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Compensatory education and pupil achievement.

Benjamin D. Stickney
University of Massachusetts Amherst

COMPENSATORY EDUCATION AND PUPIL ACHIEVEMENT

A Dissertation Presented

by

Benjamin D. Stickney

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Approved as to style and content by:

Horace Reed, Chairperson of Committee

David Day, Member

Dalton Jones, Member

Louis Fischer, Acting Dean
School of Education

ABSTRACT

COMPENSATORY EDUCATION AND PUPIL ACHIEVEMENT

(April, 1976)

Benjamin D. Stickney, M.A.T., Antioch College
B.A., University of Miami, Ed.D., University of Massachusetts

Directed by: Horace Reed, Professor of Education

This paper explores the issue of whether the schools can play an important role in reducing the inequality in cognitive achievement which exists among various socio-economic groups in the United States. This issue is addressed by analyzing the major premises accepted by proponents of compensatory education and reviewing the evaluations of Title I and associated enrichment projects conducted at the national, state, local and program levels. The writer finds very little evidence that compensatory education has been able to arrest the cumulative achievement deficit that exists between advantaged and disadvantaged pupils and suggests that as long as schools remain marginal institutions they are unlikely to compensate for environmentally determined differences in academic achievement.

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CHAPTER I

INTRODUCTION

The Problem

Public schools in the United States have been asked by a large segment of the citizenry to occupy a crucial role in the attempt to equalize opportunities for millions of children victimized by economic poverty, various forms of class, ethnic, and racial discrimination and (given the present nature of American society) handicapped by acquired sub-cultural behavior which is often detrimental to upward social mobility. Perhaps the major task of the schools in this attempt to equalize opportunity has been to compensate for those environmental factors which were thought to minimize the chances for this disadvantaged population to achieve normal cognitive development. By improving the chances that these children could achieve academically at a rate roughly equal to their middle-class counterparts, the likelihood would be enhanced that disadvantaged children would possess the basic skills considered so fundamental to their continued education and candidacy for lucrative employment.

The persistence in the United States of gross economic and social inequality is to many people America's greatest social problem. Surely the school's role in the strategy to equalize opportunity by equalizing to a greater extent the academic achievement of various socio-economic groups is a problem area worthy of the educator's closest scrutiny. In

recent years the important problem of how the schools might equalize achievement has been replaced in part by the question of whether the public schools as marginal institutions can compensate for those differences in achievement which are caused largely by differences in the environment.

Since the early 1960s there have been innumerable educational programs, most under the title of compensatory education, which have attempted to eliminate the inequality in academic achievement which exists among children from various socio-economic groups in American society by attempting to accelerate the cognitive growth and performance of children labeled disadvantaged. Today some educators recognize that most national evaluations of compensatory education have suggested that the schools have done very little to improve the achievement of most children from low socio-economic groups relative to national norms. In fact, the large-scale reports on enrichment programs were so discouraging that by the end of the 1960s some educators began to seriously question the plasticity of human intelligence and the notion of the inherent genetic equality of various economic and racial groups. Many more people in the behavioral sciences suggested that compensatory education had failed because of its dependence upon a dehumanizing and therefore intellectually restricting "culturally deprived" model. It was their belief that only community control of school curricula and personnel, particularly in the case of the minorities, could significantly improve the educational performance of economically impoverished underachievers.

The major research question addressed in this paper is: Can the schools contribute to the significant reduction in the inequality in academic achievement which exists among some economic and cultural groups in American society? It is the opinion of this author that conclusions have been drawn and suggestions have been made regarding the role of the schools in the strategy to equalize opportunity by equalizing achievement without a thorough review of the literature. This paper will attempt to address the question of the school's capability of compensating for whatever detrimental effects low socio-economic status may have on school achievement by offering the reader a systematic analysis of the rationale for compensatory education and the evaluations of school enrichment programs from the pre-school to secondary levels.

Related Research

Several large-scale studies of the effects of schooling on the achievement of disadvantaged children have provided valuable information but have been too limited in scope to come to grips with the major research question. Coleman (1966), Jencks (1972), and Mosteller and Moynihan (1972) concluded that the schools had little effect on cognitive achievement after controlling for socio-economic status, but their analyses came from data collected by the 1965 Equality of Educational Opportunity Survey (EEOS) before the initiation of Title I programs funded by the Elementary and Secondary Education Act of 1965 (ESEA). Moreover, the EEOS data came from a 10 percent national sample and told

us very little about the effects of specific programs on a homogeneous population. A review by the U.S. Commission on Civil Rights (1967) of compensatory education programs in over thirty cities evaluated early programs such as Higher Horizons in New York and Project Banneker in St. Louis, but most of these programs were in operation before the passage of Title I. The Westinghouse Learning Corporation (The Impact of Head Start, 1970) and Sterns (1971) suggested that pre-school enrichment had little effect on sustaining initial cognitive gains, but their reports were limited to that age level. There have been attempts by Hawkridge (1968, 1969), Wargo (1971), Gordon and Brownell (1972), and Foat (1974) to identify exemplary Title I projects from the pre-school to secondary level. However, these reviews focus exclusively on program evaluations.

Reviews by Menges (1972), White *et al.* (1973) and McLaughlin (1974) are perhaps more clearly related to the design of the present study. Menges evaluated the effects of compensatory education at state and local levels and included the Westinghouse Head Start survey and two annual Title I reports. There was very little in his paper, however, on specific programs and no mention of the rationale for the initiation of Title I programs. In addition, the objectivity of the Menges study must be questioned because it was written by the Office of Program Planning for the Office of Education and stated frankly, in the introduction, that its intent was to demonstrate the effectiveness of Title I. Perhaps the most comprehensive evaluation of compensatory education published to date is a three volume report by White *et al.*

(1973) which includes a lengthy rationale and evaluation. But the manuscript is restricted exclusively to pre-school and early elementary education and is very poorly organized. Finally, McLaughlin's recent 1974 evaluation of ESEA deals more with the politics and problems of national educational evaluations than with assessing the effects of the Title I on pupil achievement.

In this paper I will draw from these large-scale evaluations as well as other smaller studies of compensatory education. By integrating the data from the many evaluations of enrichment programs from pre-school to secondary school conducted at the various levels of the Federal system, one can gain a clearer picture of the overall effectiveness of compensatory education. Hopefully, the dimensions of this picture will be broadened by reflecting upon the evaluation data in conjunction with an analysis of the basic premises underlying the initiation of compensatory education programs.

General Assumptions

The relationship between socio-economic status and academic aptitude as measured by standardized tests has been firmly established. A myriad of studies have been made in North America, Europe and Asia using various kinds of intelligence tests and definitions of social status. Reviews of these studies have found them unanimous in reporting a positive correlation (commonly in the area of .25 - .50) between measured intelligence and social class (Jensen, 1969).

Nearly as well established is the correlation between scores on

several I.Q. tests and the various standardized achievement tests and the strong relationship between socio-economic status and achievement test scores. In this country, for example, the correlation between the Stanford-Binet Intelligence Scale and the Stanford Achievement Test is reported to be .63. Similarly, a correlation of .66 has been found between the WISC Full Scale and the Iowa Test of Basic Skills (Cronbach, 1970). If we use achievement per month of instruction as our criteria, we discover that the achievement of lower class children on the standardized reading and arithmetic tests is approximately two-thirds (.67) that of middle class children (Hawkridge, 1968). Therefore, there is a cumulative deficit in achievement between these two socio-economic groups (Deutsch, 1960). This phenomenon has been illustrated by Bloom (1964) in his analysis of data collected by Alexander in a study of the Chicago Reading Test scores of 154 children at grades two and eight. Bloom matched twenty pairs of these students from different social backgrounds who had identical scores on the reading comprehension test at grade two. One group of twenty students had parents in occupations that required at least a college education while the matched group came from families whose parents had unskilled jobs and less than a high school education. At grade two the correlation between the children's reading comprehension and parental vocational background was zero, but by grade eight the correlation stood at .50.

Given the rather strong relationship between tests of intelligence and tests of achievement and the moderate but consistent correlations between these measures of academic aptitude and socio-economic status, many educators have been concerned with both preventing and reducing

the achievement retardation of disadvantaged children. At the pre-school level compensatory education programs often attempted to raise the I.Q.s of lower class children in order to improve their chances of normal achievement growth after entering elementary school. At the elementary and secondary school levels enrichment programs concentrated more on accelerating the achievement of disadvantaged children than on raising the I.Q. Therefore, one cognitive objective of the pre-school programs was to prevent the cumulative achievement deficit from ever occurring, while the programs for older children proposed to reduce or even eliminate the progressive achievement gap between the socio-economically advantaged and disadvantaged school children.

Definitions

Again, the major research question addressed in this paper is: "Can the schools significantly reduce the inequality in cognitive achievement which exists among various economic and social groups in American society?" In order to come to grips with this question one must explain what is considered a "successful" compensatory education program that is significantly reducing the cumulative deficit (see Figure 1.) One position often taken by educators is that a compensatory program is successful if the educational treatment simply significantly lessens statistically the .67 - 1.0 achievement ratio; that is, if disadvantaged children are achieving above normal expectations at .8 or .9 but at less than the rate of a month of achievement per month of instruction. A second position contends that any achievement less than

1:1 monthly gains still guarantees a widening of the gap between the advantaged and disadvantaged and that a successful program must demonstrate that its participants are keeping pace with the achievement growth of the larger population. A third position argues that since disadvantaged children usually enter compensatory education programs achieving below the national norms, achievement which only matches the growth rate of their more advantaged counterparts will not permit them to catch up. Therefore, a compensatory education program can only be judged successful if the participants' rate of achievement is greater than that of average children (greater than 1:1) until such time when both groups are at the same level.

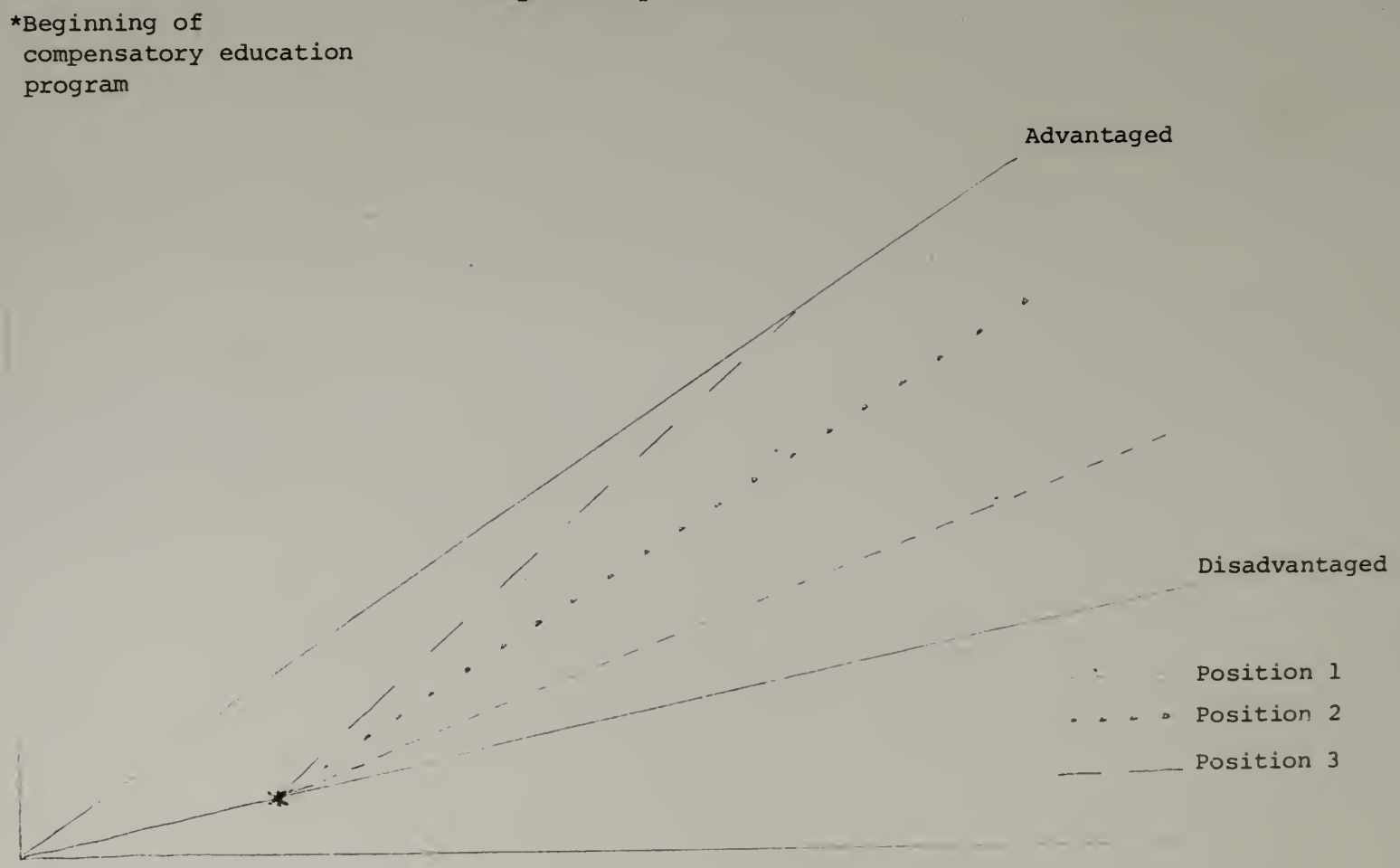
The criteria used for "success" in this paper is most closely related to position two. If the schools are to significantly reduce the inequality in achievement between disadvantaged and advantaged school children, it is important that the schools do more than reduce at a statistically significant level the rate of the cumulative deficit. Simply achieving better than the expected rate but less than the average rate will assure a continuous widening of the existing gap. On the other hand, the academic progress of the disadvantaged does not have to be greater than that of the advantaged to label compensatory education successful, for it is apparently erroneous to assume that children from low socio-economic groups must enter the schools below the national norms in measured scholastic aptitude. If pre-school enrichment programs can permit disadvantaged children to equal or exceed the national norms in I.Q. and reading readiness, theoretically, compensatory

programs beginning at the first grade and continuing throughout the elementary and secondary school years need only match the achievement growth rate (1:1) of advantaged children enrolled in regular school programs to assure equality of educational achievement. Therefore, programs in which the mean rate of achievement is a month's learning per month of instruction will have produced gains which are not only statistically significant but educationally significant as well.

The description just given of position two may appear on the surface to be a theoretically sound criteria to judge whether the schools can significantly reduce the existing inequality in cognitive achievement. Unfortunately, however, because of a phenomenon commonly called "fade out" simply identifying a number of pre-school, elementary school and secondary school programs that are either successfully raising I.Q. or producing 1:1 gains, does not necessarily mean that the schools are capable of equalizing achievement. There is strong evidence at the pre-school level and some evidence at the higher levels that the initial cognitive gains are not sustained. Fade out normally occurs after children leave the enrichment programs, but there is also disturbing evidence which suggests that regression may set in during the participation in compensatory programs (Landers, 1965; U.S. Commission on Civil Rights, 1967). Therefore, in order to judge the school's capability of closing the progressive achievement gap there should be evidence, particularly at the elementary and secondary level, that participants in compensatory programs are equaling the national achievement rate for a sustained period of two years or more.

FIGURE 1.

Three Positions on Successful
Compensatory Education



A General Overview

This paper is divided into three parts: "The Rationale for Compensatory Education," "The Evaluation of Compensatory Education," and "An Interpretation of the Research." Each part is subdivided into chapters which cover appropriate areas of concern.

In Part One ("The Rationale") the chapter organization focuses on three major premises underlying the decisions at various levels of the public educational system to initiate special enrichment programs for socio-economically disadvantaged youth in the late 1950s and early to middle 1960s. Chapter II summarizes the research associated with premise one which states that "the environment has considerable influence on measured intelligence and school achievement." Chapter III reviews the data most commonly cited in support of premise two: "A low socio-economic environment inhibits the development of intelligence and school achievement." Similarly Chapter IV contains an overview of premise three which is the belief that "the schools can compensate for the retardation in children's intelligence and school achievement which is caused by a poor socio-economic environment." In Chapters II and III this writer goes well beyond the statistical correlations among socio-economic status, I.Q. and achievement given in the introduction by reviewing a wide variety of research from the fields of psychology, sociology, anthropology, and education.

Time as well as topic are used to separate Part One ("The Rationale") from Part Two ("The Evaluation"). Chapters II, III, and IV will contain research and rhetoric up to 1965, the year Congress passed

the Elementary and Secondary Education Act, and compensatory education became an important strategy for equalizing opportunity at the national level. "The Evaluation" will cover roughly the ten year period 1966 to 1976, beginning conveniently with the 1966 publication of the Equality of Educational Opportunity Survey by James Coleman. Chapter V will include reviews of the various national evaluations on the effects of schooling, Chapter VI will summarize the state and local evaluations of Title I projects and Chapter VII will focus on attempts to identify and package specific exemplary compensatory programs.

In Part Three ("An Interpretation of the Research") Chapter VIII will attempt to come to grips with the major research question (whether the schools can reduce the existing inequality in achievement) by synthesizing the evaluations of compensatory education with the premises on which it was based. In addition Chapter VIII will summarize the entire paper and make recommendations for future policies, both educational and social, and for further research.

Data Collection

Most of the information used in this paper was collected by reading the various books and combing the several periodical indexes relevant to the subject area. Most of the citations mentioned in the rationale were acquired by reviewing the bibliographies of publications written by many of the more influential proponents of compensatory education such as Benjamin Bloom, J. McVicker Hunt, Arthur Jensen, and Martin Deutsch. Most of the evaluations used in Part Two were acquired

by careful use of the ERIC Clearinghouse and Current Index to Journals in Education which was facilitated somewhat by a computer search of Title I evaluations at the national, state and local levels.

The information in Chapter VII was gathered largely from a sample of the state and local evaluations of Title I programs published in the ERIC system from 1968 - 1974. Using a table of random numbers, a 20 percent sample of the 93 state evaluations (including Washington, D.C.) provided 19 state reports published between 1968 and 1971. An additional five state evaluations were identified through the ERIC system from 1972 - 1974. Because the state evaluations of Title I programs were generally excluded from publication in the ERIC Clearinghouse after 1971, an assessment of more recent state evaluations was obtained by the reading of an unpublished review conducted by the Stanford Research Institute. At the local level, a table of random numbers was again used to take a 20 percent sample (9) of 44 local evaluations published in ERIC between 1968 - 1972.

Limitations of the Study

There are several important limitations of this study.

1. It must be emphasized that my discussion of the rationale for compensatory education is based on a review of the major premises accepted by many persons who believed in the deficit model. Those who accepted this position were inclined to view the environment of lower socio-economic groups as restricting the cognitive growth of children in an absolute sense. From my reading of the literature it is apparent

that those who took this position were by far the most influential spokespersons for the initiation of special schooling for low-achieving, poverty-stricken youth. Consequently, my review of the rationale for compensatory education will focus on assumptions of those subscribing to this deficit model. It is not the intent of this paper to dwell at length on the culturally deprived/culturally different debate, the environmentalist/hereditarian controversy or any other major issue in the area of multi-cultural education which has arisen in recent years. These analyses of the alleged failure of compensatory education and the proposed alternatives to the enrichment programs approach may have considerable merit, but a thorough review of the many positions on this subject is beyond the scope of this paper. After summarizing the major premises of those who advocated compensatory education and evaluating the effectiveness of Title I and associated programs, I will, however, in the concluding section, challenge the validity of some of the assumptions which constituted the rationale.

2. This paper will focus almost exclusively on the cognitive domain in education in assessing the effectiveness of compensatory education. When the affective domain is mentioned, it will be in the context of relating such factors as motivation and self concept to achievement. Because my criteria for evaluating compensatory education is restricted to achievement, it would be erroneous for the reader to assume that this writer places little value on affective education. On the contrary, it is my suspicion that teacher behavior and school resources have a substantially greater immediate impact on variations

in attitudes than on variations in achievement. It seems extremely unfortunate that so little research has been conducted in the affective domain. Increasing the self concept or reducing feelings of powerlessness may have a far greater influence on equalizing the control of economic resources in this society than raising children's standardized reading scores.

Furthermore, while improving one's attitude toward schooling may have little influence on improving achievement in a six month marking period or over a year or two, it may effect long range cognitive growth. For example, a high school student with an inspiring American literature teacher who uses a multi-cultural approach may perform no better on a standardized English achievement test than his counterpart who was exposed to the subject by a dull traditionalist. Years later, however, the former person may be more inclined to enroll in a literature course offered at a local community college, an experience that would likely increase his achievement relative to his disinterested and uninvolved peer.

3. The paper attempts to evaluate the effectiveness of schooling by looking at compensatory education programs, not desegregation programs. Although innumerable Title I and associated enrichment projects are, of course, racially and ethnically integrated, little effort was made by this author to establish the rationale for or assess the effectiveness of integrated education per se.

4. In Chapter VI ("State and Local Evaluations") there are few references to state and local Title I evaluations after 1971. In a

telephone conversation with Thomas Thomas, Director of the Educational Policy Research Center at the Stanford Research Institute, I was informed that most of these evaluations have not been released for publication by the U.S. Office of Education and that it is difficult to gain access to the manuscripts. Consequently, most of my references to state and local Title I evaluations in recent years is based on an unpublished report I obtained by writing the Stanford Research Institute.

