

BEHAVIOR

'I love you too, HAL'

As happens with many electronic innovations—televisions, computers, etc.—pocket calculators are becoming more than just a luxury or an aid in problem solving. For today's college person, the minicomputers are evolving into an almost indispensable addition to the human brain. Beyond that, a survey of 60 Penn State University students indicates that young people may be growing rather emotionally dependent on the calculators' support.

"Problem solvers using calculators presumably experience less cognitive strain," says Dennis M. Roberts, associate professor of educational psychology at Penn State. Persons using calculators in the study expressed significantly more positive attitudes about themselves and their tasks than those doing problems manually, Roberts says.

"They [the users] perceived themselves as more active—energetic, interested, awake and more emotionally content," he says. Calculator users were also more "friendly, happy and cooperative than those solving problems manually," Roberts notes.

Perceptions of capability, including competence and intelligence, were also found to be consistently highest in calculator groups. Users rated the statistical problems they were given as being easy, short and fast more often than did the noncalculator group.

Roberts suggests that the advent of calculators is substantially reducing "computational anxiety" among the many Americans who would rather face a slithering snake than a calculus problem. "So many people are afraid to work with numbers and feel threatened by them," he says. "If calculators can improve attitudes about willingness to work with numbers—and our study suggests they can—calculators can have a major impact on human quantitative performance."

... but are all Republicans psychotic?

Over the years, various critics of America's mental health system, and the country's government, have suggested sporadically that the United States might be better off if the power picture were reversed and back ward mental patients were allowed to run things. Well, a study on the political preferences of psychotic patients seems to cast doubt on that line of thought.

A survey of 50 "chronic psychotics" at Northville (Mich.) State Hospital appears to confirm earlier work indicating that mentally ill patients—who historically have been "dominated by authoritarian personality traits"—tend to favor authoritarian candidates: in these cases, Republicans.

Analysis of the results, reported in the April *PERCEPTUAL AND MOTOR SKILLS*, show that the patients significantly preferred Nixon over McGovern, whereas the hospital staff chose McGovern. There were no significant differences among patients in the 1976 Ford-Carter election, but the staff was heavily for Carter. A previous study of similar patients revealed that they overwhelmingly preferred Goldwater over Johnson in the 1964 election, while nonauthoritarian personalities chose Johnson. The researchers conclude that "a voter will select the alternative most compatible with his personality system."

A matter of time

Schizophrenics perceive time differently than others, Michelle E. Densen reports in the April *PERCEPTUAL AND MOTOR SKILLS*. In a study of 10 schizophrenic, 10 nonschizophrenic and 10 normal persons, the groups were asked to estimate the passage of 5-, 10-, 30- and 120-second intervals. She found that "time passes unusually slowly or quickly for psychotic patients."

BIOMEDICINE

Talking to your wheelchair

Computers are revolutionizing modern society, and one area in which they are having an especially forceful impact is medical research and technology. For instance, recent improvements in integrated circuit technology, particularly in microcomputers, have made possible the use of verbal language for control purposes. More specifically: A voice-controlled wheelchair has now been developed and should enormously aid patients with paralysis of both the upper and lower parts of their bodies—e.g. quadraplegics and polio victims.

The development is reported in the April *ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION* by James A. Clark and Robert B. Roemer of the University of California at Santa Barbara. The wheelchair has low power consumption and low weight. It uses an eight-word vocabulary (e.g., forward, slower, right), and has a feedback system to maintain chair speed and direction. Environmental noise has only minimal effect on it.

A natural sleep chemical

During the past several years, proteins have been taken from the brain that influence a variety of psychological states and behaviors—learning, memory, visual retention, pain (SN: 9/25/76, p. 203). Still another small protein (peptide) that acts on the brain and that may very well originate in the brain as well has been identified. This one triggers sleep.

Some years ago, Marcel Monnier of the University of Basel, Switzerland, discovered that blood taken from sleeping rabbits and injected into awake rabbits made the latter fall asleep. In 1974, Monnier, with Basel Medical School colleague Guido A. Schoenenberger, reported that the active chemical is a small protein containing nine amino acids (SN: 4/20/74, p. 252). Now, in the March *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, the two researchers relate more insights into the peptide's actions.

They synthesized both the peptide and some analogs of it (chemicals similar but not identical to the natural one), then injected the compounds into the brains of rabbits. Only the total synthetic copy of the natural peptide induced sleep electroencephalogram patterns in the rabbits' brains.

Schoenenberger and Monnier have dubbed their chemical "delta-sleep-inducing peptide." It is too early to say whether its synthetic copy might make a superior drug to those already on the market for insomnia.

Protein hormones shoot for the core

Until recently, hormone researchers thought that protein hormones, which are large, could act only on target-cell surfaces, compared to the smaller estrogen hormones that are known to penetrate target cells and act on their inner machinery. Now it is becoming apparent that protein hormones can also get inside cells and interact with their equipment.

Insulin is a protein hormone that influences numerous events in target cells. These influences range from short-term effects in membrane transport to long-term effects on nuclear synthesis of DNA and RNA. Most likely, the quicker effects result from insulin's direct interaction with the outer-cell membrane. But how about its slower effects? Ira D. Goldfine of the Veterans Administration Hospital in San Francisco and his co-workers reasoned that if insulin could be shown to enter a target cell and to bind to its nucleus, then a strong case could be made that insulin produces its slower effects via such actions.

Indeed, as they report in the April *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, insulin can enter cells and bind to their nuclei.