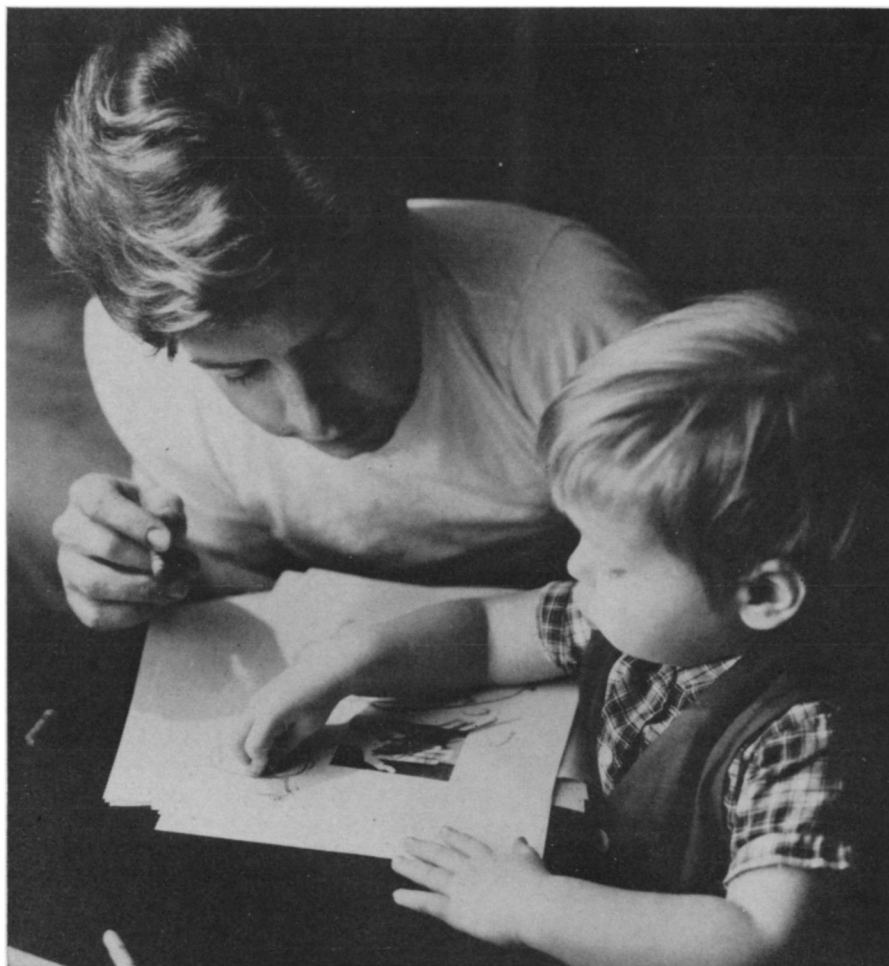




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Behavioral scientists now know they can raise a child's I.Q. by as much as 25 points through a program of intellectual enrichment.



Nurture key to I.Q.

Recent child studies show the importance of experience

by Patricia McBroom

In 1934, an authority on the subject described intelligence as an "inborn all-round intellectual ability, inherited or at least innate, not due to teaching and training." In the same tradition, biologists in 1969 talk of creating a crop of Einsteins with changes in the genetic material, as though Einstein's experiences had nothing to do with the talent that emerged.

But the picture isn't that simple.

Behavioral scientists now know they can radically change a child's Intelligence Quotient with programs at an early age. Changes from 20 to 25 I.Q. points can be the difference between retardation and respectable ability. There is also good reason to suspect that the entire intellectual level of the culture has risen.

There may be genetic input to intelligence, but recent work with young chil-

dren diminishes the importance of genes to almost a minor role. In any case, says Dr. Joseph McV. Hunt, an authority on early child education at the University of Illinois at Urbana, "intellectual potential is basically unknowable and unmeasurable."

A child's intelligence can be viewed as fluid, ready to be built through contact with the environment, Dr. Hunt says.

Although scientists do not yet know the complete sequence of intellectual growth or the full effects of experience, time and again they have been able to speed the pace of development.

Placing a mobile over the crib of a newborn, for instance, speeds the age at which the blinking response appears. Stimulation also speeds later stages, such as eye-hand coordination and persistence in going after objects. The lat-



8 march 1969/vol. 95/science news/243

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. . . raising the I.Q.



ter skill evolves by stages. At one age, a child cannot maintain interest in an object when it is partially covered; possibly he has no further recognition of it. But soon the infant, usually at about eight months, will go after objects completely covered, indicating a growth in memory and persistence. Depending upon environment, these stages of growth make their appearance earlier or later.