5. Ideally, an assessment of the effectiveness of compensatory education in the United States could be made most accurately by a single large-scale "clean" study. Such an investigation might include one random sample of program participants throughout the country matched with a control group of non-participants from pre-school to secondary school who are repeatedly tested by uniform achievement measures for several years. Extensive demographic data on the two samples would be collected and a sophisticated description given of thousands of programs containing information on curriculum, methodology, teacher characteristics and administration. Many other factors such as pupil attrition, changes in socio-economic status and curriculum would have to be considered. Obviously, such a study has not been conducted and probably never will be. Given the considerable variation in program curriculum and method, the heterogeneity of the participants, the great number of programs, and the nature of the American federal system, the kind of controlled, empirical design normally preferred by researchers is virtually impossible to construct. Consequently, any judgement on the school's ability to compensate for those environmental factors likely

to inhibit cognitive achievement must be made, at least at this point in time, by a second method of collecting and analyzing the data. This method, commonly employed in history and economics, involves carefully reviewing a great variety of descriptions and/or research studies of a given topic to gain scientific impressions of what the data reveals. Using this approach the present writer will summarize many of the various evaluations and reviews of compensatory education conducted at different levels. After sifting through the literature by extracting the "hard" data and combining the findings of many researchers at many levels over many years, we can hopefully begin to come to grips with the overall effectiveness of compensatory education.

6. Perhaps the most serious problem facing the researcher in the area of compensatory education is the difficulty in obtaining longitudinal data on pupil achievement. Typically, evaluations of enrichment programs at the elementary and secondary school levels report achievement gains that cover no more than a single academic year. In order to gain a more accurate assessment of the effectiveness of compensatory education it is necessary to follow the same pupils involved in enrichment programs for a much longer period. This author attempted to obtain longitudinal data by writing to people involved with forty-one "successful" programs identified by the American Institute of Research and interviewing prominent educators* who had conducted

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*Richard Anderson, ABT Associates; Urie Bronfenbrenner, Cornell University; the Office of Edmund Gordon, Columbia University; Merle Karnes, University of Illinois; Thomas Thomas, Stanford Research Institute; Richard Turner, New York City Board of Education; Sheldon White, Harvard University.

evaluations of compensatory education. Only two of these sources offered me data on pupil achievement that encompassed more than a year.

PART ONE

THE RATIONALE FOR COMPENSATORY EDUCATION

CHAPTER II

THE ENVIRONMENT AND COGNITION

Apparently one of the underlying assumptions of most proponents of compensatory education (stated here as premise one) was that the environment has considerable influence on measured intelligence and school achievement. In reviewing the research on the mutability of intelligence one can draw from the studies of animals, twins, foster children, institutionalized children and similar populations over time. Interpretations of the data from these categories by many social scientists led to the formation of the interactionist position on the development of human intelligence which assumed that a child's cognition was the product of complex encounters between his genetic endowment and the environment's unfolding of these innate potentialities.

Animal Studies

In animals there was evidence that the environment was capable of influencing the actual physiological development of organs. In studies concerned with sensory deprivation Riesan (1947) reported that chimps raised in darkness for sixteen months appeared to be virtually blind and revealed later (Riesan, 1958) that such visual restriction produced irreversible alterations in the ganglion cell layer and optic nerve. In a similar study of perception Weiskrantz (1958) demonstrated that blinding kittens the first seventeen weeks of life altered the development of the cell processes of the eye. Hernandez-Peon (1961) suggested that visual stimulation may effect auditory reception in cats when it

was discovered that the presence of an edible stimulus such as a mouse accompanied by clicking sounds interfered with the actual recording of these sounds in the animal's brain. Additional research by Bennet, *et al.* (1964) on varying rat environments provided further evidence that differences in animal behavior may depend in part on the environment's effect on physical maturation. In their report it was found that the enrichment of the early experiences of these animals could actually cause the development of greater width and thickness of cortical tissues and the overall acetylcholinesterone activity of the cortex. Similarly, Krech, *et al.* (1962) found evidence that early stimulation during the first month correlated with increasing the overall size of a rat's brain.

In the case of rats, environmental variation, especially during early life, appeared to clearly influence the intelligent behavior of these animals even if most of the studies included no data on actual physiological changes. Forgays and Forgays (1952) reported that rats raised in an "enriched" or "free" environment (a large cage with blind alleys, inclined runways, apertures, etc.) performed better as adults on the Hebb-Williams Animal Intelligence Test than rats raised in mesh cages or in small laboratory cages. And of those rats reared in an enriched environment the presence of playthings appeared to improve their adult problem-solving ability. In a similar experiment Hymovitch (1952) reported that rats exposed to a "free environment" in early life were "clearly superior" in problem-solving ability at maturity to rats raised in "stovepipe cages," which kept them completely isolated, or in "activity wheels," which restricted space and visual experience but not exercise. Unlike Forgays and Forgays, Hymovitch found no significant

differences in measured intellect between rats reared in a free environment and in mesh cages, which suggested that ample visual stimulation may compensate for restricted movement.

Additional evidence supporting the effects of environmental variation on the intelligent behavior of rats is offered by Forgus (1954) who found that rats raised in a "complex visual-proprioceptive environment" (similar to the enriched environment of Forgays & Forgays and Hymovitch) were superior as adults on the visual discrimination and form-generalization tests to rats raised in a "minimum visual-proprioceptive" environment. In support of Hymovitch, Forgus also found that rats exposed to a complex visual but minimum proprioceptive environment (a glass cage with restricted movement but ample visual stimulation like the mesh cage) did as well as unrestricted and visually stimulated rats on the form generalization and better on the visual discrimination tests.

Evidence suggesting a "critical period" for enrichment treatment during the early life of a rat was provided by Forgays and Read (1962), and the research of Denenberg, Woodcock, and Rosenberg conducted in the middle sixties (Denenberg, *et al.*,1968). The Forgays and Read experiments placed rats in "free environments" for three-week periods at various times in early life up to ninety days of age and found that those animals environmentally enriched just after weaning at twenty-one days performed better on the Hebb-Williams Animal tests than rats exposed at other periods. The Denenberg experiments also reported optimum period for environmental treatment to be just after weaning; in

addition, he found that those rats so exposed were significantly superior to another group treated before weaning on the Hebb-Williams Problem-Solving Maze at year one (roughly one-third to one-half of a rat's life).

In short, the research on animals provided some rather impressive evidence that the environment's interaction with the genetic endowment of an organism did alter the animal's measured cognitive behavior. This position can be summed up by Seymour Levine who addressed the nature-nurture controversy from the perspective of the researcher's knowledge of animal psychology. Writing in Scientific American in 1960, Levine concluded:

> The basic patterns of development are most likely determined by heredity. But the genetic determinants do find expression in interaction with various aspects of the environment. In the normal course of events the environment provides the substance, the energy, and milieu for the unfolding of the organism's potentialities; in the extreme, environmental influences can determine whether the process of development will continue and produce an organism. In other words, organisms do not grow in a vacuum. (p. 60)

Twins

In the early 1960s the I.Q. data which had been collected from several studies of identical twins reared apart provided additional evidence that measured intelligence was dependent in part on environmental influences. The twin data has received considerable attention from students interested in the nature of human intelligence. Since identical twins at conception come from a single ovum fertilized by a single spermatozoan and divide shortly thereafter into two individuals

who are genetically identical, any differences in the I.Q. of monozygotic twins must be caused by differences in the environment.

If one reviews the twin data with any objectivity, it is difficult to avoid the strong impression that heredity plays an extremely important role in explaining the variation among persons in what may be called a "normal" population. Newman, Freeman, and Holzinger (1937) (The Chicago Group) collected longitudinal intelligence data in the 1930s on nineteen pairs* of identical twins separated in most cases before the age of two.** When tested in adulthood, the average I.Q. difference of the thirteen pairs reared in rather similar environments was only 4.4 points which is approximately the same as the 2 to 3 point average I.Q. difference between identical twins reared together. (See table 1.) In a British study (Burt, 1958) of some thirty cases of identical twins reared apart, an average correlation of .876 was reported between member pairs in adulthood which is only slightly less

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*The Chicago Group actually reported twenty pairs, but because case number 20 did not include data on social and physical advantage, it is excluded from this analysis.

**Simply separating identical twins at an early age does not guarantee, of course, that they will be raised in a manner more different than identical twins reared in the same home. Anastasi and Foley (1949) have noted that in the placement of foster children most agencies try to place children in a family environment rather similar to that of their natural parents. Several of the twin pairs, gathered by the Chicago Group were adopted by relatives. This would certainly make for greater similarity in socio-economic, educational, and other characteristics of the two foster homes than would be the case between two families picked at random. (Anne Anastasi and John P. Foley, Jr., Differential Psychology, the MacMillan Company: New York, 1949, pp. 345-6).

TABLE 2

ENVIRONMENTAL DIFFERENCES AND I.Q. DIFFERENCES
FOR IDENTICAL TWINS REARED APART
ADAPTED FROM BLOOM, 1964

Case No.	Sex	Age at Separation	Age at Testing	Environmental Differences				I.Q. Differences*
				1. Years of Schooling	2. Educational Advantages	3. Social Advantages	4. Physical Advantages	
11	F	18 mo.	35	14	37	25	22	24
18	M	1 yr.	27	4	28	31	11	19
4	F	5 mo.	29	4	22	15	23	17
8	F	3 mo.	15	1	14	32	13	15
2	F	18 mo.	27	10	32	14	9	12
1	F	18 mo.	19	1	15	27	19	12
17	M	2 yr.	14	0	15	15	15	10
12	F	18 mo.	29	5	19	13	36	7
6	F	3 yr.	59	0	7	10	22	8
9	M	1 mo.	19	0	7	14	10	6
10	F	1 yr.	12	1	10	15	16	5
5	F	14 mo.	38	1	11	26	23	4
16	F	2 yr.	11	0	8	12	14	2
13	M	1 mo.	19	0	11	13	9	1
15	M	1 yr.	26	2	9	7	8	1
7	M	1 mo.	13	0	9	27	9	-1
14	F	6 mo.	39	0	12	15	9	-1
3	M	2 mo.	23	1	12	15	12	-2
20	F	1 mo.	19	0	2	?	?	-3
19	F	6 yr.	41	0	9	14	22	-9

*Difference in favor of the individual with the educational advantage is shown as positive.

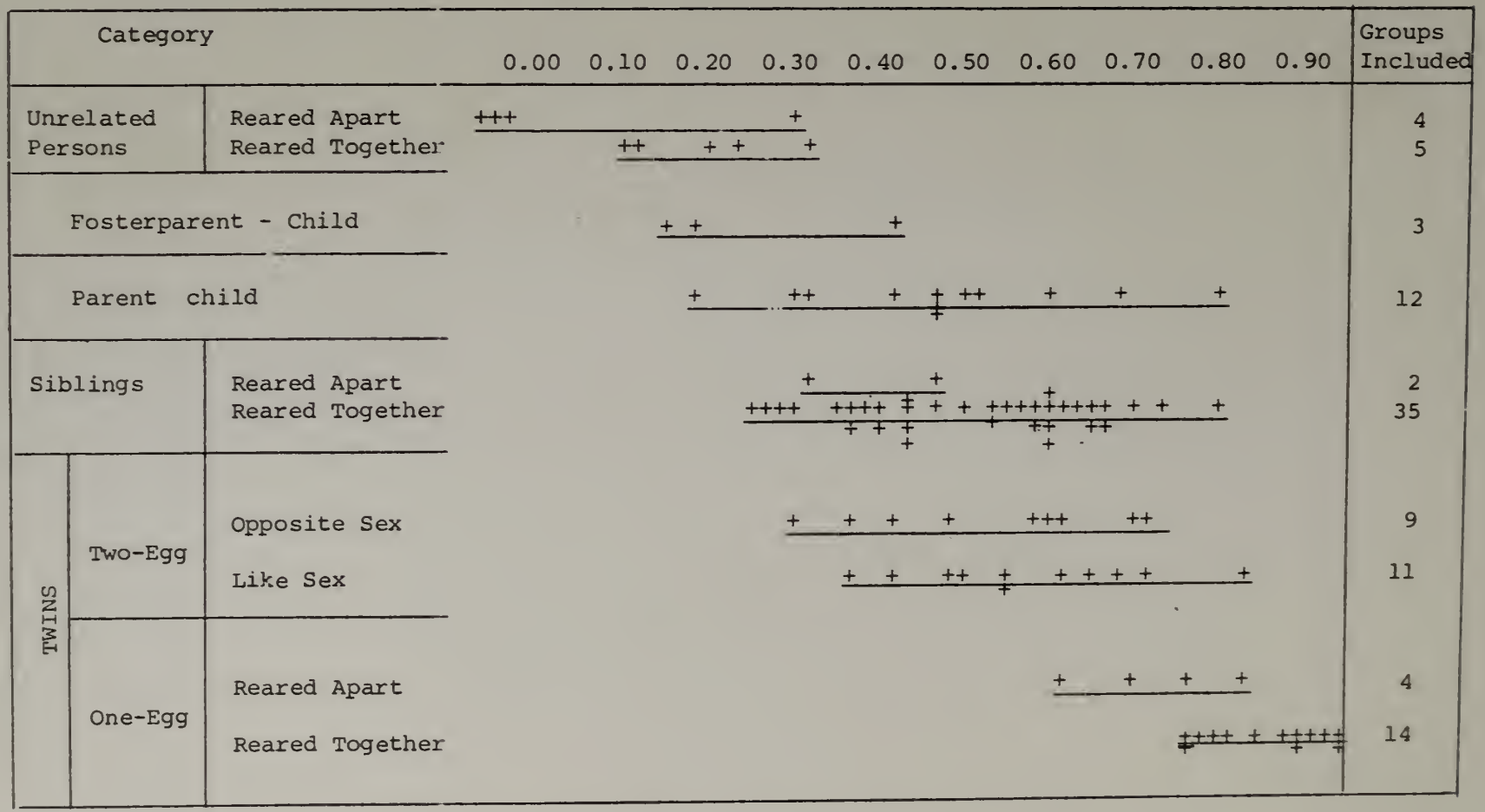
than his reported .925 correlation of identical twins raised in the same home. In an analysis of the identical twin data collected in America before World War II (drawn largely from Newman, Freeman, and Holzinger) Woodworth (1941) argued that intelligence differences within a given community have little to do with environmental differences. A later review of the research on twins by Koch (1966) noted "considerable similarity in the results in spite of the major methodological differences" (p. 47) employed by various researchers on the measured intelligence of separated identical twins. And in a review of some fifty-two studies of correlation coefficients of intelligence test scores from unrelated persons reared apart to identical twins reared together Erlenmeyer-Kimling and Jarvik (1963) found a remarkable consistency in the data from numerous sources:

> Taken individually, many of the 52 studies reviewed here are subject to various types of criticism (for example methodological). Nevertheless, the overall orderliness of the results is particularly impressive if one considers that the investigators had different backgrounds and contrasting views regarding the importance of heredity. Not all of them used the same measures of intelligence, and they derived their data from samples which were unequal in size, age structure, ethnic composition, and socio-economic stratification; the data were collected on four continents during a time span covering more than two generations of individuals. Against this pronounced heterogeneity, which should have clouded the picture, it is reflected by the wide range of correlations, a clearly definitive consistency emerges from the data. (p. 25)

An appreciation of the data's consistency may be gained by glancing at table 2 adapted from Erlenmeyer-Kimling and Jarvik which reveals that identical twins reared apart are more similar in measured intelligence than fraternal twins or siblings reared together. With such impressive empirical data virtually unanimous that heredity plays the dominant

TABLE 3

CORRELATION COEFFICIENTS FOR
INTELLIGENCE TEST SCORES



From Erlenmeyer-Kimling and Jarvik, 1963

role in the variation of I.Q. of most persons, how could advocates of compensatory education use the twin data as evidence that environmental differences could contribute greatly to measured intelligence differences?

The answer seemed to lie in the degree of the environmental differences. If two identical twins were separated at birth and raised in environments which were rather similar, the I.Q. differences at adulthood rarely exceeded seven points (Newman, Freeman, Holzinger, 1937). When comparing this figure to the roughly twelve point I.Q. difference between fraternal twins reared together and among siblings raised in the same home, the 15-16 I.Q. point difference found between unrelated siblings reared together, and the 17-18 I.Q. point difference between unrelated children reared in different homes,* it is readily apparent at least from this data, that environmental differences within a given community account for a relatively small fraction of the total I.Q. differences which exist among persons of that community. However, if the environmental differences among people are substantial, there is evidence that persons with identical genetic endowment will differ considerably in measured intelligence. A closer look at the Newman, Freeman, and Holzinger twin data will reveal that six of the twenty pairs who differed the most in educational advantage had an average

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*Arthur Jensen, "The Inheritability of Intelligence," Readings in Child Development, Harry Munsinger (Ed), Holt, Rhinehart, and Winston: New York, 1975, pp. 131-135.

difference in I.Q. of fifteen points* and that the pair with the greatest difference in amount of formal schooling differed by 24 I.Q. points. Woodworth's commentary on the Newman, Freeman, and Holzinger data provides an appropriate summary of the apparent contradiction between his contention ". . .(1) that differences in environment can produce substantial differences in intelligence, and (2) that the differences actually present in a community are not due mostly to differences in environment. . ." Woodworth explains:

> In the first place, radical differences in education can create substantial differences in intelligence, so far as intelligence is measured by our tests. Differences in I.Q. as great as the standard deviation of the population have been found in several instances, corresponding to large differences in educational advantages. . .
>
> In the second place, however, the differences between identical twins reared apart are remarkably small except in those cases when the constant of educational advantage was very great. For the majority of the separated identicals the I.Q. difference was no greater than for identicals reared together. . .. The difference found among the children of an ordinary community are not accounted for, except in small measure, by differences in homes and schooling. (p. 26)

It was the "radical differences" in the educational environment and the corresponding considerable differences in I.Q. scores from the few twin pairs collected by the Chicago Group that apparently had the

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*Cases "1" and "17" are tied for the sixth position of greatest educational advantage with ratings of 15 and respective I.Q. differences of 12 and 10 points. Therefore, these two cases were averaged and the number eleven was used to represent them. The six cases with greatest social advantage average 12.5 I.Q. points difference. The six cases with the greatest combined educational and social advantage average 15.5 I.Q. points difference. To obtain combined educational and social advantage cases "4" and "5," tied for the sixth position, had to be averaged.

greatest influence on early proponents of compensatory education such as Benjamin Bloom and J. McVicker Hunt. In his influential publication, Stability and Change in Human Characteristics (1964), Bloom includes the Chicago Group data and notes that "of the eight pairs that had the least similar educational environments, the rank correlation for their I.Q. scores was only +.24" (p. 70). Hunt (1961), in Intelligence and Experience, interprets the twin data as providing evidence of the mutability of intelligence.

> Most of the other studies of identical twins reared apart* add little to the information from this classic study by Newman, Freeman, and Holzinger (1937). The fact that they found differences of 24 and 19 points in two of their pairs of twins should probably be accepted as evidence that variations in educational and social opportunities can have an effect upon I.Q. of this order or magnitude. If the variation in opportunity were exaggerated further, the differences in I.Q. might possibly be even larger. (p. 20)

The 24 and 19 I.Q. point differences Hunt is referring to are cases "11" and "18." (See table 1.) In case "11" Helen and Gladys were separated at eighteen months. The former was adopted by a Michigan farm couple, graduated from high school and earned a Bachelor's degree from a "good" college in Michigan. She became a school teacher and spent eight years working in a large school in Detroit, where she taught mainly English and history to the middle grades. Her sister Gladys was adopted by a Canadian family from a medium-sized city in Ontario and

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*He is referring here to one pair reported by Muller (1925), another pair reported by Saudek (1934), and the larger studies of Yates and Brash (1941) and Burks (1943).

because of the movement of her foster father back and forth from the Canadian Rockies, Gladys had only two years of formal schooling. At seventeen she began work in a knitting mill, and at nineteen she began a series of jobs in Detroit which included a saleswoman, a clerk, and an assistant in a printing office. Both women met for the first time at age 29 and were given a variety of intelligence and personality measures at age 35. On every test of ability Helen was "much above" Gladys (Newman, *et al.*, 1937, pp. 245-55).

Case number "18" which had the second greatest Stanford-Binet I.Q. difference of 19 points, involved two males, James and Reece, who were born in a small mountain village in Tennessee. Their mother died in childbirth and their father remarried shortly thereafter, leaving James with the maternal grandparents and Reece with the paternal grandparents. Because of an estranged relationship between the two foster families, the twins had very little contact with one another. At 27 they visited Chicago for the battery of tests and for the first time interacted for a sustained period.

Their socio-educational backgrounds differed considerably. James' grandfather operated a saw mill and sand and gravel business as head of a family considered affluent relative to others in the small community in southeastern Tennessee. Both grandparents were described as "people of steady and industrious character" who apparently encouraged young James to work hard both in and out of school He graduated from high school, married, and was consistently employed as an extremely competent machinist. Reece, on the other hand, was raised by grandparents

described as "regular mountaineers of the more primitive sort." Neither was "educated," regularly employed or industrious. Reece had irregular schooling totaling no more than six years. At age nineteen he married and became engaged in some practices which apparently the authors found rather offensive.

> It would not be fair to recount in this place any of his less credible occupations and experiences. Suffice it to say that his whole life has had a totally different tenor from that of James. (p. 307)

At age twenty-seven the respective I.Q.s for James and Reece were 96 and 77 (Newman, *et al.*, 1937, pp. 306-16).

The two case studies cited above represent the greatest combined differences in socio-educational advantage as well as I.Q. of the twenty twin pairs reported by the Chicago Group. Without going into any further detail, it is only necessary to note at this point that the four other cases (Nos. "4," "8," "2" and "1") with I.Q. differences approximating one standard deviation show very similar trends in social and educational differences. The Helen-Gladys and James-Reece cases were discussed to give the reader a "feel" for some of the greater environmental differences reported by the Chicago Group and to demonstrate why influential behavioral scientists such as Benjamin Bloom (1964) could conclude from the twin data that the "magnitude of the differences produced by abundant and deprived environments" should produce differences in I.Q. of approximately 20 points. (p. 71)

One may synthesize the somewhat contradictory findings from the twin data by employing the idea of "environmental threshold," a term used by Arthur Jensen (1969) in his attempt to resolve the nature-nurture controversy. Although Jensen's description of what constitutes

a deprived and enriched environment, at least in recent years, is much different from the distinctions normally made by early proponents of compensatory education, the general concept seems to have been alluded to by the Chicago Group, Anastasi, Woodworth, Bloom, and Hunt. Each of these researchers has reported in one form or another that the environment has little or no effect on the measured intelligence of identical twins reared apart unless one twin is raised in an educational and social environment which differs greatly from the educational and social environment of the other.* If one looks closely at the case studies of the separated identical twins of the Chicago Group (the twin studies given the greatest attention by Bloom, Hunt, Anastasi, and Woodworth) he will discover that in every twin pair differing in I.Q. by 12 points or more the environment of the "less intelligent" twin was not only rather severely disadvantaged relative to the "brighter" twin but was considerably impoverished relative to American society in general.** The I.Q.s of the lower scoring twin in these six cases all

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*See Newman, *et al.*, Twins: A Study of Heredity and Environment, pp. 358-9; Anastasi and Foley, Differential Psychology, pp. 343-45; Woodworth, "Resemblances between Identical Twins Reared Apart," Readings in Child Development, pp. 23-27; Bloom, Stability and Change in Human Characteristics, pp. 68-71; Hunt, Intelligence and Experience, pp. 19-20.

