

BIOMEDICINE

That mothering influence

Isolating preweaning rats from their mothers for one hour causes as much as 50 percent reduction in brain and heart ornithine decarboxylase (ODC), an enzyme whose activity is associated with rapid growth and differentiation in those organs. ODC activity is rapidly restored when the pup is returned to the biological or surrogate mother. It might seem that ODC depression, like a decrease in heart rate in rat pups, is related to nutrition, but apparently it is not. Stephen R. Butler, Mark R. Suskind and Saul M. Schanberg at Duke University Medical Center say the decline is due to lack of "active maternal behavior." Rat pups placed with lactating mothers whose nipples had been tied (but who could still show other mothering behavior) showed a significant increase in brain ODC activity, while pups placed with anesthetized but unligated lactating females showed a 55 percent decline in ODC activity. To ensure that adrenal hormones had not increased due to stress from absence of mothering and inhibited ODC activity, the adrenal glands were removed. Maternally deprived pups again showed decreased ODC activity. Apparently, ODC activity is not regulated by nutrition or an adrenal mechanism, but by the mother's behavior.

Sweet memories

Forgotten where you parked your car? Can't remember which dry cleaners has your best suit? Take a hit of vasopressin and it will all come back.

The link between vasopressin, a pituitary hormone, and memory was discovered accidentally by David de Wied (SN: 3/13/76, p. 169) when he found that rats injected with the hormone could be trained more easily and had better memories. Now, researchers reporting in the Jan. 7 LANCET have restored memory in both amnesiacs and normal patients. A Belgian and Swiss study, comparing experimental and placebo groups of men aged 50 to 65, concluded that men receiving three puffs of vasopressin nasal spray per day performed better on tests measuring attention, concentration, recognition, immediate memory and learning. In Spain, four amnesia patients, three suffering memory loss from car accidents and one from alcoholism, were treated similarly with vasopressin. All four reported memory recovery within five to nine days. The Belgian and Swiss group is continuing studies to determine if vasopressin acts directly or by stimulating secretion of other hormones.

The zinc-cancer link

Recent research has increasingly supported zinc's important and complex role in cell growth, both abnormal and normal. Last year W. J. Pories, then of Case Western Reserve University, showed that decreasing dietary zinc reduced tumor cell growth in rats and mice (SN: 1/15/77, p. 38). However, in normal cells, zinc deficiency has been shown to be a major cause for failure to heal; and slow-healing tissues seem to have more chance of becoming malignant. Now, research being done at Massachusetts Institute of Technology shows that zinc deficiency may increase susceptibility to esophageal cancer. After noting a resemblance between esophageal tissue from pigs with a zinc-deficiency-related disease and tissue from humans with esophageal cancer, Paul M. Newberne and Y. Y. Fong found reduced zinc levels in blood, hair and esophageal tissue of the cancer patients. In rats fed a zinc-deficient diet and given a tumor-inducing substance, 79 percent developed malignant tumors, compared with 29 percent of those on a normal diet. Pories, now at East Carolina School of Medicine in Greenville, N.C., says the work reinforces zinc's importance, both in maintaining normal growth and controlling abnormal growth.

BEHAVIOR

A (musical) pitch for left-handers

The poor, misaligned left-hander. Except for baseball pitchers and a few select others, lefties seem destined to become interesting but somewhat inferior oddities in the minds of many Americans. And because many left-handers are believed to have their speech centers in the right half of the brain (as opposed to the left brain for the majority of people) some behavioral researchers have argued that left- or mixed-handedness is a factor in reading disability or in poor performance of visual and spatial tasks.

Now, researcher Diana Deutsch reports in the Feb. 3 SCIENCE that left-handers appear to be *superior* in auditory and music processing ability. In a study of 76 right-handed and 53 left-handed undergraduates, Deutsch exposed the students to a series of test tones, separated by several random tones. The subjects indicated whether successive test tones were identical or differed by a semitone.

The results show that left-handers erred less often — 32.5 percent of the time, compared to 38.1 percent for righties — in accurately remembering pitch tones. In addition, those who were left-handed, but also utilized their right hands fairly often, had an even lower error rate (29 percent) than those strongly left-handed.

"These findings suggest... a duplication of storage [in the left and right brain] of pitch information by the moderately left-handed," says Deutsch of the Center for Human Information Processing at the University of California at San Diego. If such duplication exists, it would mean that ambidextrous persons who are primarily left-handed would have two separate information retrieval locations and, hence, better memories for pitch and perhaps other musical or auditory factors, she says. The same theory might apply to persons who have duplicate speech functions, she suggests.

The findings represent "to my knowledge, the first evidence for association between left-handedness and superior auditory or music processing ability," Deutsch says. The findings also demonstrate "that the 'ambidextrous' should not be considered a single population, as is often assumed," according to the researcher.

Female offenders: "Traditional" women

Like their male counterparts, female criminals have been seen historically as poorly adjusted persons with low self-esteem and confused role images. Several previous studies have concluded that women prisoners may have more "masculine" value systems than their noncriminal female counterparts.

Now, a survey of 73 female offenders at the Massachusetts Correctional Institute appears to raise serious questions about such conclusions. The women were tested on three scales dealing with esteem, attitudes and sex-role. The results were compared to identical measurements with a control group of non-offenders from similar socio-economic, racial and educational backgrounds.

The results show "no significant differences in self-esteem or personal autonomy scores," says Harvard University's Cathy Spatz Widom, who conducted the survey. Moreover, the offenders were considerably more conservative and less profeminist in their attitudes towards women than were members of the control group. Rather than being more masculine in their attitudes, the offenders "have clearly internalized society's sex-typed standards of desirable behavior for women," Widom says.

Instead of trying to rehabilitate prisoners by indoctrinating them with "traditional female" values — a goal espoused by many prison programs — correction experts might concentrate on teaching them job skills, she suggests.