

behavioral sciences

From our reporter at the Southeastern Psychological Association meeting in Atlanta

Learning skill of great apes

A comparative study of the relationship between cortical evolution and cognitive skills in 45 great apes, 6 gibbons and representative groups of monkeys was conducted at the Yerkes Regional Primate Center in Atlanta by Duane M. Rumbaugh of Georgia State University.

The primates were tested on a series of two-choice visual discrimination problems. Then the problems were reversed and the animals were retested. The first test measured learning ability and speed of learning. The second measured transfer of training capabilities. Rumbaugh reports that the tests showed the general superiority of great apes over all other primate groups tested, and supported the conclusion that learning and transfer of learning skills are positively correlated with cortical evolution.

Rumbaugh is relying on this learning ability to teach an orangutan and a chimp to communicate with man through symbols on a computerized keyboard. Right and wrong words and sentences will be studied statistically.

Psychological testing

The Minnesota Multiphasic Indicator (MMPI) is a psychological test made up of 566 true and false items. In the hands of a qualified clinician it is a useful tool in establishing the mental stability of an individual. But because of the number of items and because of the wide area of subject matter covered, the MMPI is time consuming and difficult to interpret.

Thus, the growing demand for psychological testing and the shortage of qualified psychologists prompted Raymond D. Fowler of the University of Alabama (SN: 4/15/72, p. 246) to work on a computer interpretation system for the MMPI. He compiled and refined several thousand interpretive statements for the computer by 1964. By 1967 computer analysis of the MMPI was being used on a nationwide scale.

Fowler now reports that the tests and interpretations have been translated for international use. The first computerized MMPI in European service was initiated in Switzerland last November. It will be extended to all of the German speaking areas this summer and into France, Italy, United Kingdom and Belgium by this fall.

The nauseous alcoholic

Therapists have been able to induce nausea in alcoholics through verbal suggestion. With practice an alcoholic can be taught to become sick at the mere thought of taking a drink. But there is a major drawback in the method; the patient sometimes feigns nausea and therapists cannot always discriminate subtle changes. Ralph L. Elkins of the Augusta, Ga., Veterans Administration Hospital is attempting to overcome this obstacle by closely monitoring physiological responses on a polygraph or lie detector. He then compares changes in galvanic skin response, respiration and heart rate to the patient's signaled reports of nausea.

The number of subjects tested in this manner is still small but Elkins believes the results to be reliable enough to justify continued use and wider study of the method.

medical sciences

From our reporter at the FASEB meeting in Atlantic City

Effects of lead on reproductive system

One of the things that did in the Romans was a decline in birth rate due to high exposure to lead which they used in roof sheeting and in wine vessels. Modern man is again exposed to high lead levels. The average American's bloodstream has a 0.2 parts per million concentration of lead. The average urban dweller daily absorbs 16 micrograms of lead from the atmosphere.

To determine the effects of lead exposure on man's reproductive process, Mostafa S. Fahim, David Hilderbrand, Milamari Webb and Robert Russell of the University of Missouri Medical Center fed 5 micrograms and 100 micrograms of lead acetate daily to male rats. They report that after one month abnormal multiplication of cells in the prostate of lead-exposed animals increased it to twice the size of that of control animals and there was a change in the shape of the alveoli, which leads to a reduction of prostate secretion. Lead concentration in the blood of these animals was 0.192 and 0.286 parts per million.

Food additives and behavior

Two food additives, butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT), have been widely used for 20 years to prevent offensive odors caused by oxidation of fats. John Stokes, C. L. Scudder and A. G. Karczmar of Loyola University's Institute for Mind, Drugs and Behavior have found that these compounds can cause significant brain and behavioral changes.

Pregnant mice and their offspring were fed BHA and BHT. These additives, say the scientists, decreased brain enzyme activity by nearly 50 percent in the newborn mice; brain serotonin levels, decreased by 60 percent. Mice treated with BHT fought more and slept less than mice fed no additives. Mice fed BHA explored more, groomed themselves less and did not sleep at all.

Though the amounts of BHA and BHT fed the mice were five to ten times that in processed foods the researchers conclude that "these antioxidants can no longer be viewed as innocuous substances."

Marijuana and hypertension

Five psychiatrists at McGill University in Montreal report that an extract of marijuana and the main active principle of marijuana, delta-9-THC, cause significant reductions in blood pressure of rats suffering from hypertension.

They daily injected a moderate dose of THC into 10 rats with experimentally induced hypertension. An hour after injection their blood pressure dropped and remained at lowered levels for several hours. There were no overt behavioral or bodily side effects. After a week's treatment blood pressure levels of treated rats were significantly lower than those of untreated hypertensive rats.

In another test, rats selectively bred to be naturally hypertensive were injected with a crude extract of marijuana. This type of hypertension is thought to be similar to that most common among humans. Again blood pressure levels were lowered.