**You will remember that Gladys had only two years of schooling and that Reece was raised in poverty-stricken rural Tennessee with six years of irregular schooling. In case "4" the lower I.Q. twin (39) was raised on a farm with only 8 years of schooling lessened considerably by shorter sessions in many farm communities. In case "8" the "duller" twin (I.Q. 77) was raised by laborers with little education. The "less intelligent" twin in case "1" (I.Q. 85) was raised in a highly congested area of London and had her schooling interrupted by World War I. In case "2" the lower scoring twin (I.Q. 66) completed 5 grades in school.

fell in the dull-normal to dull range (92, 89, 85, 77, 77, 66). On the other hand five of the six twins with the higher I.Q. fell into the dull normal to bright normal range (92, 96, 97, 106, 116) and were raised in environments which approximated typical middle class standards.

It is Jensen's contention that heredity plays the dominant role in the variation in I.Q. among persons of a given population unless a person is reared in an environment so extremely deprived that his genetic potential is never properly activated. In other words, a certain "threshold" of minimal environmental stimulation must be reached in order to trigger the normal development of whatever genetic intellectual capacity a person may have. The argument is similar to the position taken by biolinguists such as Noam Chomsky and Eric Lenneberg that language acquisition, being a species specific phenomenon just as the graduated crawling to two-legged walking process, will occur in all normal persons by the age of three who are exposed regularly to language communication. If, as in the famous Kingsley Davis case (1947) of Ana and Isabelle, children are virtually isolated from birth, normal physical and mental development will be severely impaired. But with minimal stimulation the great majority of children will crawl at about six months, walk around one year and comprehend the fundamental grammar and syntax of their adult linguistic community by age three.

A person's intelligence is thus seen by Jensen (1969) as a natural unfolding of biological processes much like the physical maturation involved in determining height, both of which will develop according to

whatever pattern his genetic endowment dictates as long as he has reached a certain threshold of environmental adequacy.

> The environment with respect to intelligence is thus analogous to nutrition with respect to stature. If there are great nutritional lacks, growth is stunted, but above a certain level of nutritional adequacy, including minimal daily requirements of minerals, vitamins and proteins, even greater variations in eating habits will have negligible effects on persons' stature, and under such conditions most of the differences in stature among individuals will be due to heredity. (p. 60)

Therefore, it is apparent that the earlier interpretations of the twin data by the Chicago Group, Bloom, etc. are in agreement with Jensen on two major points: (1) that the I.Q. differences among persons raised in a middle class environment are largely genetic in origin, and (2) that I.Q. differences between persons raised in an "extremely deprived" environment and those reared in a middle class environment are to a great extent nurtured by experience.

> There can be no doubt that moving children from an extremely deprived environment to good average environmental circumstances can boost I.Q. some 20 to 30 points and in certain extreme rare cases as much as 60 or 70 points. (Jensen, 1969, p. 60.)

It seems that the major issue separating Jensen from the earlier reporters is their respective definitions of environmental deprivation.

> When I speak of subthreshold environmental deprivation, I do not refer to a mere lack of middle-class amenities. I refer to the extreme sensory and motor restrictions in environments such as those described by Skeels and Dye (1939) and Davis (1947), in which the subjects had little sensory stimulation of any kind and little contact with adults. These cases of extreme social isolation early in life showed great deficiencies in I.Q. But removal from social deprivation to a good, average social environment resulted in large gains in I.Q. (Jensen, 1969, p. 60.)

To the early advocates of compensatory education such as Bloom,

however, a deprived environment includes not only the gross sensory-motor restrictions of the Skeels and Dye orphans and the Davis illegitimate children but cultural circumstances often associated with economic impoverishment and discrimination. According to Bloom (1964) characteristics of a "deprived environment" include a social milieu "which discourages language development; limits exposure to interaction with the world around us and with vicarious experiences represented by books, pictures, films, television, etc.;" restricts "the individual from attempting to attack and solve problems;" and minimizes "interaction between adults and children" (pp. 77-8). And surely Woodworth, Anastasi, and Hunt believed that those monozygotic twins cited by the Chicago Group who averaged a standard deviation below their more fortunate twin brothers or sisters were reared in environments deprived enough to inhibit the natural unfolding of their innate intellectual capacities.

Of course there is another important probable difference in interpretation of the twin data which separates Jensen from the others. The earlier researchers suggest, although the twin data does not support, a linear relationship between environmental influence and measured intelligence. According to Woodworth (1941)

> . . . radical differences in education can create substantial differences in intelligence, so far as intelligence is measured by our tests. Differences in I.Q. as great as the standard deviation of the population have been found in several instances, corresponding to large differences in educational advantages. We can conclude that the educational environment, taken in a broad sense, has a marked effect on such intelligence as we are now able to measure. (p. 26)

In a similar interpretation Hunt (1961) stated:

> When substantial differences exist in the I.Q.s of identical twins whose circumstances of life have varied, these differences suggest how much effect the circumstances in life can have. (p. 20)

Commenting on the Newman, Freeman, and Holzinger twin data, Anastasi and Foley noted that most of the nineteen separated twin pairs had very similar I.Q.s in adulthood.

> [However] a more clinical approach is provided by an analysis based upon the extent of environmental difference between the two twins in each separated pair. (p. 343)
>
> An examination . . . [of their] I.Q. differences suggests that on the whole they are not random differences such as might result from fortuitous factors, but rather tend to favor the better educated twin quite consistently. (p. 343)

In other words, each of these writers apparently feels that substantial environmental differences at any level can produce large differences in measured intelligence, i.e., that a twin who is raised in wealthy intellectual surroundings and has several years of higher education will exceed his identical counterpart who is reared in a middle class home and simply graduates from high school by roughly the same I.Q. points that typically separated poverty-stricken and middle class twins.

But this apparent linear interpretation of the relationship between intelligence and experience is only conjecture, for unfortunately none of the twin pairs differed greatly in socio-economic or educational advantages at the middle to upper end of the continuum. Therefore, a careful reading of the analysis of the twin data by Hunt, Woodworth, etc. could provide support for a certain threshold of environmental adequacy beyond which experience has relatively little effect on I.Q. And, indeed, if Jensen is correct that there is an "environmental

threshold," the twin data in existence in the early sixties suggested that its point of influence was not at the level of gross sensory motor deficiency but perhaps somewhere just beneath the amenities of middle class American life.

Children and Institutions

It is probable that the several studies of children reared in some sort of institutional confinement had a much greater influence in dissuading a belief in fixed intelligence than the data on identical twins reared apart. Much of the earlier influential research suggesting strongly that human intelligence is plastic and modifiable was conducted by Rene Spitz in the 1940s, concerning itself primarily with the effects of maternal deprivation and "hospitalism." Spitz (1945) documented by film and the Hertzer-Wolf baby tests the psychomotor, affective, and cognitive behavior of children during their first year of life, who were raised in contrasting institutions of two Latin American countries. One institution, entitled by Spitz a "foundling home," housed infants of mothers who could not afford to support them. After the first three months of life (when their mothers had completed the nursing process) these infants received very little stimulation (limited space and toys) and adult attention. They spent much of their time in the solitary confinement of their cots. In the other institution, a "nursery" attached to a reformatory for delinquent young women, the mothers typically had considerable contact with their babies throughout their first year of life. In the "nursery" the sixty-nine children

generally progressed normally with an average developmental quotion (D.Q.) during the first year rising slightly from 97 to 100. On the other hand, the sixty-one "foundling home" infants soon became physically, and mentally deficient. Although the sanitary conditions of the two institutions were reported to be virtually identical, the foundling infants were very susceptible to disease (especially measles), and their average D.Q. dropped from 131 to 72.

The Spitz observations gained some support from Levy (1947) who compared a small sample of orphans raised in boarding homes with similar children reared in nurseries. At the age of 2-1/2 years the boarding children were reported to be clearly superior to the nursery children on a "developmental quotient" index which included various developmental scales.

Additional evidence suggesting the importance of maternal care came from a review of the research conducted by John Bowlby (1952) for the United Nations. The great majority of studies reviewed by Bowlby dealt with the affective rather than the cognitive effects of maternal deprivation. Nevertheless Bowlby concluded that the impairment of cognitive growth in the form of verbal intelligence may be more influenced by maternal deprivation than social or psychomotor development.

> The direct studies are most numerous. They make it plain that when deprived of maternal care, the child's development is almost always retarded--physically, intellectually, and socially. . . (p. 15).
>
> Studies. . .show that not all aspects of development are equally affected. The least affected is neuromuscular development, including walking, other locomotor activities, and manual dexterity. The most affected is speech, the ability to express being more retarded than the ability to understand. (p. 20)

Initially the well-known work of Wayne Dennis (Dennis and Dennis, 1940) with the Hopi Indians stood in contradiction to most of the early research but was eventually refined (Dennis, 1960) by a report of a fascinating study conducted in Iran. Although the Dennis research was concerned primarily with the effect of environment on motoric behavior, it has received considerable attention from students of cognitive growth because of the correlation between physical and mental retardation. In the earlier study the author compared the effects of strapping children from birth to an average of nine months on a small "cradle board," a customary practice of one group of Hopis, with another group from the same tribe which raised its children with normal physical freedom. Excluding a couple of retarded children from the final sample, the Dennises found virtually no difference between the 63 board users and 42 nonboard users in the time each group began walking (14.53 and 14.57 months respectively). In the later report from Tehran, however, Dennis found that while most orphans in one institution who were kept constantly lying on their backs from birth were severely retarded in walking ability at age 3-4, children reared from birth in another institution who were handled, had some adult attention, had ample toys and plenty of space walked normally. Dennis contends that the physical retardation of the children in the first Iranian institution "does not contradict but complements" the Hopi findings by his explanation that the Hopi babies were handled more and had much greater adult contact than the institutional children who spent nearly all of their time alone in the supine position.

This writer has found it somewhat difficult to accept Wayne Dennis' conclusion that his 1960 report from Iran complements the earlier study of the Hopi infants. Referring in the 1960 article to the Hopi study Dennis states:

> The Hopi children were limited in regard to learning opportunities only while on the cradle board. As we pointed out in our original report, they were on the cradle board chiefly during their sleeping hours, when in any case little learning is expected to occur. When awake they were handled, held upright against the mother, placed sitting on her lap, and placed prone. Their deprivation was much less than children in Institution I (the first institution described above) who 24 hours per day for many months remained in supine positions. (Dennis and Dennis, 1960, p. 56)

In the 1940 article, however, the description of the degree of motoric restrictions seems somewhat different in tone, and I find it difficult to escape the feeling that in 1960 he may have modified his earlier interpretation to avoid the apparent contradictory evidence.

> The infant is thus bound to the board the first day of life and for the first 3 months he spends nearly all of his hours in this position. Although he is taken off one or more times daily, either for bathing or for replacing soiled clothes, these operations do not consume many minutes and he is returned to the board when they are completed. . .
>
> It will be seen that the cradle deprives the infant of nearly all freedom of movement during the early months. These months, of course, are largely devoted to sleep, but nevertheless, the importance of 'random movement' which occurs during this period has been stressed by many writers. (Dennis, 1940, pp. 78-9)

In the 1940 article the opportunity for "random movement" (so important in earlier reports but never mentioned in the later study) seems to be considerably less among the Hopi infants than he recalls in 1960. The handling in the earlier report took place for only a "few minutes daily" but in the later article they received the necessary physical stimulation

"while awake." Surely the Hopi infants, like all other normal babies, were awake more than a few minutes each day.

Another possible explanation for the differing effects of the motoric deprivation of the Hopi and Iranian children is that apparently the former, but not the latter, experienced vicariously the process of walking. It is probable that the Hopi children not only could see others walking but could "feel" the movement while being carried by the mother while on the cradle board. If this is indeed the case, it would be consistent with some of the research mentioned earlier on animals which has found that rats reared in mesh cages (with restricted physical but rich visual stimulation) either approached or equated the problem solving ability of rats reared in a similar environment without the physical deprivation.

The Dennis findings also questioned the necessity of the mother's role in the fostering of normal child development. In the Iranian institution in which children were progressing normally both physically and mentally, adult attention was apparently an ample substitute for the mother. Other work by Harlow (1958) at about the same time culminated in many students of child development seriously questioning the rather simplistic views of Spitz and Bowlby on the almost inevitable damages caused by maternal deprivation. Continuous interaction with adults, not just the mother, became the ingredient considered necessary for proper infant growth and development. A review of the literature by Casler (1961) suggested that institutionalization need not be detrimental to cognitive growth as long as there are persons at the institution

who provide ample perceptual stimulation.

By the mid 1960s perhaps the most convincing evidence supporting the plasticity of human intelligence had come from the reports of Harold Skeels (Skeels and Dye, 1939; and Skeels, 1965) on the effect of residential change on the I.Q.s of "mentally retarded" orphans. Thirteen of twenty-five children in an "affectionless" institution were all removed by the age of 18 months to another orphanage where they had intimate contact with a number of mildly mentally retarded women, while twelve children constituting a contrast group remained in the original orphanage. After periods ranging from several months to over two years (depending upon the time of removal and testing) the mean I.Q. of the experimental group dramatically improved (64.3 - 91.8) while the measured intelligence of the contrast group suffered considerable decline (86.7 - 60.5). Because of the low reliability of intelligence tests at such an early age, methodological flaws, and controversy over statistical regression, the Skeels and Skodak study was less than convincing until the more recent reports by Skeels (1965, 1966) revealed the results of follow-up interviews with all the subjects some twenty years later. Eleven of the thirteen children in the experimental group were adopted, and all were self-supporting leading normal productive lives, virtually indistinguishable from the general population. On the other hand subjects in the contrast group either remained wards of institutions or were generally living marginal lives on the outside as unemployed dependents or unskilled laborers.

> In education, disparity between the two groups is great. In the experimental group, the median grade completed is the twelfth; in the contrast group, the third.

> Four subjects in the experimental group have had one year or more of college work, one of the boys having received a B.A. degree.
>
> One girl in the experimental group who initially had an I.Q. of 35 has subsequently graduated from high school and taken one semester of work at college. She is married and has two boys. These boys have been given intelligence tests and have achieved I.Q. scores of 128 and 107.
>
> If this girl had had the continuing experience characteristic of those in the contrast group, she sould have remained all these years on a custodial ward in an institution for the mentally retarded, or have been sterilized in late adolescence or early adulthood and subsequently placed out on a non-skilled labor type of domestic employment.
>
> In fact, but for the grace of God, any one of the cases in the experimental group might have experienced the impact of deprivation of those in the contrast group and vice versa. (Skeels, 1965, p. 34)

The Skeels research seems to prove what the earlier studies by Spitz, Levy and Bowlby, and Dennis suggest: institutional confinement that severely restricts the amount of environmental stimulation can inhibit the development of cognition in children. In addition, his work provides extremely impressive evidence that radical residential change can improve substantially the measured intelligence of children.

Population Over Time

By the mid 1960s there existed contradictory evidence regarding the stability and change in I.Q. of the same individuals over a period of time. On one hand longitudinal studies suggested that the measured intelligence of most persons varied very little after about four years of age. Other studies, however, indicated that environmental change did have significant effect on the alteration of I.Q. scores.

Several major longitudinal studies of the intelligence of children

over periods ranging from five to twenty-one years are in general agreement that the I.Q. of most persons studied is a rather stable characteristic (the University of Chicago Study, Freeman and Flory, 1937; the Harvard Growth Study, Anderson, 1939; the California Guidance Study, Honzik, *et al.*, 1938; the Berkeley Growth Study, Bayley, 1949; the Brush Foundation Study, Ebert and Simmons, 1943; the Fels Foundation Study, Sontag, *et al.*, 1958). In his influential publication, Stability and Change in Human Characteristics, Benjamin Bloom displays graphically the correlations of intelligence and age of the six studies cited above and notes that they are "similar in form" with "a single general trend [which] clearly emerges."

> The consistency of these data under such different conditions suggests that general intelligence develops in an exceedingly lawful way and that the discovery of the underlying nature of this development is worthy of our systematic efforts. (p. 56)

After analyzing the data from the Bayley study (the most complete and carefully conducted of the groups) in some detail, Bloom contends that the "exceedingly lawful way in which "intelligence develops" is a ". . . characteristic rapid increase in the correlation between the criterion measure and measurements made in the early years and a less rapid increase in the relationships after age four." According to Bloom the correlations between I.Q. at age 17 and at age 2 is +.41, at age 4 it is +.71 and by age 11 +.92. In other words after the critical period of early childhood measured intelligence becomes a relatively fixed characteristic, at least until maturity. Bloom argues further that the human organism is particularly susceptible to environmental influence during the first year or so of life, an issue which will be

discussed at some length later in this chapter.

Since most persons in the major longitudinal studies probably grew to maturity in environments which were rather stable, it should come as no surprise that I.Q. scores should vary little between the ages of four and seventeen. But what of persons whose environment undergoes considerable change during childhood and adolescence? J. McV. Hunt in Intelligence and Experience cites two cases (one from the California Guidance Study and another from the Berkeley Study) which indicated that intelligence changed by more than a standard deviation over a period of several years. Hunt comments on one of the cases from the California Guidance Study which reported a dramatic increase in I.Q. from roughly 85 to 140 between the ages of two and ten:

> Case 553. . . had a poor health history, especially during his early years. Only one six month period in his life had he been free from illness, and family relationships were often strained. Somehow he came to find security with his intellectual interests. The 'how' is not clear. With these interests go the rising I.Q. (p. 25)

And on another case from the California Guidance Study

> Case 764 started at age 2 with an I.Q. or D.Q. of 133. By age four years it had dropped to average, and by age 18 years to 77. She was born when her mother, who had an I.Q. of the order of 65 to 70, was 44. This mother is described as one who lived to feed her (daughter) and to keep her young. In consequence obesity began in the pre-school years and increased to age 14 when therapy was instituted. Decreased obesity, however, was not associated with an upward change in I.Q. The obesity is probably unimportant by itself, but the maternal overindulgence may well have kept the girl from a variety of experiences and from opportunities to develop self-motivating interests that would further intellectual growth. (p. 25)

Although these cases may be "genuine" as Hunt insists, it is noteworthy that he chose to cite only two out of the several hundred included in the major longitudinal studies to illustrate environmental effects on changing intelligence. In order to gather more convincing evidence of the mutability of intelligence over time, one must look at longitudinal studies of populations raised in more atypical environments than those of the major longitudinal studies.

The atypical environment that most often suggested that experience effected measured intelligence was economic poverty. Wheeler (1942) sampled Appalachian school children in Tennessee and measured their I.Q. over a ten-year period. The median I.Q. of the sample dropped from approximately 100 to 80 between the ages of six and sixteen.

In a similar study by Kennedy, Van de Riet, and White (1963) a cross-sectional survey was made of 1800 black elementary school children in the south which revealed a decline in mean I.Q. of ten points (86.00 - 75.48) between the ages of five and twelve.

There was also evidence that movement to more "advantaged surroundings effected the I.Q. of blacks migrating to cities in the northeast. Otto Klineberg (1935) reported that the length of residence in New York City of blacks who had migrated to that point from the south in the 1920s and early 1930s correlated positively with the growth of measured intelligence. In a test of the Klineberg hypothesis Lee (1951) measured the I.Q. of several groups of black children which spent varying periods of time living in Philadelphia. The I.Q.s of children who were born and raised in that city changed hardly at all between grades one and nine averaging 96 at both levels. However, the I.Q.s of other groups

who moved to Philadelphia by grade six generally improved significantly once they had come north. It is interesting that the earlier the exposure to the Philadelphia community the greater the change in measured intelligence. Those children who arrived by age six changed roughly six points (86 - 92) between grades one and nine. Children arriving by age nine and eleven showed I.Q. gains of by grade nine, four and two points respectively.

Finally, the work of Knobloch and Passamanick (1961) suggested that the socio-economic and cultural differences between low income blacks and middle class whites caused the differences in the developmental quotient of the two races to become more pronounced with maturity. This progressive cognitive gap in measured intelligence apparently was caused not by an increase in middle class white intelligence but by a gradual decline in the I.Q. of disadvantaged black children throughout their years of schooling (Arlitt, 1922; Young and Bright, 1954; Tomlison, 1944; Higgins and Sivers, 1958; and Kennedy, Van de Riet, and White, 1961). Higgins and Sivers (1958) reported a similar decline in I.Q. among white children from a low socio-economic background, suggesting that the alleged decrease in measured intelligence over the years of childhood is not particular to poverty-stricken Negro children.

Summary

By the early 1960s there appeared to be little question that the nurturing process played an extremely important role in determining the mean difference in measured academic aptitude between members of the American main culture and many persons from different environmental

backgrounds. Surely environmental deprivation along the lines of that experienced by the Spitz and Dennis orphans lessens one's chances of performing within the range of normality on intelligence and achievement tests. In addition, the research on separated identical twins and subcultural groups suggested that variations in culture and socio-economic status caused considerable variation in cognitive development.

