

Zigler E & Butterfield E C. Motivational aspects of changes in IQ test performance of culturally deprived nursery school children. *Child Develop.* 39:1-14, 1968.  
[Yale University, New Haven, CT]

Intelligence testing procedures separating motivational from cognitive-achievement determinants of changes in Stanford-Binet IQs were employed with culturally deprived children who did or did not attend nursery school. The findings indicated that the increase in IQ that resulted from the nursery school experience was due to a reduction in the effects of debilitating motivational factors rather than to changes in rate of intellectual development. [The SSCJ® indicates that this paper has been cited in over 120 publications.]

Edward Zigler  
and  
Earl Butterfield  
Department of Psychology  
Yale University  
New Haven, CT 06520-7447

April 14, 1987

Early intervention programs have always been a major focus of our research interests. Following Head Start's first summer, researchers reported 10-point IQ increases among participants. These results were interpreted to mean that Head Start miraculously increased cognitive ability. I felt strongly that a six-week Head Start program could not possibly alter children's cognitive functioning and that the change was probably a result of performance factors.

Earl Butterfield and I believed that motivational factors attenuated the performance of economically disadvantaged children. We felt that the IQs of culturally deprived children were often underestimated, in part because economically disadvantaged children are extremely wary in test settings more familiar to middle-class youngsters.

In order to distinguish between motivational and formal cognitive factors, we created an optimizing condition in addition to the standard pretest, posttest paradigm. Typically, in this area of research, children are tested before and after an intervention. In standard test administration of the Stanford-Binet, the ex-

perimenter asks the child questions in ascending order of difficulty, stopping when the child fails to answer several questions in a row. The result is that the child inevitably accrues a sense of frustration and failure. In the optimizing condition, everything was done to give the child a sense of achievement. During the test administration, children were encouraged to answer until they responded correctly or the examiner felt that further encouragement would be frustrating. Whenever children missed two consecutive items, they were given a question they could answer easily.

We expected that the preintervention scores of the group tested under optimizing conditions would be higher than those tested under standard conditions, that standard administration test scores would increase more for Head Start than non-Head Start children, and that Head Start children given the standard test would have scores closer to those of the group in the optimizing condition. These expectations were all borne out by the data.

The study demonstrates the danger of using only IQ scores to assess intervention programs. Clearly, the children perform better as a result of Head Start but do not actually gain in formal intelligence. Two children could have the same level of intelligence, but the Head Start child may be better able to use that intelligence than the non-Head Start child. I have always believed that it is more effective to help children use the intelligence they have than to try to change their cognitive capacity. I think these are the reasons the study was so frequently cited at the time. It also provided some essential information for the political debate surrounding Head Start and other programs for the disadvantaged. I am honored and delighted that it's been helpful to other psychologists.

Subsequent work of researchers to assess the underlying changes that led to the improved performance of Head Start children is encouraging.<sup>1,2</sup> David Caruso of Yale University is now carrying out such a study in an effort to arrive at a differentiated analysis of our finding. The result, with regard to both skills learned and specific motivational patterns altered, should prove valuable.

1. Baroff G. *Mental retardation: nature, cause, and management*. New York: Hemisphere, 1974. 504 p.

2. Zigler E & Berman W. Discerning the future of early childhood intervention. *Amer. Psychol.* 38:894-906, 1983.