Some evidence suggests that children from poor families lose pace in developing this skill as early as the age of 11 months. In a test of the same ability, a group of orphanage children studied in Tehran followed United States children by a full year.

Considering the plasticity of early development, Dr. Hunt reasons that the time, toys and attention that affluent American middle-class parents can lavish on children actually increase their intelligence.

Such mass increases are difficult to measure, but all available figures support the hypothesis.

Soldiers sampled in World War II scored higher intellectually than their counterparts in World War I. Half of them were as intelligent as the upper 20th in World War I. The Tennessee Valley Authority, which brought increasing complexity and opportunity to an isolated rural region, also seems to have affected intelligence. Advances shown in children reared before and after TVA add up to roughly 10 points. Similar gains were found in separate studies of Hawaiian and Scottish children tested at 15-year intervals.

"Wherever intellectual level has been

followed, we're getting rises instead of falls," says Dr. Hunt. He suspects that intelligence will continue to rise with increasing cultural complexity. "I am sure," says Dr. Hunt, "that we have intellectual and linguistic skills far beyond what our ancestors had."

This suggests that the American rural and urban poor, lacking entrance to the affluent society, also fail to participate in the intellectual gains conferred by opportunity. There is typically a 20-point I.Q. gap between lower and middle classes. Dr. Hunt, however, is convinced that a very large number of the poor can close the gap with help.

All the work done in the past five years with special tutoring programs, including Head Start, gives evidence that this is so. One such study, recently completed by the National Institute of Mental Health, succeeded in establishing a 17-point I.Q. gap between children who were helped and those who were not.

Psychologist Barl S. Schaefer sent tutors into the homes of 30 children living in a Washington ghetto. For two years, an hour a day, five days a week, the tutors carried in puzzles, toys and picture books. They played with the children, talked to them and took them on trips. At the end of two years, the 30 children, then three years old, had a mean I.Q. of 106. By contrast, a group of 30 similar children who were not helped had mean scores of 89. Only three children in this group scored slightly above 100 in I.Q. and several were retarded.

In the tutored group no child was retarded, and one had an I.Q. of 130. As could be expected, the children who

gained the most had mothers willing to help. Hostility and neglect from the mother hampered intellectual growth.

Dr. Schaefer, who views intellectual development as a continuing process, does not like to accept the idea that intelligence is set at any age. Change the circumstances of even an adult's life and his rate of intellectual growth may very well change, says Dr. Schaefer. In the same vein, he sees retarded growth in the early years as lost time, not necessarily irreversible damage. "It's irreversible in the sense that lost years cannot be recovered," says Dr. Schaefer. Unless something radical happens to speed up growth, the child is always behind.

Like Dr. Hunt, the NIMH psychologist believes there is such a thing as genetic intelligence, but can't measure it.

The 30 children tutored in Washington are now four years old, out of the program, and I.Q.'s have begun to drop. Dr. Schaefer does not know yet how much is lost, but his experience parallels that of other investigators working with young children: first a noticeable effect with stimulation, large I.Q. changes, then a dropoff when tutoring is stopped.

The pattern highlights the need for early and continuing education, says Dr. Schaefer. Middle-class parents do this as a matter of course; the poor need training.

What is the evidence that I.Q. levels would persist if education continued? So far, there is little, except for one piece of work, now a classic in the field.

Begun in the 1930's in an Iowa orphanage, the study demonstrates that early help does turn into adult ability. Dr. Harold M. Skeels, an NIMH psychologist, intervened in the lives of 13 retarded orphans and saw them gain an average of 28 points on intelligence scales. As adults, the 13 are all self-supporting, most in middle-class occupations. Other children in the orphanage were not so lucky. A comparison group dropped 26 points and several of them are still in institutions.

Such startling impact on intellectual capacity will be taken as a matter of course in the future as neuroscientists open the secrets of the brain. What psychologists have learned about intelligence these past few years fits well with the biological knowledge. An infant's brain is quite immature at birth; so must his intellectual capacity be. And for a reason—the thrust of evolutionary development has been to free the brain from the tyranny of genes and make it sensitive to the environment. The human nervous system is the most adaptable, least patterned, of all the animals. ◇

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