C H A P T E R I I I

POVERTY, INTELLIGENCE, AND ACHIEVEMENT

Rarely in the behavioral sciences can one be certain of anything. The extraordinary complexity of the processes whereby the human organism interacts with the environment necessitates an empirical, inductive approach to scientific inquiry. Perhaps the closest the field of education and sociology can come to a factual statement is that the mean I.Q. of low income groups is less than that of higher income groups. A summary by Arthur Jensen (1970) has revelaed that innumerable studies on three continents are unanimous in their findings that higher socio-economic status correlates positively with higher measured intelligence. Given the strong correlation between socio-economic status and I.Q. and the relation cited in Chapter I between SES and school achievement, a second major premise held by proponents of compensatory education was that a low socio-economic environment inhibits the development of intelligence and school achievement (premise two).

The Culture of Poverty

A rather interesting and influential anlaysis of poverty was made by Oscar Lewis (1959, 1961, 1965). Basing his generalizations on a number of cross-cultural observations (most extensively conducted in Puerto Rico, Mexico and New York City) Lewis contended that a "sub-culture of poverty" existed in a number of places in the world. Although the culture of poverty could conceivably exist in a number of historical

and socio-economic circumstances, Lewis found that it "flourished" in a "class stratified, highly individuated, capitalistic society." Under these conditions the economic underclass often developed a culture which was remarkably similar in many parts of the world. Aware of middle class values and cognizant of the difficulty of upward mobility, persons sharing the culture of poverty had feelings of hopelessness, negative self images and suspicious attitudes toward the major institutions of society such as the police and the schools, which were controlled by the more affluent dominant culture. Such alienation, despair, and economic want existing aside relative affluence contributed to a number of poverty-culture characteristics, most prominent of which included matricentism, family instability, present-time orientation, impulsiveness, irrationality, welfare dependency, disorganization, and general authoritarianism. Since these cultural variables were self perpetuating and contributed to the general maintenance of destitution, Lewis concluded that this way of life was not only economically but "culturally impoverished."

The Lewis analysis is, of course, only one of many that have been made of the lifestyles of lower income groups. The cultural variables he has identified as characterizing the values and behavioral patterns of poor people have been stated, in one form or another, many times before. What distinguished Lewis was the universality attributed to the culture of poverty and more importantly, for our purposes, his conclusion, as a respected anthropologist, that placed a value judgement on this culture. In an apparent violation of the cherished anthropological concept of "cultural relativity" Oscar Lewis states:

> . . . on the whole it seems to me that it is a relatively thin culture. There is a great deal of pathos, suffering and emptiness among those who live in the culture of poverty. It does not provide much support or long-range satisfaction and it's encouragement of mistrust tends to magnify helplessness and isolation. Indeed, the poverty of culture is one of the crucial aspects of the culture of poverty. [underlining my own] (Lewis, 1965, p. ii)

And as an impoverished culture it would best be

> transformed and eliminated. [This book] highlights the social, economic, and psychological complexities which have to be faced in any effort to transform and eliminate the culture of poverty from the world. It suggests that basic changes in the attitudes and value system of the poor must go hand in hand with improvements in the material conditions of living. (Lewis, 1961, p. xxx)

Despite Lewis's contention in 1965 that the culture of poverty had been largely eliminated in the United States (between six and ten million people) and a number of studies (Sears, 1952; Boyd, 1952; Weiner and Murray, 1963; Sexton, 1965) challenging the idea that the poverty-stricken in American society have feelings of hopelessness, many advocates of "enrichment" educational programs for children from low income families use Lewis to justify their rationale. And in another sense whether one cites Lewis specifically is irrelevant, for the flavor of writing typifies a number of other influential manuscripts of this period such as The Culturally Deprived Child by Frank Riessman (1961), Slums and Suburbs by J.B. Conant (1959) and The Dark Ghetto by Kenneth Clark (1965). Theoretically, poverty was viewed as intricately interwoven with many attitudes and behavioral patterns which often severely impaired a child's chances to acquire those aptitudes and skills which permit one to succeed in school. The Lewis anthropological studies served to give further credibility to this position.

The remainder of this section will summarize the more specific research which suggests that the lifestyle associated with economic poverty usually placed poverty-stricken children at a cognitive disadvantage in school. The areas that will be included are motivation, language, and stimulation deprivation.

Motivation

It was commonly assumed in the mid-1960s that attitudes originating in the home of poverty-stricken children often contributed to their poor achievement in school. Typically the disadvantaged child was poorly motivated academically because of such factors as low parental aspirations, weak ego development and the authoritarian nature of his home environment.

For many years educators seem to have been virtually unanimous in their contention that motivation to learn effects pupil achievement. Since the research had shown a far-from-perfect correlation between intelligence and school grades (usually about .50; Cronbach, 1963), it was assumed that highly motivated "overachievers" could perform rather well in school despite limited aptitude. on the other hand, even the "bright" disadvantaged child was thought to be very often an "underachiever" because of his typically neutral to negative attitudes toward the educational process. There was some research (Maddi, 1965; Ringness, 1965*) to support the relationship between motivation and achievement, but this author is somewhat amazed to find the extraordinary

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*Maddi found a relationship between motivation and measures of creativity. Ringness found that motivation to succeed correlated positively with the grade point averages of ninth grade boys of similar I.Q.s.

commitment of education to this affective factor based on a paucity of experimental evidence.

Regarding the wishes and degree of optimism that lower class persons hold toward achieving higher status in this society it appears to be an oversimplification to state that economically impoverished people typically lack the motivation often deemed necessary for upward mobility. Hess and Shipman (1968) in a study of four groups of Negro mothers from four income levels in New York City reported only a modest positive correlation between economic level and the aspirations that these women had for their children. This finding is in general agreement with several other studies (Weiner and Murray, 1963; Boyd, 1952; and Sears, 1952) which suggest that poverty has little or nothing to do with the aspirations of people in American society. When these mothers were asked, however, the expectations they had for their children's educational attainment, dramatic differences appeared in the percentage of lower class and middle class mothers who mentioned college. For example, 100 percent of the middle class mothers vs. roughly 38 percent of the mothers of the lower economic group expected their children to attend an institution of higher learning. In addition, Hess and Shipman found a highly significant positive correlation between "feelings of powerlessness" and decreasing income, but not between importance of education and economic status. Lower expectations and greater feelings of powerlessness also correlated negatively with measured intelligence on two Stanford Binet measures of I.Q., given outside of and within the home. In their summary of the study the authors offer the following analysis of the effect motivational attitudes may have on achievement:

> The images that these mothers hold of the school and that are probably transmitted to the young child in some form are particularly relevant for early education and the child's success in the school. The mother's attitudes indicate that the problem is not due to a lack of respect for the school or to the belief that it is ineffective; it is due to the fact that the mother regards it as a distant and formidable institution with which they have very little interaction and over which they exercise very little control. (p. 127)

A study by Wilson (1959) of high school boys of differing socio-economic status in the San Francisco-Oakland Bay area may shed some light on the expected but generally unsupported positive correlation between higher income and the educational aspirations of pupils. Wilson found no significant difference between social class and expressed desire to attend college of boys with I.Q.s below 89 (". . . that is, those for whom collegiate aspirations are unrealistic") but did report highly significant differences, after controlling for grades and I.Q., between working and middle class boys whose measured intelligence fell in the normal range. Since many of the studies of the aspirations of disadvantaged children in all likelihood included data on subjects with I.Q.s well below normal, it is possible that poverty-stricken children typically unrealistically inflate their academic goals to somehow compensate for the cumulative effects of failure and low self-esteem.

Ausubel and Ausubel (1963) take this position in their influential review of the literature on ego development of Negro children. Dismissing the pencil and paper measures indicating very similar motivation of black and white children as indicative of the "unrealistic" defensiveness of so many Negro children, the authors argue emphatically that the majority of segregated black children in American society suffer from

low self esteem. Victims of not only economic poverty but "an inferior class status," black children typically were believed to perceive themselves as "an object of derision and disparagement." Ausubel and Ausubel based their conclusion mainly on the perceptions of several observers and a handful of studies of children's color preferences and racial-role identity. It was concluded that low self esteem led to low motivation which was responsible, in part, for poor achievement.

Once again the Ausubel and Ausubel conclusions seemed to be an overly simplified explanation of the relationship between race, self-concept, motivation and achievement. Evidence did exist in the early 1960's that self-concept correlated positively with cognitive achievement (Coopersmith, 1959; and Brookover, *et al.*, 1962), but there was apparently no hard data which indicated that higher achievement was caused by a more positive self image. Indeed, the case could just as easily be made that a greater self concept was caused by higher achievement. Yet the Ausubels call for an end to segregated schooling and the initiation of special programs to improve self image and thus achievement, a proposal shared by many other behavioral scientists of the period. For example, Franklin Patterson, Director of the Lincoln Filene Center for Citizenship and Public Affairs at Tufts University, stated at a conference sponsored by the Center and Tufts on "the relationship of education to self-concept in Negro children and youth" in 1963 that there were "two general assumptions" of those who initiated the gathering.

> One was that, in general, the environmental press of the American color-caste system tends to develop conceptions of self in Negro children and youth which result in defeated behavior, as far as academic and political developments are concerned. The other assumption was

> that schools which tend to serve as part of this defeating press, can instead serve to strengthen the self-concept of Negro children and youth. With a consequent strengthening of their performances as students and citizens. [underline, Patterson] (Kvaraceus, *et al.*, 1965, pp. 1-2)

In addition to questioning the casual relationship between self-concept and achievement, one could also take issue with the assumption that black children, even in the early sixties,* had a lower general self image, than their white counterparts. A closer look at some of the data cited in the Ausubel's review, for example, can raise some interesting questions about the effects of segregation. One of the most commonly mentioned series of studies were those conducted by Kenneth and Mamie Clark in the 1940s on the doll color preference of Negro children between the ages of three and seven from the South and North. Roughly 2/3 of the 253 children sampled preferred a "white" doll to a "colored" doll but acceptance of the latter doll was more likely to occur among the southern Negro children than the northern group who lived in Springfield, Massachusetts. The Clarks rather weakly offered the following explanation for this unexpected finding:

> One factor accounting for this difference may be the fact that in this sample there are many more light colored children in the north than there are in the south. (Clark and Clark, 1958, pp. 174)

But another explanation could be that the Negro children in the more racially integrated Springfield city may have had greater interaction

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*A recent review of the literature on black self image by Zirkel and Moses (1971) reports that most of these studies were conducted in the late sixties and early seventies after the impact of the civil rights movement.

with white persons than their southern counterparts which served to broaden the former group's frame of reference in terms of social status beyond the immediate Negro community. Although they may have been more "integrated" with whites, there was little question which race in Springfield enjoyed the greater social status. On the other hand, in a highly segregated southern community, a Negro child's frame of social reference may only include his immediate racial group, and his self-concept may depend largely on his relative position within that social entity. A study by Rosenberg in the early 1960s of Negro and white attendants in a mental hospital may serve to illustrate the point. On a self esteem scale, Rosenberg reported that the Negro employees had even a higher self image than the white workers.

> In this middle Atlantic city, the job of attendant is a relatively good job for a Negro but a very poor position for a white. Self-esteem may be more a matter of one's position within one group than the rank of the group in relation to other groups. [underlining, this author] (Rosenberg, 1965, p. 63)

If it was assumed but hardly documented that the environment of the typical disadvantaged child lowered his expressed goals and impaired his ego development, what evidence existed that the alleged authoritarian nature of his home environment had a detrimental effect on his preparation to meet the challenges of school? By the mid-1960s several studies had reported that lower class parents use of reinforcers to elicit appropriate behavior in their children was more harsh and punitive than the middle class (David and Dollard, 1940; Davis, 1943; Mass, 1951; MacCoby, 1954; Kohn, 1959). Two of the more recent investigations of the 1950s by Mass (1951) and Kohn (1959) may be used as examples of these reports.

The Mass study interviewed the parents and peers of twenty-one pre- and early-adolescents from both the lower class and "core culture" and found within the former group a good deal more fear of parental authority and less open family communication. The Kohn article summarized interviews from two hundred white working class and two hundred white middle class families in Washington, D.C. In their use of punishment the working class parents were more likely "to respond in terms of the immediate consequences of the child's actions" to assure obedience out of respect; the middle class parents, to the contrary, punished more "in terms of their interpretation of the child's intent" to promote "the child's development of internalized standards of conduct."

Theoretically, the lower class emphasis on negative reinforcers and punishment caused the lower class child to play a more submissive and dependent role in his relationship with the teacher. Less likely to interact with the school activities and less intrinsically motivated than his middle class counterpart, he is less prepared to benefit from a school situation that encourages children to actively participate in the learning process. Martin Deutsch (1963) argued the point in terms of expectations of reward.

> [An]. . . area in which the lower-class child lacks pre-school orientation is the well-inculcated expectation of reward for performance, especially for successful task completion. The lack of such expectation, of course, reduces motivation for beginning a task and, therefore, also makes less likely the self-reinforcement of activity through the gaining of feelings of competence. In these impoverished, broken homes there is very little of the type of interaction seen so commonly in middle-class homes in which the parents set a tack for the child, observe its performance, and in some way reward its completion. (p. 172)

The assumption that the nature of the rewards stemming from the home effected school achievement was largely speculative, for there existed very little empirical evidence in the mid-1960s to support such a relationship. Probably the most frequently cited study was that of Wolf (1963) who found that the use of more positive rewards for intellectual development along with twelve other home environmental process variables correlated rather highly with children's Hennon-Nelson I.Q. scores in a sample of pupils in the Chicago area. A study that received very little, if any, attention was a British investigation (Kent and Russell, 1957) of the relationship between home discipline and I.Q. which contested the notion that a generous use of positive reinforcers correlated with higher intelligence. The study sampled some two hundred children of various ages and socio-economic backgrounds and found that children from "demanding" homes had significantly higher I.Q.s (124.2) than children from homes described as "normal" (109.9), "unconcerned" (97.0) and "overanxious" (107.3). The authors described a "demanding" home as a place where parents set high standards for the child and "pressured" him to perform well in schools.

> They reward infrequently and without generosity and they attempt to make what Kramer calls the 3 A's, affection, acceptance and approval, conditional upon satisfactory conduct and achievement. (p. 28)

While the findings of the Kent and Russell study did not imply that punishment effected I.Q., it did suggest that negative reinforcement (making approval conditional upon appropriate behavior) within an environment which pressed children to achieve may have some relationship to measured cognition.

The Kent and Russell study, viewed within the context of the assumed detrimental cognitive effects of authoritarian child rearing, raises an interesting issue involving the instructional methodology of compensatory education programs. We will see later that many, if not most, treatment programs were characterized by a rather "free" permissive approach to discipline to create a relaxed atmosphere believed to be conducive to greater learning. While there was some evidence that could be interpreted as suggesting that abrupt, verbally punitive child-rearing practices impaired the development of the ability to think in terms of cause-effect relationships and abstractions, "humanistic" educators who assumed that an open approach with a regular use of rewards correlated with improved achievement were probably going beyond the data.

Language

The notion that the language of poverty impaired the development of the academic skills necessary for successful school achievement received considerable attention from many educators in the early 1960s. Few argued, of course, with the notion that a child whose native language or dialect was different from that used in the school usually faced a greater handicap than his counterpart who was reared speaking standard American English. Several researchers from the fields of sociology, psychology and education went a step further, however, and suggested that the speech of many poor persons actually inhibited cognition. Probably the most influential work was conducted by British sociologist Basil Bernstein (1962) who labeled as "restrictive"the linguistic code of many working class families and "elaborated" the dialect more often

associated with middle class families. According to Bernstein characteristics of a restricted language include short or incomplete sentences, a repetitive use of conjunctions, and a limited use of subordinate clauses, modifiers and the impersonal pronoun. Described as a language of implicit rather than explicit meaning, the restricted code may retard the development of the ability to think abstractly. Complex conceptualization was seen by Ausubel (1964) as more difficult for the typical lower class child in school because he constantly shifts from concrete to abstract modes of thought and comprehension.

In this country a number of studies have revealed differences between the linguistic pattern of many lower and middle class people. Irwin (1948a) studied the speech sound development of infants from "laboring" and "non-laboring" families from birth to thirty months and reported that after a year and a half the mastery of phoneme types became significantly greater for the latter group of babies from business, clerical and professional homes. In a later report (Irwin, 1948b) analyzed the same data for any differences in the frequency of utterance of speech sounds and found a significant advantage for the infants from non-laboring families. The Irwin reports should be viewed with caution, however, because of the small number of infants (6 - 11) tested after the age of eighteen months. Racial differences in language development have also been reported by Anastasi and D'Angelo (1952). Data from 100 five year old Negro and white children from a New York City day care center found little racial difference in sentence length but significant differences favoring whites in the use of "mature" sentences. The black children used less frequently compound, compound-

complex and "elaborated" sentences.

More recent research on the effects of social class on language acquisition by Vera John was commonly cited by proponents of compensatory education programs. After studying different socio-economic classes of black children in New York City, John suggests that the fundamental distinction between the language of middle and lower class persons is not in quality but in usage. In a study (John, 1963) of "lower lower," "upper lower" and "middle class" Negroes at the first and fifth grade levels, the middle class children were reported to be superior in integration of language but not in enumeration. The speech of the middle class children was typically more like adult language which John interprets as reflecting greater verbal interaction with adults during childhood.

> The middle class child has an advantage over lower class in tasks requiring precise and somewhat abstract language. Acquisition of more abstract and integrative language seems to be hampered by living conditions of the lower class home. Opportunities for learning to categorize and integrate are less available for lower class children because they receive less specific feedback or careful tutoring. (pp. 821-22)

In a second report (John and Goldstein, 1964) it was found that preschool black children did particularly poorly not only on words not commonly used in low income urban homes (rural words such as leaf and bush and other more distant referents such as kangaroo and caboose) but on action words (tying, pouncing, building) which lower class children should hear about as frequently as middle class children.

> Perhaps the explanation lies in the learning environment. Children from low-income homes have relatively little opportunity to engage in active dialogue when learning labels. . . The functional diversity in language may be a direct result of the occupational and educational experience of the speaker. Middle-class occupations generally require and permit

verbal interaction with a variety of people. (268-69)

Thus the middle class person must be more "flexible" in his use of language in terms of intonation, grammar, rate, and vocabulary in order to communicate with a more diverse population. The lower class person, however, with fewer opportunities to engage in varied dialogue uses more conventionalized speech. In the case of action words, the lower class child must depend more upon the frequency of the co-occurrence of the word and the event rather than an active dialogue relating the label referent in a number of circumstances.

> Gerunds such as "tying" were failed, not because the children were deficient in experience with the referent but rather because they had difficulty in fitting the label to the varying forms of action observed and experienced. (p. 269)

The relative paucity of environmental variation typifying lower class homes was thought by Martin Deutsch (1964) to effect the degree of precision and level of abstraction of the economically impoverished child's use of language. Drawing on Bernstein and his own research on class and language usage Deutsch suggested that lower class pre-schoolers needed a "language training program where words are repeatedly placed in meaningful context, the child is allowed multiple opportunities for expressive language demonstration. . ." (p. 260). In an apparent reference to the John research on lower middle class first and fifth graders, Deutsch noted that lower class children are not restricted in "expressive language ability" but in the level of "syntactical organization and subject continuity." It is not simply the lower class child's limited exposure to a variety of stimuli but also his minimal contact with any systematic inputs from the home environment that effects his level of verbal usage.

> One can postulate that the essence of well-structured routine and activity in the home is reflected in the difficulty that the lower-class child has in structuring language. The implication of this for curriculum in the kindergarten and nursery school would be that these children should be offered a great deal of verbalized routine and repetition. (259)

Deutsch's suggestion that economically disadvantaged pre-schoolers be exposed to a variety of stimuli within a systematic context was shared by other influential early childhood educators such as Merle Karnes, David Weikart, Susan Gray, Rupert Klaus, and Bereiter and Englemann. Their respective approaches to a structured exposure to verbal stimuli for disadvantaged children will be discussed in Chapter VII.

Stimulus Deprivation

The notion that an environment deprived of a variety of visual and auditory stimuli effects cognition and that many low income persons were influenced by such restrictions was entertained by several compensatory educators by the mid-1960s. Prominent spokespersons for this position were Martin and Cynthia Deutsch, both from the Department of Psychiatry at New York Medical College. Fundamental to this argument was the belief that perception was largely dependent upon past experience, taking issue with the Gestalt belief that the internal configuration determined the internal order. The research on animals cited earlier (Hernandez-Peon, 1961; Riesan, 1958; Hymovitch, 1952; Forgus, 1954) indicating that the visual experience has a marked effect on the cognitive behavior of cats, chimpanzees and rats, and the work of Wayne Dennis (Dennis and Dennis, 1940; Dennis, 1960) with the Hopi Indians and Iranian orphans can be interpreted as supporting the notion that

infant perception of others walking is crucial to the development of normal bipedal locomotion.

Additional human evidence was provided by research on blind persons, on people suddenly subjected to a virtual absence of any visual or auditory stimuli, and on infants reared in "enriched" cribs. Von Senden (1932) reported that persons blinded at birth by cataracts on the eyes had an extraordinarily difficult time discriminating even the most simple figures after removal of the deficiencies in adulthood. Identification of squares and triangles was often only possible by the subjects counting the sides of the figure. Hebb (1958) suggested that depriving people of sensory input impaired the reticular system causing it to reject further audio-visual stimulation. In this study college students blindfolded in a soundproof room became very lethargic and inattentive after a day or two. The possible positive effects of visual stimulation was reported by White (1966) who found a correlation between the presence of figures on sheets as well as a complex stabile by the crib and earlier psycho-motor development in infant subjects.

If it is likely that the presence or absence of certain perceptual and auditory stimuli may enhance or curtail the development of human cognitive behavior, what evidence existed by the mid-1960s that the condition of economic poverty deprived children of the necessary sensory input for normal intellectual growth? Regarding the modality of hearing, apparently the only published empirical evidence was offered by Cynthia Deutsch (1964) who reported a significant correlation between social class and performance on the Wepman Auditory Discrimination Test among black and white first and fifth graders. Consequently, her analysis of

the auditory problems which may effect the learning of children reared in low income homes is based mainly on conjecture.

