ideas about the ice age's demise.

Evidence from the bottom of Seneca Lake reveals that this part of North America remained cold long after the Younger Dryas. William T. Anderson of the Swiss Federal Institute of Technology in Zurich and his colleagues made the discovery by drilling into the soft layers of clay that have gradually accumulated on the bottom of the lake. Oxygen isotope ratios within the clay serve as a sort of atomic thermometer, allowing the researchers to gauge the region's temperature thousands of years ago.

The oxygen record and other signs within the sediments suggest that Seneca Lake went through a prolonged chill from roughly 10,000 years ago to 8,000 years ago, the scientists report in the February Geology. This previously unknown cold period lasted longer and was more intense than the well-documented Younger Dryas. The scientists trace the frosty conditions to the shrinking ice cap in Canada, which was melting rapidly at this time and filling the Great Lakes with cold water.

The frigid weather apparently stretched around much of the Northern Hemisphere. Anderson and his colleagues have found hints of a cold spell occurring at a similar time in Europe, Alaska, Greenland, and the Atlantic Ocean. — *R.M.*



By 9,500 years ago, the North American ice cap (shaded region) had shrunk considerably from its peak ice-age size. Melted water from the ice cap drained into the Great Lakes and cooled that region.

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