

BEHAVIOR

Pot studies find no brain shrinkage

Contrary to British findings six years ago, two American medical research teams now report they can find no evidence that chronic marijuana use leads to irreversible shrinking of the brain. The results of the two studies—one at Harvard Medical School's Alcohol and Drug Abuse Research Center, and the other at Washington University in St. Louis in collaboration with University of Kansas—appear in the March 21 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

In the Harvard study, 19 young men with "long histories of heavy marijuana smoking" were placed in a research ward for 31 days. For 21 of those days, the men had access to marijuana cigarettes—uniform, 1-gram joints supplied by the National Institute on Drug Abuse. During that period, the men averaged more than five cigarettes per day, including a daily dosage of 100 milligrams of the active component THC. However, in some instances subjects smoked as many as 20 joints (400 milligrams of THC) during a 24-hour period.

The Washington/Kansas researchers selected 12 men between the ages of 20 and 30 who had heavy smoking histories. Those subjects were not clinically tested while smoking marijuana, but they, along with the men in the Harvard study, underwent computerized brain scans (CT's). Computerized scans, a recent British medical development, are X-ray techniques that allow doctors to obtain a detailed anatomy of the brain without injecting a tracing substance into the brain—a painful and sometimes dangerous procedure.

Both groups report finding no evidence of brain shrinkage or damage. In 1971, the British doctors studied 10 marijuana smokers and suggested that heavy smoking could lead to shrinkage. However, that study was performed using pneumoencephalograms, an older method where air was injected into the subjects' brains. Also, some of those men took other drugs, such as LSD and pep pills, and the British researchers cautioned that further studies were needed before any definite conclusions could be drawn.

The Harvard doctors "believe that these persons [in their study] may be more representative of the general population of heavy marijuana users" than those examined by the British group. But the Harvard group also suggests that marijuana smoking might alter brain function in some way that CT brain scans cannot detect.

One joke worth 1,000 facts

"A funny thing happened to me on the way to the classroom," a college professor tells his students. Chances are, most of the students will remember the "funny thing" far longer than they will the lecture itself, according to a study on memory for classroom lectures conducted at the University of Colorado.

The study, funded by a grant from the National Institute of Mental Health, found that extraneous remarks made in the classroom were remembered better than either study topics or academic details. The researchers, Walter Kintsch and Elizabeth Bates, also report that verbatim memory of any part of a lecture remains intact two days after class, but is significantly reduced five days after the lecture is given. But contrary to previous predictions, students did not remember statements of topic—such as, "The closed energy model is critical for the psycho-analytical approach to therapy"—any better than statements of detail—such as, "Galton was the brilliant younger cousin of Darwin." Neither type, however, was remembered as well or as long as an offhand joke or anecdote.

In the March *JOURNAL OF EXPERIMENTAL PSYCHOLOGY*, the researchers suggest further studies to determine how lectures might be better structured to fit the students' memory patterns.

ASTRONOMY

New stars from old

The possibility that the birth of new stars may be triggered by the violent, explosive death-throes of old ones has been discussed by astronomers for years—in theory. William Herbst and George Assousa of the Carnegie Institution's Department of Terrestrial Magnetism in Washington have now reported what they believe to be the first observational, albeit circumstantial, evidence for such a relationship.

The first step was when Herbst, an optical astronomer, noticed that a cloud of bright gases next to some young stars (about 600,000 years old) in the constellation Canis Major was actually a ring-shaped formation, like the cross-section of the visible expanding shell of a supernova remnant. Assousa, a radio astronomer, then found that there was also an invisible expanding shell of neutral hydrogen of the sort that his previous observations had suggested was characteristic of supernova remnants. The radius and expansion velocity of the shell suggest that it is about the same age as the young stars, which, according to Herbst, may also make it the oldest known supernova remnant. The researchers also discovered in the region a "runaway" star, HD 54462, whose high velocity suggests that it may be half of a former binary pair whose now-missing partner might have exploded to become the supernova.

Herbst is now trying to measure differences in the ages of the 20 to 30 individual young stars in the group. If they were indeed triggered into being by the supernova, the younger among them should be along the inside edge of the shell, while the older ones would be outside. The reason is that once formed, the stars would move outward faster than the shell, with the older ones having had a longer time to travel.

Some believe that our own sun may have been formed this way. Excesses of certain isotopes in meteorites such as Allende have suggested that the primordial nebula from which the sun condensed was not completely homogeneous. It has been proposed that such inhomogeneities could have arisen if the condensation was started by the passage of the shock front expanding away from a nearby supernova.

Portrait of a globule

"A globule," according to Bart J. Bok of Steward Observatory in Tucson and M. Elizabeth Sim and T.G. Hawarden of the Royal Observatory in Edinburgh, "is a roundish, sharply bounded dark nebula with an angular diameter of a few seconds of arc," seen projected as what Sir William Herschel called a "Loch im Himmel" against a star-rich background. Bok et al. have cataloged 27 globules and similar dark patches in the Southern Coalsack—"the finest dark nebula in the southern Milky Way"—and compiled a portrait of one of them identified as globule 2.

Located at 1975 right ascension 12h 30.0m and declination 63°37', it is about 6 arc-minutes (3 parsecs) across. Like most globules in the region, the authors report in the March 10 *NATURE*, "it is probably on the verge of collapsing into a single or multiple star," a process which could take less than a million years. The dust in globule 2 is highly concentrated toward the center: Only 37 stars showed infrared images in the annulus covering 1.6 to 3 arc-minutes from the center, compared with 186 stars in a similar region nearby. The dust seems to total at least 0.05 times the mass of the sun, with a total dust and gas content of 5 to 10 solar masses, depending on the assumed dust-to-gas ratio.

The authors cite studies by others indicating that there is HI absorption over a wide region blanketing globule 2 and two others, a similar hydroxyl (OH) distribution, and a more localized formaldehyde cloud spanning 2 to 8 arc-minutes.