> . . . one could expect that a child raised in a very noisy environment with little directed and sustained speech stimulation might well be deficient in his discrimination of speech sounds. He could also be expected to be relatively inattentive to auditory stimuli, and further, to have difficulty with any other skill which is primarily or importantly dependent on good auditory discrimination. The slum child does indeed live in a very noisy environment, and he gets little connected and concentrated speech directed to him. (p. 280)

Therefore, according to Cynthia Deutsch, it is not the paucity of sounds that may restrict auditory discrimination in the slum child. Indeed it is the child's saturation by sounds, his chaotic bombardment by "noise" which may cause interference and a "tuning out" of auditory stimuli ("learned inattention").

> This reasoning implies certain desirable conditions for children's auditory learning. Certainly one would try to place the child in a quiet environment and minimize stimuli to other modalities while maximizing the signal-to-noise ratio). Further, one would want to avoid too much repetition of the same stimulus, while at the same time avoiding presentation of too many different stimuli which might in themselves be distracting. (p. 280)

According to Deutsch such distractions may impair the development of the requisite auditory discrimination skills to read normally. She points out that most reading-readiness tests (in 1964) favored measuring readiness in terms of visual perceptual skills. But these tests were designed for the middle class raised in quiet environments and less likely to suffer from underdeveloped auditory discrimination abilities.

The publications of Martin Deutsch (1963, 1964) dealt with stimulus deprivation in more general terms giving greater attention than Cynthia

to the relative scarcity of visual objects in the environment of the child from a low income family. Like his wife, Martin's thesis that the lack of variety in the social milieu of the children of poverty has a detrimental effect on cognition is almost entirely speculative. Drawing essentially on J. McV. Hunt's interpretation of Piaget, Basil Bernstein, the auditory discrimination study cited above, and his own research as Director of the Institute for Developmental Studies at New York University, Martin Deutsch became an extremely influential spokesperson for the growing body of research linking the underachievement of so many children with restricted experience.

Perhaps his most important research on stimulus deprivation was a study he conducted with Phyllis Katz which attempted to assess the relationship between some of the perceptual and cognitive performances of Negro lower class boys in Harlem (Katz and Deutsch, 1963). Good and poor readers at the first, third and fifth grade levels were distinguished by scores on Reading Prognosis Tests and the Gates Advanced Primary Reading Test given to 385 males in two elementary schools. The children falling in the upper and lower 30 percent of the scores constituted the final sample of 168 boys. The subjects were then tested on a variety of perceptual measures. The study's major finding was that "normal" readers were superior to "poor" readers in such areas as simple reaction time, shifting auditory and visual modalities, vigilance (measuring degree of sustained attention and "efficiency in detecting signal, usually visual"), and discrimination (visual and auditory of written and taped English and Hebrew words). Although there was evidence that maturational factors effected the perceptual differences of good and poor

readers (the difference generally became less distinct in the older children), the authors suggest that many children may require "specific intervention" to correct poor auditory and visual response caused by environmental inadequacies.

The Deutsch position on stimulus deprivation appears identical to his feelings on linguistic deprivation and similar to Cynthia Deutsch's postulation on auditory stimuli. Stimulus deprivation does not necessarily mean ". . . restricted sensory input in the quantitative sense but in the range of the spectrum and the systematic ordering of stimulation sequence." This relative uniformity of deranged experience tends to be injurious to the "growth and activation of cognitive potential." The Deutsch position on intelligence and experience may remind one of the Jensen concept of the environment as a threshold.

> . . . social poverty may have a leveling effect on the achievement of individual skills and abilities. . . In individual terms a child is probably away from his maturation ceiling as a result of this experimental poverty. . . If a certain quantum of fostering experience is necessary to activate the achievement of particular maturational levels, then perhaps the child who is deficient in this experience will take longer to achieve these levels, even though his potential may be the same as the more advantaged child. (p. 169)

Some of the specifics of the child's environment which Deutsch feels may prevent the activation of one's genetic potentialities in the areas of language and auditory discrimination have already been discussed. As pointed out earlier, Deutsch draws heavily on Bernstein and his spouse, Cynthia. In the field of perception Deutsch contends that restricted visual stimuli effects the formal aspect of cognition.

Visually, the urban slum and its overcrowded

> apartments offer the child a minimal range of stimuli. There are usually few if any pictures on the wall, and the objects in the household, be they toys, furniture, or utensils, tend to be sparse, repetitious, and lacking in form and color variations. The sparsity of objects and lack of diversity of home artifacts which are available and meaningful to the child, in addition to the unavailability of individualized training gives the child few opportunities to organize the visual properties of his environment. . . The effect of sparsity of manipulative objects on visual perception is, of course, quite speculative, as few data now exist. However, it is an important area, as among skills necessary for reading are form discrimination and visual spatial organization. (pp. 170-71)

What often comes to mind when one speaks of a "lack of diversity in home artifacts" is the paucity of such objects in the home environments of children from many other periods of history. Was there a ceiling placed on their cognitive potential as there is on the modern slum dweller? Referring to our own history, Deutsch apparently feels there was not.

> It is true. . . that the pioneer child didn't have many playthings either. But they had a more active responsibility toward the environment and a great variety of growing plants and other natural resources as well as a stable family that assumed a primary responsibility for the education and training of the child. In addition, the intellectually normal or superior frontier child could and usually did grow up to be a farmer. Today's child will grow up into a world of automation requiring highly differentiated skills if he and society are to use his intellect. (p. 170)

Or, of course, it may be that there are no ceilings whatsoever placed on measured human intelligence because I.Q. is largely a mark of one's familiarity with his environment relative to his contemporaries of the same chronological age. Indeed today's children may be "smarter" than pioneer children because the totality of the present environment may be more "intellectually stimulating."

Whatever the nature of cognition's interaction with visual stimuli, by the mid-1960s there was a widely spread belief in educational circles that middle class children did have an advantage over lower class children because the latter lacked many of the sensory amenities characteristic of the social milieu of their more affluent counterparts. Without these stimulants schooling for many lower class children was thought to be a difficult and an increasingly unrewarding experience. Surely Martin Deutsch summed up the feelings of many educators in his introduction to his 1963 article on stimulus deprivation.

> The thesis here is that the lower-class child enters the school situation so poorly prepared to produce what the school demands that initial failures are almost inevitable, and the school experience becomes negatively rather than positively reinforced. (p. 163)

The Issue of Critical Periods

An extremely important segment of the many topics germaine to the effects of environmental deprivation on cognition is the issue of critical periods, a concept that warrants our specific attention. The critical periods hypothesis is the belief that there are certain optimal periods in the development of an organism during which exposure to appropriate experiences or stimuli will bring about learning much more easily than in other periods. Because of the extraordinary importance attached by many compensatory educators to pre-school enrichment, the following discussion will be limited to the alleged critical period of early childhood as it effects cognition.

Often premising their propositions on experimental studies of animals (see "Animal Studies," Chapter II) many persons from the fields

of psychology and education in the early 1960s argued that appropriate learning experiences during the first few years of human growth (usually ages one to five) were crucial to the normal development of intelligence. Bloom (1964) did not use the term "critical period" but argued that it is during the early years, when the human organism is undergoing its greatest change, that the environment has greatest influence.

> Variations in the environment have greatest quantitative effect on a characteristic at its most rapid period of change and least effect on a characteristic during the least rapid period of change. (p. vii)

According to Bloom, learning not only occurs more easily during early childhood but it is during this period that at least half of human intelligence develops (40 percent by age four; 80 percent by age eight). Moreover, it is difficult to make up at a later period whatever effects a "deprived" environment may have during the critical early years.

> Furthermore, we have assumed that the loss of development in one period cannot be fully recovered in another period. . . What we have hypothesized is that extreme environments can have far greater effects in the early years of development than they can in later years. That is, deprivation in the first four years of life can have far greater consequences than deprivation in the ten years from age 8 through age 17. Put in other terms, extreme environments each year in the first four may affect the development of intelligence by about an average of 2.5 I.Q. points per year, whereas extreme environments during the period of age 8 to 17 may have an average effect of only 0.4 I.Q. points per year. (Ibid, p. 72)

After a review of the sustaining effects of enriching the early experience of various animals, Hunt (1963) is in agreement with Bloom that the less fortunate may have permanent scars from environmental deprivation ("The difference between the culturally deprived and culturally privileged is, for children, analogous to the difference between cage-reared and

pet-reared rats and dogs.") The retardation which occurs during the second and third year of life Hunt contends "may be reversed to a considerable degree" by proper pre-school treatment along the lines of those proposed by Maria Montessori. Arthur Jensen (1963) following a review of sustained chemical and behaviroal changes produced by a "nursery school" for rats at the University of California, suggests that early experience of "children of impoverished culture" has a substantial influence on their cognitive retardation. According to Jensen,

> Our present knowledge of the development of learning abilities indicates that the pre-school years are the most important years of learning in the child's life. A tremendous amount of learning takes place during these years; and this learning is the foundation for all further learnings. (p. 133)

Additional support for the importance of early childhood was provided in an influential review of the literature by William Fowler (1962) who argued that reading and mathematics could be taught to children as young as age two, thereby increasing considerably his measured cognitive abilities. Indeed, Fowler reports of one child who was subjected to a "broad program of intensive cognitive stimulation from her earliest weeks" attaining an I.Q. on some tests as high as 170 at age eight.

What longitudinal data existed in the early 1960s to support the contention that the environment had greatest quantitative influence on the development of human intelligence during the first few years of life? This writer has found it an extraordinary submission to subjectivity that Benjamin Bloom, perhaps the most influential and widely quoted spokesperson for the critical period hypothesis, based his argument

essentially on only two studies: Lee (1951) and Kirk (1958). Furthermore, Bloom, and apparently Fowler and Jensen (but not Hunt) virtually ignore any conflicting data.

The first Bloom citation is the Lee study which followed groups of Negro children who imigrated to Philadelphia from the South at various ages. At first glance Lee's finding that the earlier the exposure to this northern city, the greater the I.Q. change seems to support the hypothesized importance of early environmental influence on cognition (see Chapter III). You will remember, however, that Lee measured the I.Q. change in all the children only through the ninth grade. Because children arriving in Philadelphia by age eleven gained only two I.Q. points (as opposed to the six point change of children arriving by age six) does not mean the environment necessarily had any lesser effect on the development of intellect. At this later age the data suggests little more than the longer (as opposed to earlier) the residence in Philadelphia, the greater the cognitive growth. If the children who arrived by age eleven had been followed through grade twelve, their I.Q. scores may have improved by more than two points.

In the Kirk report Bloom also appears to go well beyond the data in concluding that it is a study "most crucial in establishing the pattern of change in relation to the environment. . ." Kirk (see Chapter IV) followed eighty-one mentally retarded children (I.Q.s 45-80) between the ages of three and six over a period covering three to five years in two experimental and two contrasting groups. One experimental group lived at home (the community experimental group) and attended a pre-school in the community, and the other (the institution experimental group)

represented children who attended an institutional pre-school while residing in an institution for mental defectives. The third group (the community contrast group) lived in the community but attended no pre-school and the other contrast group (the institution contrast group) lived in another institution for the retarded and did not attend a pre-school. The experimental children were followed during, and from one to three years after, their pre-school experience.

A careful reading of the relevant sections of Kirk's book reveals that Bloom is overstating the case when he summarizes the effects of this pre-school treatment by stating ". . . that with only two exceptions, individuals in the experimental group gained in a rather consistent pattern" (Bloom, 1964, p. 74). It is correct that the I.Q.s of most subjects in the community and institution experimental groups increased during their pre-school experience (while the I.Q.s of the contrast groups did not) and further that these accelerations did not continue but were generally maintained after treatment. But what Bloom omits is that the community contrast group, which showed no acceleration during the pre-school period, increased their I.Q.s after entering first grade or a special class at the age of six, to a level "approaching the score of the experimental children who had attended pre-school." Kirk comments on this unexpected finding:

> It had not been anticipated that the community contrast group. . . would show acceleration in I.Q.s and S.O.s after school experience beginning at the age of six. If these results are corroborated by later studies, it could mean that pre-schools for mentally handicapped children are not necessary, since the children will accelerate their rate of development after entering school at the usual age of six. It can be interpreted to mean that school experience is effective in accelerating the mental and social

> development of mentally retarded children even when school experience is initiated at the age of six. [underline, this author] (p. 209)

Kirk does argue, however, for pre-school enrichment for disadvantaged children. He notes that their was no acceleration in the measured intelligence of the siblings of the community experimental (who had no pre-school experience) when they entered regular school at age six as there was among the children of the community contrast group who came from more adequate homes than the community experimental group. Consequently, he suggests cautiously that enrichment beginning at age six may be early enough to alter the intelligence of retarded children from "adequate" homes but too late to have an effect on mental defectives from "psycho-socially deprived" homes. Kirk then attempted to check this possibility by a further analysis of the community contrast group which revealed that eight of the twenty-six subjects came from homes rated as "inadequate."

> An analysis of their changes in I.Q.s on the Binet and Kuhlmann tests (upon entering grade 1) indicated that their average I.Q. on both tests was less than the average change in I.Q. of the other 18 children whose homes were rated as adequate and semi-adequate, but that the difference was not statistically significant. (p. 209)

But because of this statistically insignificant advantage held by the "adequate" home children in accelerated I.Q. at age six and the sibling differences of the community experimental group, Kirk rather boldly concludes that ". . . an educational program at the age of six is not too late for [mentally retarded] children from relatively adequate homes. . . [but that] an exception. . . must be made for children living in psycho-socially deprived homes" (p. 211). Kirk recommends

that "the latter children and society would benefit by organizing intensive education programs beginning at the pre-school level to compensate for the inadequate homes. . ." of mentally retarded children.

Surely the Kirk study raised some fascinating questions regarding early education that warranted further research, but it in no way provided tangible evidence in support of the Bloom proposition that environmental influences on the development of human intelligence are greatest during the pre-school years. The fact that most children in the community contrast group (from inadequate as well as adequate homes) with no pre-school experience did gain in I.Q. to a level approaching the sustained pre-school gains of the community experimental group questions the necessity of early intervention. On the other hand, since there is some indication that the gains may be less or more difficult to attain at grade one for "psycho-socially deprived" children, one could conclude that closer attention should be given to pre-school education for socio-economically handicapped children.

A closer look at some additional research conducted before the 1960s which has been interpreted as supporting the critical periods hypothesis once again raises questions about the validity of the suggested irreversibility of the cognitive effects of early deprivation. Regarding maternal deprivation Bowlby's review of the literature (Bowlby, 1952) for the United Nations suggests that a severely deprived early environment may do irreparable damage affectively but gives us very little longitudinal data indicating any sustained effect on intellect. (The major exception is the work of William Goldfarb to be discussed later.) Indeed, Bowlby notes that in all domains, if the mother's absence is

for a relatively short period, there is evidence of a "spectacular recovery" of the young child's behavior after a renewal of maternal care. The Province Study (Province, 1962), mentioned in Chapter II, of infants raised in institutions for their first year of life found the babies retarded on physical, emotional and cognitive measures. Although the fourteen children generally remained below the norms on various measures when tested shortly after placement in foster homes, Province comments that "we have been impressed by and filled with admiration for the adaptability, resiliency, and capacity for improvement we have witnessed in the children in the course of this research" (p. 144).

Another study that deserves attention is the well-known report from Tehran by Wayne Dennis (1960; see Chapter II). You will remember that this summary of the severely retarded psychomotor development of children who spent up to 24 hours a day for "many months" during their first year of life in the supine position has been interpreted as contradicting his findings with the Hopi Indians (Dennis and Dennis, 1940). The children had very little stimulation (were even fed by a bottle resting on a pillow) in this institution, and at age three only 15 percent could walk alone. What most reviews of the Dennis study ignore, however, is what happened to these children after their removal to another institution, at approximately age three, which offered them a substantially greater environmental enrichment. Indeed this writer has never seen a single reference in the literature to the following paragraph from the 1960 Dennis article.

> So far as the permanency of motor deficiencies is concerned it should be noted that Institution II had many children between ages 6 and 15 years who presumably were as retarded at ages two and three as were the children

> whose behavior was described above. Yet these children were attending school, playing games, doing chores, and being trained in different skills, such as the weaving of Persian rugs. There was nothing in their general behavior to suggest that any permanent consequences insued from the extreme retardation in motor development during the early years. (pp. 56-7)

Unfortunately Dennis did not attempt any cognitive measures of the children in Institution II, and one can only wonder if their intelligence was as normal as their observed physical behavior.

To this author's knowledge, by the early 1960s the only longitudinal study with hard data besides Lee (1951) that offers evidence in support of the irreparable cognitive effects of a deprived early experience is by Goldfarb (1943a), a report that for some reason has received remarkably little attention.* Encouraged by his earlier research (Goldfarb; 1943b) indicating permanent effects of early institutionalization on the aggressiveness, disorganization, and emotional unresponsiveness of forty foster children, Goldfarb compared fifteen foster children (eight boys and seven girls ages ten - fourteen) who had spent most of their first two years of life in institutions (the institution group) with another group of foster children equated by number, age, sex, foster maternal background who had always lived with "real families" (the foster group). Highly significant differences were reported in the measured intelligence and achievement (as well as in the areas of concept formation, speech, personality, and social maturity) of the two groups when tested (mean

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*Hunt mentioned it only once near the end of his important book, Intelligence and Experience; Bowlby discusses it very briefly in his book, Maternal Care and Mental Health, prepared for the World Health Organization; and Bloom gives no reference to it at all in Stability and Change in Human Characteristics.

age of institution group; 12 years, 4 months; of foster groups: 12 years, 3 months). On the Weschsler Bellevue Intelligence Test the mean totals for the verbal and performance were 72.39 and 95.37 for the respective institution and foster groups. On the Metropolitan Achievement Test, the institution group mean score was well below grade level in reading (5.07) and in math (4.70) while the foster group mean for reading (6.79) and math (6.66) was at grade level. Goldfarb attributes these differences to the permanent effects of institutional depression.

One cannot help being somewhat skeptical, however, of the Goldfarb study. There is no mention in his article of how the experimental or control gooups were selected; simply that fifteen children in each group were chosen apparently from the files of the New York Association for Jewish Children Foster Home Bureau. Another problem is comparing the rather startling retardation in measured intelligence (72.39) of the experimental group with their relatively moderate retardation in reading (5.07) and math (4.70). It is unusual for children with I.Q.s so low to be only a year or two behind in reading at age twelve. Normally, children with equivalent I.Q.s are barely reading at all. Despite these difficulties and the rather small size of the sample, it is unfortunate that the Goldfarb research has not received more attention. His method of comparing the intelligence and achievement of older persons from contrasting residential settings in early infancy is rather simple and could have been easily replicated. To this writer's knowledge it was not done. This is unfortunate because proponents of compensatory pre-school programs who hoped that enrichment during the critical pre-school years would have a permanent effect on measured intelligence had very

little scientific data to support them.

Summary

In concluding our second premise for compensatory education (that economic poverty inhibits the development of cognition and achievement), it may be appropriate to mention the research of R.M. Wolf in which Benjamin Bloom places considerable faith in his important book, Stability and Change in Human Characteristics, (Bloom, 1964). From a review of the literature Wolf (1963) hypothesized thirteen process variables of parent-child interaction which would likely influence intelligence. Interviews with the mothers of sixty fifth-grade students from the Chicago area produced a multiple correlation of .76 between the ratings on the following thirteen environmental variables and Hennon-Nelson I.Q.s.

"A. Press for Achievement Motivation
1. Nature of intellectual expectations of child.
2. Nature of intellectual aspirations for child.
3. Amount of information about child's intellectual development.
4. Nature of rewards for intellectual development.

B. Press for Language Development
5. Emphasis on use of language in a variety of situations.
6. Opportunities provided for enlarging vocabulary.
7. Emphasis on correctness of usage.
8. Quality of language models available.

C. Provision for General Learning
9. Opportunities provided for learning in the home.
10. Opportunities provided for learning outside the home (excluding school).
11. Availability of learning supplies.
12. Availability of books (including reference works), periodicals, and library facilities.
13. Nature and amount of assistance provided to facilitate learning in a variety of situations."

(from Bloom, 1964, p. 78)

Referring to the three major categories outlined by Wolf we do not know the correlations between a greater "press for achievement motivation," "press for language development," "provision for general learning"

and economic class although it was widely assumed that an emphasis on these factors was associated much more with the home environment of the middle class than the lower class. Indeed, with the exception of process variable two, there was nothing in the literature to suggest that this was not the case. These thirteen variables, however, (which were generally included in some form within the categories "motivation," "language," "stimulus deprivation" and "child-rearing practices" used by this author) correlate with measured intelligence significantly greater than the +.40 or less usually attributed to socio-economic status (Bloom, 1964). Therefore, while poverty in all probability was largely responsible for such inadequacies as limited exposure to standard English and books, it was not poverty itself, but conditions often associated with it, that influenced intelligence. If these inadequate environmental conditions associated with poverty that inhibited cognition and prevented normal achievement could be somehow compensated for by exposing disadvantaged children to more adequate variables which were strongly correlated with higher intelligence, it would be possible to reduce the inequality in cognitive achievement which existed between the lower and middle classes. By the early 1960s the schools had come to be regarded by a significant segment of the American population as the institution that could successfully provide that compensation.

CHAPTER IV

THE SCHOOLS, THE ENVIRONMENT AND ACHIEVEMENT

Faith In The Schools

A third major premise held by advocates of compensatory education was that the schools can compensate for the retardation in children's intelligence and school achievement which is caused by a poor socio-economic environment. Faith in the school's ability to overcome many of the negative effects of an environment of economic poverty was expressed by many leading social scientists from the fields of education, psychology, and sociology. The rhetoric on this subject may be summarized in part* by drawing on the statements of influential spokespersons attending two conferences on the problems of disadvantaged students: one sponsored by Teachers College, Columbia University in 1962 and another by the University of Chicago in 1964.

