Intelligence: Genetic or environmental?

Little, if no difference, in intelligence and academic achievement test scores exists between minority and white students when social and environmental factors are taken into account, according to two studies reported at the APA meeting. "This new evidence from two separate and independent studies is the strongest ever presented documenting that environmental and social factors affect test scores," said Edward J. Casavantes of the U. S. Commission on Civil Rights and chairman of an APA symposium on the effects of social and cultural variables on intelligence scores of racial and ethnic groups. Presenting their findings were Drs. Jane R. Mercer of the University of California in Riverside and George W. Mayeske of the Office of Education.

"Many social scientists have always felt that there were no basic intellectual differences between racial and ethnic groups, but until now there has been an absence of scientific data," said Casavantes. But these studies "identify the nature of the environmental factors that influence achievement and intelligence test scores and also outline the degree to which these factors affect test scores among different ethnic groups."

Finding a disproportionate number of black and Chicano children in Riverside classes for the mentally retarded, Dr. Mercer looked for causes. She discovered that the black and Chicano students whose families were like those of the average middle-class whites had I.Q.'s equal to the whites. Also the I.Q. tests being used were 20 to 30 percent based on cultural background. When this background was accounted for, she found, the average I.Q. for all three groups was essentially the same.

Dr. Mercer's study was conducted locally, but Dr. Mayeske's analysis of school achievement tests was nationwide. He also found that minority and white achievement scores were almost identical when environmental and social factors were statistically canceled out. "The differences among the racial-ethnic groups approach zero as more and more considerations are taken into account," he reported. He concluded, "We intended to study the effect of race on test scores and ended by studying the effect of racism on test scores."

Some of the socioeconomic factors involved in both studies were the amount of space in homes, a mother who expected her children to go beyond high school, a father with more than nine years of schooling, a family that spoke English all or most of the time, a family that owned its own home, a rural or urban setting, geographic location (North or West as opposed to the South) and the overall effect of social class.

DOCKING DISCUSSIONS

When Soyuz meets Skylab

When the United States committed itself in 1961 to race the Russians to the moon, few would have dreamed that 10 years later the two countries would be making plans for possible rendezvous and docking of joint spacecraft. They now are.

Last week the National Aeronautics and Space Administration released a 21-page summary of the approved minutes of the latest meeting between the two nations, held in June at the Manned Spacecraft Center in Houston. The general topic was compatibility of methods and means for rendezvous and docking. Although the major emphasis was on ways of assuring compatibility in future space systems (such as shuttles and space stations), more immediate plans were proffered: the testing of a still-to-be-determined system by docking an Apollo-type craft with the manned Salyut space station and by docking a Soyuz with a Skylab-type station. No definite plans were made because the decision ultimately is a political one: Presently there are no approved NASA budget funds for such a mission between 1973 and 1977.

Three working groups from each country agreed on numerous details including coordinate systems and units, general location of docking equipment, manual control of docking, lights on the passive and active craft and communications systems and frequencies. It was agreed that on future craft the atmospheric system would be similar to that in the current Russian craft: normal air at one atmosphere of pressure (SN: 7/17/71, p. 39). Some details of the structure of the docking system were discussed, but the major decision, the exact design, will be discussed in Moscow at the next meeting in November. The universal design will probably be a ring and a leaf system in which four finger-like projections interlock, and latches secure the ring. □

APOLLO 15 DATA

The moon's interior

The moon may be more like the earth than most scientists had originally thought—at least in its heat-flow rate and gross structure. After a three-week look at the Apollo 15 returns, scientists last week reported their very preliminary findings—subsequent to change, as always, as more data are analyzed.

The first results from the heat-flow probes at the Apollo 15 Hadley/Apennine site indicate that heat escapes upward through the lunar material at a rate at least one-fifth that noted on the earth. This is about the same ratio as the radii of the moon and the earth (one-fourth). "One would have expected that, if he had assumed that the moon had the same isotopic composition of the earth," explains Dr. Marcus G. Langseth of Columbia's Lamont-Doherty Geological Observatory. But the chemical evidence from at least two Apollo sites had seemed to indicate that this was not the case.

The heat flow at the Hadley site is determined by obtaining the temperature gradient—the rate of increase in temperature with depth inside the moon—and the thermal conductivity of the material. The temperature probes from 90 centimeters to 150 centimeters show that temperature increases about 1.7 degrees C. per meter of depth. "That's a pretty substantial gradient," says Dr. Langseth. It can be explained in part, however, by the low thermal conductivity of the material: At its minimum value the material is an efficient heat insulator. If the lunar regolith is composed of loose, blocky material as many scientists believe it is, it could account for the low conductivity. For this reason, he says, one cannot extrapolate the temperature increases with depth. Below the regolith region is probably a more consolidated material where the gradient would drop off.

But the information may point to similarities in the composition of the moon and earth. Speculates Dr. Langseth: "If the heat flow from Hadley Rille is representative, and that's a big if, and if that heat flow . . . is equal to the total heat production inside the moon [or the moon is at a steady state] . . . and if the same condition exists on earth, then this minimum heat value would say that at least the abundance of radionucleides per unit volume inside the moon is comparable to that inside the earth." If the moon is undifferentiated (and there is now much evidence to the contrary), then the temperatures inside the moon would reach melting levels at depths greater than 500 kilometers. If the moon is differentiated, then the heat-generating elements would be moved closer to the surface, and there