

Transfer Evidence Found

Study supports contention that learning can be transferred to untrained rats by injecting them with brain materials from trained rats

► ONE OF TODAY'S most heated scientific controversies is whether the brain's learning can be physically transferred from one animal to another. Evidence that it can was presented by a Duke University biochemist in Durham, N.C.

While emphasizing that his results were "preliminary," Dr. William L. Byrne outlined experiments indicating that learning in untrained rats is significantly improved by injections from trained rats.

His contribution to what has been a major controversy in the scientific world came at the autumn meeting of the National Academy of Sciences on the Duke University campus.

Dr. Byrne noted that a number of scientists, including himself, had been skeptical of "learning transfer" experiments because they had been unable to consistently reproduce affirmative results.

However, he said that most of the inconsistent experiments had involved attempts to extract RNA, a form of nucleic acid, from brain materials of trained rats to use for injection. Nucleic acids, both RNA and DNA, are known to be important in the storage and expression of hereditary information, the basic code of life.

His own experiments used brain materials that underwent a minimum of alteration during extraction. In one

series of experiments, one group of rats was taught to press a bar to get a pellet of food. Extracts of brain material were then prepared from this group.

The extracts were injected into a second group of animals. A third group, the control animals, was injected with brain materials from untrained rats. Both of the injected groups were then taught to press the bar to get food.

All of the rats with injections from trained rats learned the task, and they learned it in less than half the time it took the other rats.

In addition, other experiments were conducted in which rats were taught in a box with a single bar. These rats were then placed in a box with two bars where they exhibited no preference for either the left- or right-hand bar.

However, if these rats were injected with brain extract from other animals taught to get food from either the left-hand or right-hand bar only, then they would show a preference for the left-hand or the right-hand bar, depending on which extract they got.

Dr. Byrne explained that many scientists believe memories are established through a combination of chemicals, and a new molecule is formed known as an "engram."

"As a result of these experiments it hopefully will be possible to confirm the existence of such an engram, identify its chemical nature and elucidate how an engram in fact serves as the permanent form of memory," he said.

PSYCHIATRY

Hypnosis Therapy Helps

► OF ALL THE APPROACHES to mental therapy, perhaps the most intriguing is a new experimental technique called "sensory hypnoanalysis."

Though the name gives one pause, there is nothing overly complex about sensory hypnoanalysis as Dr. Milton V. Kline of the Morton Prince Clinic for Hypnotherapy in New York explains it.

The therapist simply tells his patient in hypnosis to focus on bodily sensations. In doing so, the patient apparently reaches beyond the verbal level to the indescribable but potent concepts of the body.

The process greatly amplifies sensations, said Dr. Kline, but particularly those kinesthetic and tactile feelings associated with the body. At the same time, the patient experiences intense visual imagery—dreams, memories, images of the self in pictorial form. He may talk if he wishes, and Dr. Kline has heard patients describe an arm or hand as though they were never aware of it before.

Inevitably, the patient feels a strong impulse to express himself creatively. While under hypnosis he paints, sculpts or writes, giving concrete form to his distorted self-image.

Feelings about the body develop at such an early age, noted Dr. Kline, that traditional "talk" therapy does not reach them. All of his 30 patients who have received sensory hypnoanalysis were particularly resistant to other forms of therapy.

The art they created was marked by a sense of destructiveness and tension, said Dr. Kline. Once he exhibited the paintings of an alcoholic, suicidal patient, but had to take them down when a number of people, casual observers, became too agitated.

Another patient's work reminded an art professor of early primitive paintings done by South American Indians. The professor brought out samples of the Indian work, and there was indeed a similarity, said Dr. Kline.

This confirms his belief, he said, that the sensory therapy reaches primitive, regressive impulses. Once they surface, such emotions can then be discussed consciously like any other problem.

Dr. Kline noted a "clear improvement" in all his patients and "dramatic results" in some. Several suffering from psychosomatic disorders—ulcerative colitis, asthma, migraine headaches—were completely cured physically, he said. He believes the technique is also suited to compulsive and depressive reactions.

Psychiatric literature often refers to "body image," but the concept has never been well-defined. It is, nevertheless, acknowledged as a highly pervasive force in human psychology.

"A distorted body image," said Dr. Kline, "interferes with personality integration, sexual identity and a sense of competence." Those afflicted with the problem feel inadequate at "mastering themselves and the world around them."

MEDICINE

New Hope for Control of Staph Infections

► STAPHYLOCOCCAL infections—especially rampant in hospitals and responsible for boils, blood poisoning, and some fatal disorders—may be virtually stamped out as a result of Northwestern University research.

Researchers at Evanston, Ill., have extracted teichoic acid from the bacteria's cell wall and used it to protect groups of mice from subsequent massive doses of virulent staph organisms. From 80% to 90% of the mice survived the exposure, compared to only 10% of the unprotected mice.

Existing staph vaccines are made from the entire cell of the organism. They provide some immunity, but can cause severe allergic reactions in some patients. In theory, vaccines would not cause allergic reactions if they contained only that part of the organism that stimulates immunity.

Newborns, nursing mothers and persons weakened by disease are especially susceptible to staphylococcal infections, and the ubiquitous organism is easily transmitted to them in hospitals. Several strains have become resistant to antibiotics, making the discovery of an effective, long-lasting immunizing agent a significant contribution.