The Columbia conference invited educators from twenty-four cities to New York City in July of 1962 ". . . to examine the many dimensions of education in depressed urban areas and to develop sound guiding principles for program planners in city school systems" (Passow, 1963, p. vii). Under a grant from the Ford Foundation the conference heard thirteen working papers from "13 specialists in various fields. . . as starting points of the discussions." According to A. Harry Passow, the Conference Coordinator, very few, if any, of the participants felt that the schools by themselves

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*For specific reference to pre-school education see "The Issue of Critical Periods," Chapter III, pp. 70-79.

could effectively compensate for depressing effects of urban poverty ("over and over, participants stuck on the question of whether the school can make the necessary impact without society really equalizing opportunities in employment, in housing, in civic affairs," p. 351), but it was unmistakable that the school was seen as capable of playing a crucial role. Mel Ravitz, an Associate Professor of Sociology and Anthropology from Wayne State University concluded:

> Major stress is placed upon the school to broaden the horizons of children because often parents do not care or are unable to do very much to enrich their children's experience. The school is the one agency that touches all children and it must be used for their enrichment purposes. (Ravitz, 1963, p. 18)

Ravitz saw the teacher as the most important school variable.

> The key figure in the entire educational process [is] the teacher. Good teachers can work miracles with children coming from any background; poor or uninterested teachers never seem to succeed, even with children of good backgrounds. (Ravitz, 1963, p. 19)

Referring to the perpetuating effects of poverty on "the general academic inadequacy of the majority of disadvantaged pupils. . ." Miriam Goldberg (Goldberg, 1963a) of Teachers College suggested:

> At some point the circular negative reinforcement has to be attacked. Perhaps the most accessible place is the school itself. One of the major issues confronting education today is to discover the means by which the school can compensate for the lack of readiness for learning which lower class children, in general, and the Negro and other discriminated-against groups of children, in particular, bring to their school work. [We must] . . . provide these children with the skills and knowledges which will enable them to select their future direction rather than be hemmed in by the increasingly limited sphere of operations left to those who lack these skills. (p. 89)

Martin Deutsch saw the school as contributing to failure as well as having

the power to maximize the chances for success.

> [The school can] . . . significantly reduce the attenuating influence of the socially marginal environment.
>
> It is in the school situation that the highly charged negative attitudes toward learning evolve and the responsibility for such large groups of normal children showing great scholastic retardation. . . must rest with the failure of the school to promote the proper acculturation of these children. Through (sic) some of the responsibility may be shared by the larger society, the school, as the institution of that society, offers the only mechanism by which the job can be done. (Deutsch, 1963, p. 178)

And Kenneth Clark professed considerable faith in the power of education as a viable agent of social change.

> Education has been one of the most effective means for social mobility in the American society. This problem in the future may be different from the similar problems in the past only in that it will involve different and larger groups of previously disadvantaged individuals. (1963, pp. 144-5)

Referring to "major consequences of frustration" such as increased delinquency, bigotry, and hostility of ineffective educational institutions, Clark strongly relies on an educational remedy.

> Creative educators can help to prevent these personal and social disturbances by making the necessary modifications in curriculum and methods and by providing the educational leadership, guidance, and stimulation which will make it possible for American society to strengthen and improve our system of democratic public education. When this is done, our schools will continue to function as the chief vehicles of upward class mobility and as a major source of social and economic vitality. If it is not done, our schools will contribute to social stagnation and more insidious forms of social class cleavages and distinctions. (1963, p. 145)

The Chicago conference (Research Conference on Education and Cultural Deprivation) was held at the University of Chicago in June, 1964, ". . . to review what is already known about the problems of education

and cultural deprivation, to make recommendations about what might be done to solve some of these problems, and to suggest the critical problems for further research" (Bloom, Davis, and Hess, 1965). Funded by the U.S. Office of Education, the conference solicited working papers from thirty-one scholars from a variety of disciplines in the behavioral sciences. Among the participants were Anne Anastasi, Basil Bernstein, Benjamin Bloom, Martin Deutsch, Erik Erickson, Susan Gray, Robert Havighurst, Arthur Jensen, Lawrence Kohlberg and Thomas Pettigrew. A summary of the conference findings (". . .about the nature of cultural deprivation, especially as it relates to the educational process" by Benjamin Bloom, Allison Davis and Robert Hess, the conference coordinators, should serve to capture the flavor of the attitudes expressed in the many papers and meetings. After reflecting on the wisdom and extraordinary difficulty of revolutionizing American education as a whole to adjust to an increasingly complex and rapidly changing world, the authors address the specific problem of the "culturally deprived."

> But, there is a much more immediate problem. This is in some ways an easier problem to attack and it must be solved in the present. We cannot wait for a decade in which to gradually find solutions for this problem.
>
> In the present educational system in the U.S. (and elsewhere) we find a substantial group of students who do not make normal progress in their school learning. Predominately, these are the students whose early experiences in the home, whose motivation for present school learning, and whose goals for the future are such as to handicap them in school work. . .
>
> It is this group with which we are at present concerned. We will refer to this group as culturally disadvantaged or culturally deprived because we believe the roots of their problem may in large part be traced to their experiences in homes which do not transmit the cultural patterns necessary for the types of learning characteristic of the schools and the larger society. (Bloom, Davis, Hess, 1965, p. 4)

Following a description of the nature of cultural deprivation, the conference turned to educational alternatives.

> What is needed to solve our current as well as future crises in education is a system of compensatory education which can prevent or overcome earlier deficiencies in the development of each individual. Essentially, what this involves is the writing and filling of educational prescriptions for groups of children which will enable them to realize their fullest development. Compensatory education as we understand it is not the reduction of all education to a least common denominator. It is a type of education which should help socially disadvantaged students without reducing the quality of education for those who are progressing satisfactorily under existing educational conditions. (Ibid, p. 6)

Apparently the consensus of the University of Chicago conference (or at least the Bloom, Davis, Hess interpretation of the prevailing attitude of the participants) was that the public schools were capable of compensating for many of the deficiencies in cognition caused by environmental circumstances. Moreover, the educational institutions could accomplish this relatively easy task ("in some ways an easier problem to attack" than more fundamental educational reform throughout the nation's schools) rather quickly ("it must be solved in the present. We cannot wait for a decade. . ." of the future).

One cannot summarize the educational idealism of the early 1960s regarding compensation for socio-economic poverty without mentioning three important books which were instrumental in focusing national attention on the education of poverty-stricken children: Slums and Suburbs by J. B. Conant, The Culturally-Deprived Child by Frank Riessman, and Education and Income by Patricia Sexton. The Conant (1961) manuscript placed perhaps less faith in the compensatory power of the schools than many other publications of educators of that period.

> At the outset I must record an educational heresy, or rather support a proposition that many will acdept as self-evident but that some professors of the liberal arts will denounce as dangerously heretical. I submit that in a heavily urbanized and industrialized free society the educational experience of youth should fit their subsequent employment.

The subsequent employment of poverty-stricken youth is likely to be, of course, manual labor, and Conant places considerable emphasis on vocational educational programs (a proposal attacked vehemently by Kenneth Clark, 1963, as certain to perpetuate the restricted opportunities of lower class youth). On the other hand, Conant does advocate compensatory programs such as those that were already in existence in New York (Higher Horizons) and St. Louis (Banneker) ". . . to improve the schooling of slum children," particularly in the area of reading.

> Common to all these projects appears to be a direct concern with enlisting community support and motivation for better education in addition to upgrading the instructional programs, especially in reading. All these projects represent, to my mind, promising steps to be watched with great interest." (p. 61)

Frank Riessman's, The Culturally-Deprived Child (Riessman, 1962), (after some fifteen years still a fascinating analysis of the situation) places considerable faith in the teacher's ability to provide quality education for the "deprived." According to Riessman, the key to effective teaching "does not consist of gimmicks or tricks," but "certain basic attitudes" such as warmth, informality and cultural relativism. Regarding effective programs, Riessman is cautiously optimistic about the Higher Horizons Program model suggesting that the Hawthorne Effect or some Experimenter Bias Effect (". . . these factors may have stimulated enough enthusiasm to achieve the obtained results, independent of the specific methodology employed"), rather than any instructional formula which could

be packaged and distributed, may be responsible for the program's success. But ". . . the [Higher Horizons] Program does demonstrate that the culturally deprived can be educated, and this is an extremely important service in the age of non-belief." Although it does not go far enough, "The Higher Horizons Program represents a giant step forward. . ." (p. 111).

Patricia Sexton (1961) also suggested Higher Horizons and other "experimental programs" to "compensate for the inferior quality of education offered in many minority-group schools," (p. 244) following her comprehensive study of education in a large mid-western city that documented the relationship between social class and achievement. Sexton called for national efforts to reconstruct the curriculum of schools with many low income pupils (particularly in the area of reading and language) and a defeminizing of the school atmosphere. In addition to her specific suggestions for school reform (see p. 93), Sexton captures the spirit of the experimental idealism so common in the early sixties.

> If experimental programs aimed at these objectives are to achieve maximum success, it will require that they be both imaginative and that they incorporate all reasonable ideas from the widest possible variety of sources and points of view. (p. 284)
>
> Our schools are the nation's most vital resource. What happens there will affect the fate of the nation and the fate of every individual child. To make the American dream a reality, to realize the full potential of our nation and all its citizens, we must enlist the full support of our schools, we must recognize that they are not doing the job they should be doing and we must welcome all constructive criticism and suggestions for reform. (p. 287)

Compensatory Education As An Alternative

If there were general agreement that the schools could overcome many of the handicaps of disadvantaged youth, what specifically should

compensatory education, as opposed to the traditional approach, be doing to significantly improve cognitive achievement? There was, of course, no consensus. There was a paucity of research on the subject and few successful models to follow. These factors combined with the general idealism of the early 1960s contributed to what was probably a period of unprecedented experimentation in American education. But proponents of compensatory education were not entirely shooting in darkness. There was some psychological and sociological understanding of the relationship between poverty and cognition and what emerged was a myriad of suggestions for educational reform that were divergent yet typically contained certain common denominators.

At the pre-school level a great emphasis was placed on the use of language. Whether one is reading the teacher-directed behavioral technique of Carl Bereiter and Sigfried Engelmann, the cognitive-discovery approaches of Merle Karnes, David Weikart, and Martin Deutsch or the more traditional pre-school curriculum of Carl Beller or the Howard University Project, the importance of the child's verbal interaction with adults is stressed. The suggestions of Martin Deutsch (1964) are typical of those advocating more academic, structured pre-school programs:

> A language training program would require the creation of a rich, individualized language environment, where words are repeatedly placed in a meaningful context, and where the child is allowed multiple opportunities for expressive language demonstrations as well as for receiving language stimuli under optimal conditions and being encouraged to make appropriate responses. (p. 260)

According to Deutsch, an enrichment language program would improve significantly the pre-school child's preparation for academic success in the early elementary grades thereby reducing the chances of motivational problems stemming from frequent failure.

At the elementary and secondary school level it was often suggested that the schools work directly to improve the child's self-image--"building in these children a positive self esteem to supplant the feelings of inferiority and sense of hopelessness which are supported by the all too-pervasive pattern of social realities" (Clark, 1963, P. 157). Strategies for improving self concepts included the use of textbooks and materials which reflected to a greater degree the life experiences of disadvantaged minority children ("Indeed it might be necessary to select or devise materials which would raise the self-esteem of these children. . .:")(Ibid, p. 157); the employment of teachers familiar with the culture and ". . . the ethnic group membership of . . .[their] pupils and how such membership shapes the child's image of himself and of his world" (Goldberg, 1963b, p. 233); and a generous use of positive reinforcement, often in terms of verbal praise.

Reforms in the administration and curriculum of the public elementary and secondary schools were suggested in the "Great Cities School Improvement Studies," (1960) sponsored by the Ford Foundation.

> 1. An extended school day and school week (to include field trips to civic, recreational, industrial and other centers of interest, as well as reading clincis, opportunities for recreational reading in the school library, small academic coaching and small group guidance) to improve the basic skills, motivation and prevent attrition.
>
> 2. A flexible, non-graded grouping of children in the elementary school. . . will reduce discouragement on the part of slower children. . .
>
> 3. The organization of centers or classes to provide a special program for the culturally deprived child who is of high school age but has not completed the elementary school program. . . to prevent failure, attrition, disciplinary problems.
>
> 4. Varying the sizes of classes within the school day (so that the particular talents of some teachers are brought

> to large groups of children, and at the same time other teachers, who may have talents for working with the culturally deprived in small groups or as individuals, are freed for work of this type. . . to improve the basic skills and the appreciation of the humanities.
>
> 5. An organization in which the length of the periods in the school day is altered to give the culturally deprived child some short periods of instruction in small groups in skill areas and longer periods of integrated unit activity will improve reading and arithmetic skills, establish the close, stabilizing relationship with an adult. . .
>
> 6. Greater use of para professionals. . . for such purposes as vision and hearing screening, . . . field trips, operating projectors. . . will release professional personnel for teaching purposes and improve the academic achievement of the culturally deprived. . .

Educational reforms called for by Patricia Sexton (1961) include an elimination of "segregated groupings and curriculum," a "replacement of the highly competitive system of marks, exams and comparisons of all sorts. . . by other types of incentives to learning, the removal of irrelevant 'dead weight' from the curriculum such as 'meaningless dates and data,' an expansion of work-study programs, more attractive accessible libraries, and greater 'attention' to an unexplainably neglected skill concentration. . ."

Effective teachers for disadvantaged children were viewed by Sexton (1961) as perhaps more likely to be male ("efforts should be made to encourage more men, of the type boys can readily identify with, to enter teaching"), enthusiastic, and well paid; by Goldberg (1963) as respectful, familiar with the child's cultural experience, sensitive to the "self-fulfilling prophecy", capable of showmanship; and by Riessman (1962) as consistent, straight-forward, down-to-earth, sometimes physical, and dedicated. A somewhat more formal teacher was proposed by Leonard Kornberg based on his BRIDGE Project, a well-known teacher education

study of the early 1960s. He viewed the effective teaching of disadvantaged children as being respectful and stimulating but also as exuding professionalism ("a professional's intense commitment to his role and objectives") and self-assurance, not the "one-of-the boys" patronizing "phonies" that these children "deeply resent as obvious deceit." (Kornberg, 1963, pp. 275-76).

The suggested changes just cited in administration, curriculum, and teaching represent only a microscopic glance at the published proposed reforms in the schools to improve the cognitive achievement of disadvantaged pupils. Nevertheless, they do give us a "feel" for the ideal characteristics of many, if not most, of the proposed compensatory education programs of the 1960s. Drawing on the suggested reforms listed in this section and many additional manuscripts on the subject, this writer can offer common characteristics and a definition of the proposed compensatory education programs. The listing and definition which follow applies only to the program's cognitive objectives.

Suggested improvement in the cognitive achievement of disadvantaged children typically involved the following suggested changes:

1. Improving the motivation of pupils.
2. Improving the self concepts of pupils.
3. Increasing per pupil expenditures.
4. Lowering the teacher-pupil ratio.
5. Individualizing instruction where appropriate.
6. Liberalizing the administration of the schools to facilitate appropriate changes in class periods, class size, and student and teacher mobility.
7. Ordering or creating instructional materials which are more

consistent with the socio-cultural background of the pupils.

8. Emphasizing "language training" at the pre-school level.

9. Employing enthusiastic and dedicated teachers who are familiar with the pupils' socio-cultural background, understand the nature of a "disadvantaged" environment's effect on cognitive achievement, and think positively about the school's power to effectively compensate for environmental inadequacies.

10. Involving members of the community--particularly the pupils' parents--in the children's learning process.

Compensatory education may be defined, therefore, as a process whereby educators attempt to compensate for the academic inadequacies of economically and/or socially disadvantaged children by giving particular attention to the strengthening of basic cognitive skills, motivation and self concept in an atmosphere imbued with the promotion of positive reinforcement, cultural enrichment, student-centered materials and humanistic teaching.

The Evidence

If there was considerable faith in the power of the schools to play an important role in compensating for environmental inadequacies and there were numerous suggestions of how this could be accomplished, what evidence existed in the early 1960s that indicated that compensatory education would be effective? As we shall see there was very little scientific data in support of "premise three." Faith in the schools was based largely on conjecture and idealism.

Apparently Americans have long viewed the schools as an institution capable of contributing significantly to upward social mobility.

Horace Mann's famous labeling of education as "the great equalizer" in 1847,* the unprecedented growth of public education in this country during the 19th centruy, and the compulsory attendance laws in existence in most states by 1900**, are indicative of the value placed on the school's ability to offer millions of people a greater equality of opportunity. Indeed, one is struck by the magnitude of this country's commitment to public education as instrumental to social democracy when considering the relatively limited and usually non-existent role even local government played in the 19th century in providing services to aid and abet the circumstances of the average citizen.

By the turn of the century many citizens of the Northern Atlantic seaboard had just arrived as downtrodden immigrants from Ireland and southeastern Europe. According to the conventional wisdom, the schools were indispensable to their acculturation. Reflecting upon the "previously disadvantaged individuals" Kenneth Clark (1963) remarked:

> It is one of the cardinal assumptions of our American democracy that significant social changes may be brought about through education--through providing that type of intellectual training and information which will make it possible for the citizen to make the types of decisions which he must make in a democracy--rather than through tyranny and violence. (p. 145)

A similar note was struck by Goodwin Watson of Columbia Teachers College in 1961 in his introduction to Frank Reissman's, The Culturally Deprived Child.

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*Stated in the 12th Annual Report to the Massachusetts Board of Education, 1848, Mann (1948).

**In 1900, 32 states had passed compulsory attendance laws. Mississippi, in 1918, was the last state to legislate compulsory attendance. Butts and Cremin (1953), p. 415.

> It has been one of the proud achievements of public education in the United States that we were the first country in the world to try to give education beyond the three R's to all our youths. Secondary education in other lands has been highly selective; the Lycee of France, the grammar schools of England, and the Gymnasia of Germany and Scandinavia have been designed for the intellectual upper crust only. Most Americans have rejected the aristocratic notion that a small circle of the elite from the best homes should have a virtual monopoly on higher education, and an access to top posts in government, business, and cultural life. We assert our dedication to the principle of equality of opportunity. (p. ix)

Although the immigrants faced certain religious, cultural, linguistic and economic barriers it has been assumed that the schools "worked " for them despite the fact that little or nothing similar to compensatory education existed some seventy-five years ago. It has been argued that special enrichment programs were unnecessary for most immigrant children because their family solidarity, religious faith, and work ethic prevented even those economically impoverished areas from becoming social jungles of hopelessness and despair. In the words of James Conant the new arrivals

> came from an impoverished but stable society with its own ancient mores. The pride of family and often strong church connections were social cement that kept the [immigrant slums] from being complete social jungles in spite of the fact that the dwelling conditions were often as bad as they are today.

In addition, there existed in the earlier period a greater market for unskilled labor and consequently a lesser need for lower class people to approach any national norm in reading or mathematical proficiency. Therefore, the traditional American approach to education was relevant enough for most lower class children of immigrant parents.

In more recent times, however, in the "pockets of poverty" children have been found to be victims of the associated ills of cultural impoverishment as well as economic want described in Chapter III. Moreover,

a large percentage of the modern disadvantaged school children in the cities are black bringing with them cultural patterns emerging from the extraordinarily dehumanizing experiences of Anglo-American slavery and color discrimination. What was needed, therefore, is educational reforms along the lines of those mentioned earlier to make the schools meaningful and therefore "work" for the culturally deprived children of today.

In addition to the conjecture based on historic interpretation, there existed a few scientific studies which sometimes were cited by proponents of compensatory education. Some attention was given to the twin studies of Newman, Freeman, and Holzinger (1937), by Bloom, Hunt, and Anastasi and Foley (see Chapter II) as providing evidence that educational advantages correlated rather highly with I.Q. Indeed Bloom (1964) remarked that

> It is especially noteworthy that the differences in I.Q. for identical twins separated during the first years are highly related to the differences in education (+.79) but have only moderate relationships with the difference in social and physical advantages in the environments of the separated twins (+.51, -.30. (p. 69)

The authors themselves (Newman, Freeman, and Holzinger, 1937) emphasized the importance of education in concluding a statistical analysis of their data:

> From the viewpoint of the educator it is important to note that extreme differences in educational and social environments are accompanied by significant changes in interests and educational achievement as measured by our tests. (p. 349)

A closer inspection of the twin data of the Chicago Group does reveal not only a strong correlation between schooling and I.Q. but an even greater correlation (.908) between estimated educational advantage and scores on the Stanford Achievement Test. The authors go on to attribute 50 percent of the variance in I.Q. of the nineteen separated twins

to education and only 10 percent to social differences. Then the Chicago Group uses the same forms of analysis after omitting the four twin cases whose educational difference is greatest and found respective correlations of +.406 and +.441 between the educational and social advantage and I.Q.s of the remaining fifteen pairs. The variance without the four "extreme" cases is only 1 percent attributed to educational and 16 percent to social advantage.

Reporting the correlations after eliminating "extreme" cases or extracting the atypical subjects from such a small sample of cases can produce correlations which are both misleading and of little value scientifically. For example, in reporting an only moderate correlation (.406) between educational advantage and I.Q. of the fifteen twin cases after omitting the four pairs of greatest educational difference, one may get the impression that the correlation between the four cases and I.Q. is extremely high. But Newman, *et al*. do not give the correlations between the four cases and I.Q.; we are only given the .406 figure and the +.79 correlation between all nineteen pairs and educational advantage. Using their Pearson formula to determine correlations, this writer computed the correlations between educational advantage and I.Q. of the four pairs of greatest educational difference to be only +.38 while the relationship between I.Q. and social advantage of these cases revealed a somewhat higher correlation of +.67. One would also expect to find a strong correlation between the six cases of greatest I.Q. difference and social and educational advantage, but once again the respective correlations are only +.22 and a moderate +.59. Perhaps a better indication of relative importance of education and social advantage on measured intelligence can be gained by simply averaging the I.Q. differences of the six

pairs with the greatest educational differences and the six cases with the greatest estimated social differences. Using this method educational advantage accounts for a fifteen point difference and social advantage a 12.5 point difference.

Another problem with the Chicago study is the questionable index used by the judges to determine social advantage. We are not told the criteria used for estimating the environmental effect and only assume that it is years of uninterrupted schooling for education and some form of economic-cultural background for social. After a careful reading of the case studies one may get the impression that the social index used by the Chicago Group was rather crude. For example, in case "5" the social environments of two female twins were very similar until they both married in their early twenties (see table 1, Chapter II, p. 25. According to the Newman, *et al*. study, "it was only after marriage that their social environments diverged markedly," one marrying a well-to-do lumber merchant and the other a low income farmer and railroad brakeman. Yet, the estimated social advantage (26) in favor of the former twin is the fourth highest figure of the nineteen pairs. Apparently little weight was given in this case to similar environment throughout childhood and early adulthood despite the high stability of measured intelligence usually reported after age eighteen (Bloom, 1964). In this case the I.Q. difference was only four points at adulthood and the Chicago Group implies that this small difference is a result of the two girls rather similar education (advantage of 11) which compensated for the substantial social difference.

In another case (#7) one twin adopted by a well-to-do urban physician

was given a social advantage of 27 (the third highest figure) over his brother who was adopted by a truck farmer and his wife in southern Illinois. The Chicago Group apparently gives little weight to their estimate to the latter child's "excellent foster mother greatly interested in his welfare" who usually invited her son's twin brother to her Illinois home annually. (One can only wonder what the estimated social advantage in this case might have been if Newman, *et al*. spent much of their life in Carbondale or at the University of Southern Illinois instead of the University of Chicago.) In this case the education was very similar (9) and the I.Q. of the favored physician's son was a point lower (105) than his brother (106).

Questionable estimates of social advantage, such as these described in cases "5" and "7", may effect the validity of the statistical data showing a higher correlation between I.Q. and educational advantage (+.79 for social advantage, +.51 for educational advantage). Omitting cases "5" and "7" this writer computed the Pearson correlations between social advantage and I.Q. of the remaining seventeen pairs and found a stronger correlation of +.68. Because of the contradictory results one can get from juggling the various cases and the possible inaccuracy of the social index criteria it is difficult to conclude from the twin data just cited that education in itself can effectively compensate for home environmental differences. What is needed to give us evidence on the significance of schooling is several cases of separated identical twins who clearly had very different social environments but very similar educational experiences. To my knowledge none of the twin studies available in the early 1960s included such distinctions.

Additional research that received some consideration by a number of advocates of compensatory education included a few experimental studies which attempted to measure the effect of schooling on disadvantaged children. Some of the well-known work of Beth Wellman, Harold Skeels and their colleagues* of the Iowa Child Welfare Research Station suggested that pre-school environment for orphans reared in an institution may have had a small effect on their measured intelligence. Forty-six institutional orphans enrolled in an experimental nursery school for 5-6 hours each weekday were matched with forty-four similar children of the same orphanage who did not attend the model pre-school. After a three year period it was reported that those children of the experimental group who had 400 or more days of nursery school gained an average of 4.6 I.Q. points and those who experienced pre-school training for 200 to 399 averaged a gain of 3.7 points. On the other hand, the two control groups indicated that institutional residence had a depressing effect on measured intelligence; the group matched with the experimental group with 400 or more days of pre-school lost an average of 4.6 I.Q. points while the one matched with the second experimental group lost 1.2 points. This data has been analyzed by McNemar (1940) who claimed that the Iowa Group had inflated the I.Q. gains by including in their averages individuals participating more than once and reanalyzed with a smaller sample controlling for repeated exposure (Weilman, Skeels, and Skodak, 1940) by the Iowa researchers in a rebuttal to McNemar which continued to find some effect

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*This paragraph taken from J. McVicker Hunt's Intelligence and Experience, pp. 29-30.

of the pre-school experience on increasing I.Q. Unfortunately, no attempt was made to follow up the measured intellectual capacities of these children after a few years, so we have no evidence that the nursery experience had any permanent impact.

Data from more recent research on the effects of schooling on the cognition of less fortunate children can be interpreted as somewhat more promising. Perhaps the longitudinal research of James Kirk (1958) drew the greatest attention (see "The Issue of Critical Periods," Chapter III). Reporting on the development of measured intelligence of four groups of mentally retarded children (I.Q.s from 45-80) mostly from "psycho-socially deprived homes," Kirk found that those receiving "enrichment" in either community pre-schools or in institutions' pre-schools gained roughly ten points in I.Q. while contrast groups consisting of siblings, community children without pre-school experience and institutional children with no pre-school training generally maintained or reduced their rate of intellectual growth. Although the differences in I.Q. between the two community groups were insignificant shortly after exposure to regular schooling at the age of six, Kirk suggested that the acceleration of the community contrast group, rather than any fade-out in the measured cognition of the community experimental group, accounted for the convergence. Apparently members of the contrast group typically came from more "adequate" homes where there was greater reinforcement of the early elementary experience. In a study of causal thinking as defined by Piaget, Jean Marguis Deutsche (1943) in a testing of some 700 children from grades three to eight reported that educational training in causal relationships correlated more highly with the ability to answer questions of a causal

nature than socio-economic status or I.Q. Although Deutsche agrees with Piaget that maturation plays an important role in causal thinking, school experiences appear to accelerate the phenomenon. In a study of the effects of perceptual training on the I.Q.s of children in rural Virginia, Boger (1952) exposed one white and another Negro gorup of early elementary pupils for a five month period to exercise materials ("pictorial and geometric problems and puzzles, jigsaw puzzles, and wood puzzles") to improve visual perception, discrimination and special relations abilities. Significant improvement in the relatively low I.Q.s of both groups as opposed to two contrast groups were generally maintained six months after completion of the perceptual training exercise. In another rural report (Brazziel and Terrell, 1962) twenty-six first grade Negro children and their parents from a small town in Tennessee participated in an "intensified teacher-parent approach" to the improvement of reading and arithmetic readiness. Professionals met once a week for a six-week period with parents in sessions to discuss their children's school program, problems and the nature of an educational television program that the parents and children watched daily. At the end of the program highly significant differences were reported between the experimental and control groups on the Metropolitan Readiness Test.

By the early 1960s there were also promising reports from a number of urban areas involved in the Great Cities School Improvement Program, a number of locally initiated compensatory programs sponsored by grants from the Ford Foundation; from the Demonstration Guidance Project and Higher Horizons Program in New York City and a trickling of data from a few pre-school educators such as Merle Karnes, Martin Deutsch and Klaus

and Gray. Although these programs preceded the Elementary and Secondary Education Act of 1965 and any meaningful commitment by the federal government to compensatory education, significant evaluations of these projects were made later through funding provided by the Department of Health, Education, and Welfare. Therefore, a discussion of these early compensatory efforts and the initially encouraging data associated with them will be included in Part II ("The Evaluation of Compensatory Education").

PART TWO

THE EVALUATION OF COMPENSATORY EDUCATION

CHAPTER V

NATIONAL EVALUATIONS

For convenience Part Two will attempt to assess the impact of enrichment programs by looking first at national evaluations, secondly at state and local evaluations and thirdly at specific program evaluations. But another reason for progressing from the national investigations to the smaller studies is that it facilitates the examination of some of the differences (and hopefully the reasons for the differences) among the conclusions reached by evaluations conducted at different political levels. A number of observers have noted that evaluations conducted at the state and local level have found compensatory education to be far more effective than the evaluations at the national level (Talmadge, *et al.*, 1974; The National Advisory Council, 197[illegible]). Furthermore, it has been pointed out that evaluators at the program level have been able to identify a sizeable number of "exemplary" programs (Hawkridge, 1969; It Works Series, 1970; Thomas, 197[illegible]).

Implicit in several of these observations is the idea that the findings of the large scale national studies may be distorted by what may be called the "canceling effect." Since participants in compensatory education programs are a heterogeneous group exposed to an infinite variety of teachers employing many different methods, what "works" for some children may not be effective for others. Consequently, students with appropriate instruction who are really benefiting from compensatory education and achieving at say 1.1 are averaged with children only achieving .4, for whom compensatory education has been a meaningless or

even negative experience. Since the large scale evaluations have been unable to control for the relevant demographic variables and effectively isolate particular kinds of instruction, lumping together scores such as these may reveal that the overall academic growth rate is only .7 - .8. The evaluator then may conclude that compensatory education is a failure. If this contention is valid and some forms of compensatory education are working for a reasonable percentage of the disadvantaged school population, movement to smaller studies conducted by the states, localities and individual programs should produce more encouraging results.

While the concept of the "canceling effect" may have validity, the reader should not get the impression that evaluations at the lower levels necessarily contain pupil populations that are smaller and more homogeneous than the national studies. Only a handful of the surveys that are national in scope sample a national population (such as the Coleman Report). Indeed, several important "national" reports have searched the country for successful programs by simply reading hundreds of small-scale program evaluations. Alternatively, many local and program evaluations can hardly be called "small scale," for they may include data on tens of thousands of students within a local educational agency (LEA) in a large program such as New York City's Higher Horizons. Consequently, as we review evaluations of compensatory education on various levels, it must be kept in mind that the distinction made between national, state, local, and program evaluations in terms of the relative importance of the "canceling effect" is a rather crude one.

Early Programs

Before turning to the national reports it is appropriate at this point to mention some of the compensatory education programs which were in existence several years before the passage of the Elementary and Secondary Education Act of 1965. According to a review by Freeman (1969) the first compensatory education program to gain national prominence began in a Harlem Junior High in 1956. Entitled the Demonstration Guidance Project, it sought to identify Negro pupils with promising standardized test credentials (above the 50th percentile) and provide them with intensive counseling and special education. After impressive gains were reported in achievement,* the program was expanded in 1959 to a large-scale project entitled Higher Horizons which provided comprehensive compensatory services to thousands of disadvantaged low achievers at the elementary, junior high, and secondary levels. The U.S. Commission on Civil Rights (1967) describes the project as the largest compensatory education "program in American history (as of 1966), involving by 1962 64,000 children from 52 elementary schools, 13 junior high schools, and 2 senior high schools." According to the Commission,

> Four major techniques were used in Higher Horizons. First, teachers were trained and encouraged to improve both their expectations of the students and their own ability to teach disadvantaged children. Second, counseling and guidance services were extended and increased in an effort to raise student aspirations and to provide greater opportunities for employment and further education. Third, an effort was made to

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*According to the U.S. Commission on Civil Rights (1967), "An evaluation of the program found that 147 of 250 students who had begun the project in seventh grade gained on the average 4.3 years in reading achievement after 2.6 years of the program at the junior high school." (p. 123)

> broaden cultural backgrounds and horizons of students through visits to museums, libraries, colleges, and concerts. Special remedial teachers were provided to upgrade reading, writing, and arithmetic skills. (pp. 124-5)

Higher Horizons was not only the largest compensatory education program of the early 1960s but probably the most influential. Passow (1963) describes the project as "perhaps the most widely known enrichment program. . . now being adapted in numerous other communities" (p. 343) and Freeman (1969) claimed that "during the early 1960s Higher Horizons was widely praised as a shining example and was copied in many cities." Indeed, it was used as a model for DHEW's shaping of proposals for Title I of ESEA (Freeman, p. 10326).

Another well-publicized compensatory education program was Project Banneker in St. Louis which was initiated in 1957 under the energetic leadership of Samuel Shepard, who for several years directed the operation without additional funding. The U.S. Commission on Civil Rights (1967) described the project as one "of the largest compensatory projects in the Nation" involving by 1965, twenty-three predominately Negro elementary schools with more than 14,000 pupils. In an early review of compensatory education programs by Gordan and Wilkerson (1966) Project Banneker is described as a program designed to raise academic achievement through certain effective modifications rather than by specific curriculum changes. Great emphasis was placed on improving the motivation and self concepts of pupils, the attitudes of teachers and increasing the involvement of parents by such techniques as regular parent meetings, academic competition among the several Banneker Schools, pep rallies, pupil and parent contact with successful persons, staff home visits, and teacher "re-education" (p. 250).

After Higher Horizons and Project Banneker, compensatory education programs which probably received the greatest attention nationally were those from major cities participating* in the Great Cities School Improvement Program (GCSIP), a comprehensive educational enrichment project sponsored by the Ford Foundation beginning in 1957. Although the program varied considerably from city to city, Dorsey Baynham, a freelance education writer, wrote in 1963 that four factors common to each site were "an awareness that the culturally deprived student is usually poor in communication skills," a "willingness to experiment with a broad range of teaching materials. . . and . . . administrative approaches," "strenuous efforts to search out and use community help. . .," and preparation of teachers to meet the special cognitive and affective needs of disadvantaged children(Baynham, 1963, p. 17).

The effectiveness of Higher Horizons, Banneker, GCSIP and other less prominent pre-ESEA programs** will be discussed later in conjunction with a national survey of compensatory programs conducted by the U.S. Commission on Civil Rights in 1967.

Equality of Educational Opportunity Survey

The first and certainly the most important national investigation

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*Milwaukee, Berkeley, Pittsburgh, St. Louis, Washington, D.C., Cleveland, Chicago, and Detroit were participating cities.

**The U.S. Commission on Civil Rights (1967) cites an inventory of compensatory education programs by the University of Chicago, apparently just before passage of ESEA (Urban Child Center, School of Education, University of Chicago, Inventory of Compensatory Education Projects, 1967). The inventory listed several hundred programs.

of the effects of schooling on disadvantaged children was the Equality of Educational Opportunity Survey (the Coleman Report) directed by James Coleman (Coleman, 1966). The survey was conducted in the fall of 1965 before the impact of ESEA, so one cannot use the Coleman data to pass any judgement on the effectiveness of compensatory education.* The Coleman report was initiated in response to Section 402 of the Civil Rights Act of 1964 which ordered that the Commission of Education ". . . conduct a survey and make a report to the President and the Congress. . . concerning the lack of availability of equal opportunities for individuals by reason of race, color, religion or national origin in public educational institutions at all levels in the United States. . ." (p. iii).

Called by Mosteller and Moynihan ". . . the second largest social science research project in history"(Project Talent it seems was larger), the survey tested some 570,000 pupils and 60,000 teachers. Data from over 4,000 schools was collected and analyzed in extraordinary detail. To Coleman and his staff equality of educational opportunity apparently meant not only equalizing inputs (school facilities and per pupil expenditure) but school outputs (pupil achievement on standardized tests), for their report went well beyond attempts to document the limited school resources generally available to racial and ethnic minorities.

In light of our concern with the ability of the schools to reduce the inequalities in achievement, the Coleman Report is notable not for what it found but for what it did not find. To the surprise of almost

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*With the passage of ESEA in 1965 the number of compensatory programs in existence increased in a single year from "several hundred" to over 22,000 (U.S. Commission on Civil Rights, 1967, p. 118).

everyone the survey did not report gross inequalities in educational resources in schools with differing minority enrollment and did not find evidence that school facilities and curriculum in themselves had much at all to do with pupil achievement. Nationally, whites did enjoy a greater quantity of school resources which were thought to effect learning than did blacks, but when available facilities for the two races were analyzed regionally (focusing on the South, Midwest, etc.), remarkably little difference in educational services was reported (p. 122). The input variables of "teacher characteristics" (p. 316) and "student body characteristics" (p. 301) did correlate with measured pupil learning, but

> Differences in school facilities and curriculum, which are the major variables by which attempts are made to improve schools, are so little related to differences in achievement levels of students that, with very few exceptions, their effects fail to appear in a survey of this magnitude. (p. 316)

Apparently Coleman and his staff (most of whom were from the Office of Education) wished to soften the impact of the survey. A Summary Report released shortly before the entire manuscript has been described by Mosteller and Moynihan (1972) as "at heart a political document designed to ease the blow of the findings, even perhaps to deflect them somewhat" (p. 9). In their book, On Equality of Educational Opportunity, Mosteller and Moynihan cite the following "delicately worded" passage from the Summary Report:

> Nationally, Negro pupils have fewer of some of the facilities that seem most related to academic achievement: they have less access to physics, chemistry and language laboratories; there are fewer books per pupil in their libraries; their textbooks are less often in sufficient supply. To the extent that physical facilities are important to learning, such items appear to be more

> relevant than some others, such as cafeterias, in which minority groups are at an advantage. [underline, Moynihan and Mosteller] (p. 9)

Mosteller and Moynihan then pointed out that nationally at the secondary school level 98 percent of the whites and 94 percent of the blacks attend schools with chemistry labs and that "in the Midwest and the West, the reported sample proportion is 100 percent for both groups." Nationally, a greater difference is reported in the availability of physics labs (94 percent of whites and 80 percent of blacks attend a secondary school with such a facility), but unexpectedly the white advantage is greatest in the West (100 percent vs. 76 percent) rather than the South. "But next one learns," continued Moynihan and Mosteller, "that in the West 95% of the Negroes but only 80% of whites have language laboratories. And so it goes" (p. 9). The full report itself was released July 2, 1966, on the eve of the July 4th weekend in what Godfrey Hodgson has called "a hallowed bureaucratic stratagem" of announcing explosive or unpopular information just before a holiday period ("Few reporters care to spend that holiday gutting 737 pages of regression analysis and standard deviations," Hodgson, 1974, p. 603).

As embarrassing as the Coleman Report must have been for the Office of Education, the survey did contain a number of findings that stood in support of the conventional wisdom. On the standardized tests* used by Coleman, minority children (with the exception of "oriental Americans")

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*The Inter-American Tests of General Ability, the ETS Sequential Tests of Educational Progress Series, the ETS School and College Ability Tests series were used in one form or another to measure vocabulary, association, classification, analogies, reading, sentence completion, synonyms, mathematics, and general information (p. 576).

scored well below "majority" children at each grade level reported in the survey* (p. 20), and there existed a cumulative deficit in achievement between each of the minorities and the majority (p. 274). The achievement test scores of Negro children were the lowest of any racial or ethnic group measured, falling about one standard deviation below the white average. Certain teacher characteristics (particularly teacher verbal facility and educational background) were shown as likely to have some effect on Negro (but not white) achievement (pp. 317-18), and the student's expressed feeling of destiny control had a strong relationship to achievement** ("stronger. . . than do all the 'school' factors together," p. 23). Generally speaking, the percentage of white pupils in a school improved the achievement of Negro pupils but only consistently when white were more than half the school population (p. 32). Finally, as one might expect, the school factors effecting achievement usually had a greater influence on minority students than on majority pupils (p. 22).

But even factors such as racial integration, and the teacher's verbal facility showed a relatively small correlation with achievement when compared to student environmental background which usually accounted for between 10-25 percent of the variance in individual achievement (pp. 298-302). Eight background factors were included in the survey dealing with family structure and size, parental economic and educational backgrounds, parental attitudes toward education, availability of reading

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*Grades 1, 3, 6, 9, and 12.

**The attitude of "sense of control of the environment" was extremely highly related to achievement, but this feeling was not found to be influenced much by any school characteristics.

materials and certain technical amenities, and length of residence in an urban area (p. 298). Collectively, the pupil background characteristics had a slightly greater effect on the variance in achievement at the earlier grades than the later grades* (p. 300) and a somewhat greater effect on white achievement than on black achievement. The significance of family background compared to the other variables and the importance of the Coleman Report itself may be summarized by quoting the concluding paragraph from the 106 page section on "Pupil Achievement and Motivation."

> Taking all these results together, one implication stands out above all: that schools bring little influence to bear on a child's achievement that is independent of his background and general social context; and that this very lack of an independent effect means that the inequalities imposed on children by their home, neighborhood, and peer environment are carried along to become the inequalities with which they confront adult life at the end of school. For equality of educational opportunity through the schools must imply a strong effect of schools that is independent of the child's immediate social environment, and that strong independent effect is not present in American schools. [underline this author, p. 325]

The "independent effect of school" that was so critical and was found by Coleman to be so inconspicuous in the America of 1965 would be made more visible it was hoped by federal appropriation throughout the nation for compensatory education programs. By the time the Office of Education had released Equality of Educational Opportunity Survey over one billion dollars had already been spent under Title I of ESEA, essentially to permit the schools to effectively educate children independent of their home environment.

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*Only grades 6, 9 and 12 were included. Information on pupil background was obtained from the children themselves; it was believed difficult to question younger children on this topic. But it is interesting that variation in schooling had a greater effect in the higher grades than in the lower grades.

Before describing and evaluating the effectiveness of Title I, it is important at this point to consider some of the criticism of the Coleman Report and discuss briefly the major attempts at reanalyzing the EEOS data. Needless to say, the survey has been subjected to intense scrutiny and often bitter criticism from a number of observers.

Perhaps the criticism of the Coleman Report can best be summarized by reviewing the articles written by economists Bowles and Levin (1968) and Hanushek and Kain (1972) which have been quoted frequently and cover most of the major flaws of the survey mentioned by other prominent critics. Bowles and Levin point out that ". . . the report was handicapped by a severe time restraint." (Section 402 of the Civil Rights Act of 1964 had ordered that the survey be delivered to the Commission of Education within two years which necessitated that any research study of that magnitude be hastily thrown together.) Given the time factor, Hanushek and Kain argue that Coleman and his staff should not have attempted to measure input, output and process.

> ". . . in attempting to answer all three, the authors of the Report failed to provide convincing answers to the question of whether minority children are systematically discriminated against in the provision of educational resources. (p. 119)

This was, of course, the major reason for conducting the survey. Furthermore, Coleman and his staff's overextension ". . . would prevent them from providing an authoritative answer to any of the three questions" (underline this author, Hanushek and Kain, p. 119).

Regarding perhaps the Report's most widely publicized finding that social background, rather than school resources, has a strong influence on pupil achievement, it is Bowles and Levin's contention that these

alleged phenomena are not substantiated by the evidence. They argue that the measurement of social background and school input were inadequate.

The report's conclusion that expenditure per pupil had little relationship to achievement was not based on data which showed ". . . the difference among students in the amount of instructional resources devoted to their education." In the regression analysis Bowles and Levin point out that Coleman simply averaged ". . . the instructional expenditure per student within an entire school district." Ignored by Coleman were "school-to-school differences within a district (even differences between secondary and elementary schools). . ." (Bowles and Levin, p. 8).

Another weakness of the report is the limited measurement of school facilities used in the statistical analysis. For example, library volumes per student and the presence of science laboratories are given considerable attention, but specific instructional materials are not included in the analysis. In addition, Bowles and Levin note that the data in the report showing no relationship between pupil-teacher ratio and achievement ". . . was obtained by lividing the enrollment of the school by the number of teachers" (p. 11). This method may be very misleading since ". . . schools with the same enrollment-teacher ratios may have significantly different class sizes depending on the average number of hours of teaching required of the instructional staff" (p. 11).

Still another shortcoming of the report's measurement of school inputs is the absence of longitudinal data. Bowles and Levin argue that without the inclusion of past experiences one may simply be measuring the effects of the pupils' immediate environment. Since the tests of

the Coleman Report were administered in the fall, that educational environment could be at most only a few weeks.

> It cannot be assumed that the characteristics of schools that students were attending at the time of the survey are similar to those of the schools that they have attended in the past. Secondary schools are likely to receive pupils from feeder schools of widely varying quality." (p. 12)

A number of other problems with the report have been outlined in the Hanushek and Kain critique. Among the more serious errors are problems with the sample itself and the process of entering the variables for an analysis of variance. The original sample was supposed to be 900,000 students but non-responses reduced the number of participants to about 569,000. Particularly striking is the fact that 41 percent of the 1,170 high schools of the original sample had to be excluded from the report. This high school omission was most evident in the metropolitan South where data could only be obtained at the 11th grade for only four schools that had between 10 percent and 75 percent nonwhite students. Referring to these figures, Hanushek and Kain comment that "one is hesitant to make inferences, especially as concerns the effects of integration from an analysis of such small samples" (p. 120). Another rather serious problem with non-response sectionally is found in the central cities in the North. Hanushek and Kain point out that several inner city areas of this region refused to cooperate with the survey and one can only wonder whether "sensitivity" about real or believed inequalities or "controversy about school discrimination" contributed to their reluctance to participate.

Regarding the analysis of variance, Hanushek and Kain contend that the accuracy of the findings must be questioned because the explanatory variables measured in the report are not truly independent. ("When

explanatory variables are intercorrelated, interpretation of variance is exceedingly difficult. Only part of the explained variance can be assigned uniquely to particular variables or vectors" [p. 125].) For example, higher income suburbs are likely to also pay their teachers more, and well-educated parents may be more interested in the quality of the school in choosing a place to live. In these cases, it is obvious that attempting to assess the actual effect of parental income on education or pupil achievement is extremely difficult. Accurately determining the influence of the explanatory variables becomes even more difficult, the authors claim, by the "very unusual manner" in which Coleman and his staff enter the variables to analyze the variance.

> Explanatory variables are entered into the model in a predetermined order and only the increment to explained variance is assigned to each new variable or vector. Thus, the proportion of variance allocated to each variable or vector depends on the order in which they were entered. If two variables or vectors are highly intercorrelated, the first entered will be assigned both its unique contribution to explained variance and its jointly explained variance with all other variables or vectors. . ." (p. 125)

Therefore, altering the order of entry of intercorrelated explanatory variables or vectors is likely to change the degree of explained variance. And, as Hanushek and Kain point out, the authors of the survey ". . . consistently entered family background variables first and educational inputs (school factors) last" (p. 125). If the order of entry had been reversed Coleman might have found that education, rather than family background, had the greater effect on the variance in pupil achievement.

Many of the methodological problems mentioned by these economists were surely among the many questions on the minds of many of those who planned to meet at Harvard to reanalyze the Coleman data. Shortly after

the publication of the Coleman Report, Daniel Moynihan and Thomas Pettigrew initiated in the fall of 1966 a seminar, "On Equality of Educational Opportunity", which attracted some fifty to sixty Harvard faculty members and many other interested persons to the Harvard Faculty Club. Funded by the Carnegie Corporation, the continuous "swarming about among panels, committees, groups and subgroups" was described by Moynihan and Mosteller as a seminar taking on "near conference proportions." In the winter of the 1966-67 academic year Christopher Jencks of the Institute of Policy Studies in Washington became a participant in the seminar and later in the year became a faculty member of the Harvard Graduate School of Education. By 1968 Jencks and Marshall Smith, Research Director of the Seminar, had reached the conclusion that the EEOS data warranted extensive reexamination and together with David Cohen, Staff Director of the U.S. Commission on Civil Rights 1967 Study (see pp. 128-130), established at the Harvard Graduate School of Education, the Center for Educational Policy Research (CEPR). Published products of the seminar and the reanalysis conducted at CEPR were respectively the important books entitled On Equality of Educational Opportunity, by Frederick Mosteller and Patrick Moynihan and Inequality by Christopher Jencks.*

The Mosteller and Moynihan publication is largely a collection of several articles written by participants of the seminar which included

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*The background information for this paragraph came from the prefaces of On Equality of Educational Opportunity (Mosteller and Moynihan, 1972) and Inequality (Jencks, 1972).

the Hanushek and Kain paper cited earlier in this chapter. Although many reservations were voiced about Coleman's objectives, methods of collecting his information, and his analysis of the data; the consensus of the several authors generally supported the findings of EEOS. For example, David Armour

> verified that, contrary to the opinions of some of the critics of the methods used in EEOR,* no matter how one looks at the associations--controlled or uncontrolled, schools controlled before family, or family controlled before schools--family inputs are far more powerful predictors of achievement than school inputs, and this is true for both races (p. 39).

(Armour based his conclusions on the Coleman data from only the elementary schools and chose schools as the units of analysis rather than individual students.) Regarding the issue of school integration Armour supports Coleman in his finding that even under these circumstances Negro children still average roughly 1.5 standard deviations behind whites on the standardized tests.

> Armour concludes that while integration of schools could help, that alone could not close the black-white achievement gap. He believes that closing it requires that major attention be given to the socioeconomic condition of the individual black family. In other words, neither school upgrading nor school integration will close the black-white achievement gap if the black-white gap in socioeconomic status is ignored. (p. 43)

The common criticisms of the EEOS sample regarding non-responses and the rather crude means by which the family background and school data was collected** were reiterated by Mosteller and Moynihan. On the whole,

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*Mosteller & Moynihan refer to Coleman as Equality of Educational Opportunity Report.

**For example, asking students to fill out questionnaires on family background to obtain that data; concluding that funding had little to do with achievement without any information on how the money was spent.

however, their reanalysis is in agreement with Coleman's principal findings.

> On reexamination we find the EEOS data do not confirm all the purported findings of the EEOR. But they confirm many of them, and just as importantly they establish new parameters of what is likely to be true about education. Henceforth, for example, it is likely we shall find that American school systems are more like one another than otherwise. Henceforth, it is likely we shall find that increasing the 'supply' of education for schools that are going concerns by merely increasing gross 'inputs' will not have any great effect on gross 'outputs.' This seems clear. (p. 44)

The Jencks report takes a rather broad look at the variations among people in the America of 1972 with considerable data on inequality of occupational status, income and job satisfaction as well as information on the uneven distribution of cognitive skills, I.Q. scores, school expenditures and educational resources. It is only the two latter topics which relate to the variation in educational services provided for disadvantaged children that require comment at this point. After reviewing the EEOS research and the further data collected by the Center for Educational Policy Research, it is Jenck's conviction that there is little causal relationship between variation in schooling and variation in pupil achievement.

> The school. . .could. . . establish a system of compensatory opportunity in which the best schooling was reserved for those who were disadvantaged in other respects. The evidence suggests, however, that educational compensation is usually of marginal value to the recipients. Neither the overall level of educational resources nor any specific early identifiable school policy has much effect on the test scores or educational attainment of students who start out at a disadvantage. (from the concluding chapter, "What is to be Done," p. 255)

Although the Equality of Educational Opportunity Survey and the reanalyses of the data by Mosteller and Moynihan and Jencks provide some rather impressive evidence that the schools have little effect on

tax dollars were being spent wisely. Speaking before the Senate Subcommittee on Education during its Hearings on Elementary and Secondary Education Act of 1965, Kennedy addressed the importance of keeping the parents of poor children informed:

> I think it is very difficult for a person who lives in a community to know whether, in fact, his educational system is what it should be. . . if I lived in the community where the $2 million (of Title I dollars) was being wasted, I would like to know something about that. I wonder if we couldn't have some kind of system of reporting, either through some testing system that would be established which the people at the local community would know periodically as to what progress had been made under this program. (quoted in McLaughlin, 1974, p. 3)

Although Kennedy's enthusiasm for the bill was contingent upon its evaluation requirement (an enthusiasm that was apparently thought critical to the Act's passage because of the political influence in Congress of the New York senator),* the language of the evaluation component of Title I was much more general than he had wanted. According to McLaughlin

> Kennedy's support was important to the passage of ESEA, but evaluation was also a traditional bugaboo of schoolmen. Thus to appease Senator Kennedy and not simultaneously anger educational interest groups, drafters resorted to additional political diplomacy. Kennedy's demand for an accountability measure was met as inconspicuously as possible, with a lonely worded evaluation mandate. (p. 16)

Samuel Halperin, the Director of the Office of Legislation of the United States Office of Education (USOE) remarked later that when Kennedy's evaluation plan was put into Congressional language, "the guiding concern was that the amendment be broad and general, and open to multiple interpretations at the local level" (quoted in McLaughlin, p. 16).

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*McLaughlin, pp. 1-3.

Consequently, projects at the local level were told only that ". . . effective procedures, including provisions for appropriate objective measures of education, will be adopted for evaluation, at least annually, of the effectiveness of the programs in meeting the special educational needs of educationally deprived children" (U.S. Congress, House, Public Law No. 89-10, 89th Congress, First Session, H.R. 2362, April 11, 1965, Sec. 205; quoted in McLaughlin, p. 17). McLaughlin states that "the law did not specify what 'appropriate objective measures'might be, or indeed even what might be identified as the 'special educational needs of educationally deprived children'" (p. 17).

The basic plan for collecting evaluation data from Title I programs has been described as "the three-tiered reporting scheme" which resembles a pyramid. "The Local Eduational Agency (LEA) is required to report annually to the State Educational Agency (SEA)"* and the SEAs are then required to

> make to the Commissioner (A) periodic reports including the results of objective measurements. . . evaluating the effectiveness of payments under this Title and of particular programs assisted under it in improving the education of deprived children and (B) such other reports as may be reasonably necessary to enable the Commissioner to perform his duties under this Title. . ." (op. cit., section, 206, quoted in McLaughlin, p. 17)

Given the vague evaluation requirement of the Act and the vested interests of educators at the state and local level, this "three-tiered" reporting structure would make attempts to assess the effectiveness of most compensatory eduation programs extremely difficult.

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*quoting McLaughlin, p. 17.

According to McLaughlin, USOE personnel might have given greater substance to the evaluation process, for it was their responsibility to construct specific evaluation guidelines. Five major problems, however, prevented the Division of Program Operations (DPO) (the unit primarily responsible for constructing the guidelines) in the Bureau of Elementary and Secondary Education (BESE) from implementing a more rigorous reporting process. First of all, DPO had "severe time restraints" facing ". . . 30 day deadlines in which to write guidelines for school year (1965-66) Title I programs" that had already begun. Secondly, the DPO staff had very little experience with evaluation (there was not a single full-time evaluator on the staff until six months after the Title I operations had begun) and no experience in conducting an evaluation of this magnitude. Thirdly, the bulk of the administrative staff of USOE/BESE/DPO was traditionalist ". . . educated in the school of grants management and weaned on the tradition of a weak USOE." Fourthly, as we have already seen, the Act itself prevented USOE from carefully monitoring the operations of evaluation conducted at the lower political levels.

> While the ESEA required that USOE Title I staff review the effectiveness of Title I, at the same time USOE officials were prohibited by Section 604 from exercising 'discretion, supervision or control' over state and local administration of ESEA. (McLaughlin, pp. 17-18)

Finally, it must be reiterated that ESEA was the first large-scale federal legislation for education, and in the America of 1965 many people throughout the nation were extremely worried that federal aid would bring federal control. Fearful that Washington would insist on dictating curriculum and even standardizing texts in return for federal funding, it is hardly surprising that many state and local educators favored ESEA

evaluation guidelines which could assure considerable autonomy for the LEAs and SEAs. Consequently, "throughout the drafting process (of the evaluation guidelines) USOE officials took extraordinary care to obtain the concurrence and support of SEA and LEA officials" (McLaughlin, p. 18).

Given all of these factors, the guidelines written by DPO ". . . were little more concrete than the legislative language itself. . . [which] enabled LEAs to exercise complete discretion in determining the content and format of their reports" (p. 19). McLaughlin offers the following summary of the challenges facing the evaluator of compensatory education under Title I:

> As ESEA Title I got underway, then, there was little explicit interest within USOE in making school administrators responsible to their constituencies, or in making educational achievement the touchstone of success in judging ESEA; as Robert Kennedy had been promised in return for his support. Kennedy's expectations were eclipsed by more powerful policy system incentives, and by USOE's perceived need to maintain harmonious relations with the states. Evaluation was an issue only as it affected these intergovernmental relations. (p. 20)

As we review the various national evaluations of Title I conducted by the USOE and independent research organizations, it may be useful to keep in mind the limitations imposed on data collection by the nature of the ESEA legislation.

The National Evaluations of Compensatory Education

The first national evaluation of compensatory education following the passage of ESEA was conducted by USOE in 1966.* The report, of

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*The States Report--The First Year of Title I, Elementary and Secondary Education Act of 1965, U.S. Office of Education, Washington, D.C., 1966, ED 012 378.

course, was hastily prepared due to the reasons mentioned earlier. But even under the best of circumstances USOE could have done little to measure the achievement of Title I pupils that first year since "most Title I programs . . . had been in operation for only 3 or 4 months by the end of the fiscal year in June, 1966" (from this first report, p. 14). The report simply summarized the largely descriptive state evaluations and contained a number of statements expressing the philosophy of ESEA.

> Perhaps the major impact of Title I has been to provide educationally deprived children with more individual attention. It has been possible to emphasize the personal element in a national program that reaches more than 8 million children. In many cases, teaching has focused for the first time directly upon the particular needs of the individual boy and girl. (p. 4)

The second USOE evaluation* of Title I once again reviewed the state evaluations and appeared to be essentially a statement of educational propoganda, mixing pictures of children with misleading statements suggesting success (". . . many Title I youngsters are improving, sometimes gaining a full month for every month spent in the classroom" [p.7]). The report did mention, however, that reports from the cities were "disheartening" with little evidence of significant pupil gains. (p. 7).

According to Hecht (1973), one reason for the poor quality of the first two USOE evaluations was the "compilation methodology" used by DPO which simply ". . . followed a route from local to state to federal reports," passing on and compiling information from the lowest to the highest levels (p. 70). This method of data collection and the "faulty manipulation of the limited data available" soon came under attack,

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*The Second Annual Report of Title I of the Elementary and Secondary Education Act of 1965, School Year, 1966-67, Office of Education, (DHEW), Washington, D.C., 1967, Ed 021 946.

however. Typical of the critics was R.A. Dentler who found the two early reports "elegant, encouraging, yet empirically not precise" and pleaded ". . . on behalf of effective evaluation research [for reports which would be] in keeping with the spirit and the letter of the 1965 Elementary and Secondary Education Act (quoted in Hecht, 1973, pp. 71-72). Fortunately subsequent annual surveys by DPO show considerable improvement.

Before reviewing additional Title I USOE evaluations, it may be appropriate at this point to glance at the evaluation of compensatory education programs included in the U.S. Commission on Civil Rights Report of 1967* (see p. 119). The commission reviewed the evaluations of treatment programs in a number of cities receiving Title I funding, but gives most of its attention in the report to its findings on well-known pre-ESEA compensatory education programs such as St. Louis' Project Banneker, New York's Higher Horizons, (see pp. 183-86), New York's All Day Neighborhood School Program and Philadelphia's Educational Improvement Program.

You will remember that Higher Horizons and Project Banneker were among the earliest and most influential compensatory education programs. Indeed ESEA strategists frequently used Higher Horizons as their model in their theoretical design of compensatory education under Title I. Six years after Higher Horizons was inaugurated in 1959 and only a few weeks after the passage of ESEA the New York Board of Education released its evaluation of the program. The Commission summarizes that evaluation.

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*United States Commission on Civil Rights, 1967. Racial Isolation in the Public Schools, Vol. I., U.S. Government Printing Office, Washington, D.C., February, 1967.

> Although the professional staff participating in the program expressed the view that the program was successful in the area of expanding cultural horizons and in the provision of additional guidance services, the investigation found no significant difference between students in schools with the Higher Horizon Program and similarly situated students in schools without the program. These two groups of students showed no difference in academic achievement. In three school years both groups had gained only about two years in reading achievement. (p. 125)

Apparently the initial achievement gains of Higher Horizons students had been either fabricated or for some reason faded. A very similar pattern was noted by the Commission in reviewing Project Banneker.

> By the 1960-61 school year, after the program had been in existence for three years, Dr. Samuel Shepard, the program's director and superintendent of the Banneker School District reported that eighth grade reading levels at the Banneker schools had shown a noticeable improvement. They were, on the average, only one half year below the national average. A comparison of eighth grade reading scores in subsequent school years, however, shows that this gain apparently was not sustained. In 1966-67, eighth grade students, some of whom had been in the program for seven years, were tested. The majority of Banneker schools were a year or more behind the national average. (p. 121)

The Commission also reviewed a number of programs funded by the Ford Foundation's Great Cities School Improvement Program (see Chapter III, p. 90-91). Apparently the most extensive of the "Great Cities" programs was the Educational Improvement Program (EIP) in Philadelphia. The Commission evaluated EIP by comparing, over a two-year period, first to third grade EIP students (predominately Negro) with similar pupils attending both non-EIP segregated schools and non-EIP integrated (predominately white) schools. Once again the children in the compensatory program (EIP) showed an achievement gain (equaling the city-wide mean at the end of the second grade. It is interesting that the non-EIP pupils in segregated and integrated schools also showed a similar gain and fade

out. At the end of the second grade there was no significant difference in the achievement rate of EIP and non-EIP segregated groups (both were falling further behind the city-wide mean) but some evidence that the non-EIP integrated group was not fading out as rapidly. Summarizing the evaluation of EIP, the Commission stated that the program ". . . did not improve the general levels of academic achievement for Negro students in all Negro schools" (pp. 136-7).

The Commission concluded its section of the report on the "effects of compensatory education in majority Negro schools" with the following paragraph:

> The Commission has reviewed evaluations of more than 20 other compensatory education programs in large cities. These evaluations conducted by the local school systems report mixed results. Because the data often were incomplete and the period in which the programs had been in operation often was too short, it is not possible to draw absolute conclusions about the relative success or failure of these programs. In most instances, however, the data did not show significant gains in achievement. (p. 127)

According to McLaughlin the next evaluation of compensatory education that was national in scope was initiated in part because of the disappointments associated with the Coleman Report of July, 1966, and the U.S. Commission on Civil Rights Report which was released some six months later in February, 1967. Shortly after the Commission report was published the TEMPO Division of the General Electric Company was commissioned by USOE's Bureau of Research to conduct a cost-benefit study of compensatory education programs in selected school districts. The idea was to bring the theoretical model from the area of micro-economics which had been effective at the Department of Defense into the muddled world of educational evaluation. Theoretically, a cost-benefit analysis would assess the relationships between Title I funding

and pupil achievement to come to grips with the distinguishing features of exemplary Title I programs. TEMPO identified eleven school districts for its preliminary analysis that were supposed to contain successful compensatory programs and later conducted case studies of five such districts to examine in greater detail.

The TEMPO study was completed in early 1968 and McLaughlin contends that ". . . findings were received at. . . [USOE] with great disappointment and something approaching disbelief." She continues

> Even within a universe of supposedly 'successful' programs, TEMPO analysts were unable to identify either a Title I population, nor a Title I program, nor significant achievement gains that could be attributed to Title I funds. (p. 35)

Because of the poor records kept at the local level in most of the districts, the overall effectiveness of Title I in the sampled districts was impossible to assess. There did not seem to be any evidence, however, from the few districts with "sufficient" data that Title I had any impact on pupil achievement (McLaughlin, p. 35).*

The third annual evaluation of Title I programs conducted by USOE in 1968 was a much more empirical study than the 1966 or 1967 reports. Prompted by the criticism directed at the earlier reports, Congress in late 1967 ordered that more sophisticated reports be made by the Commissioner each year on the achievement of Title I pupils. According

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*These conclusions from the TEMPO study are based exclusively on impressions received by reading McLaughlin's description. This writer found the study listed in the ERIC Index, but could not find it in ERIC files of two different libraries. Apparently the two volume report entitled "Survey and Analysis of Results from Title Funding for Compensatory Education" and "Analysis of Compensatory Education in Five School Districts" was never released by USOE.

to Hecht, by 1968 the political climate had permitted a more objective evaluation for the opposition to federal aid to education and "the Office of Education now had less need to be defensive in its reporting." The 1968 survey of compensatory education* represented the beginning of what Hecht calls "the second phase" of Title I evaluation characterized by the collection of uniform programmatic data directly by the Office of Education through the use of sample surveys representative of the nation" (p.72).

The 1968 survey sampled 465 of 10,544 districts nationally receiving Title I funds. In order to facilitate the collection and analysis of the data, only grades 2, 4 and 6 were included in the Study. USOE's interest in obtaining accurate information is indicated by its elimination of all reading achievement data that did not include such components as pre- and post-tests. Consequently, only the reading scores of 11,490 pupils were analyzed. The survey concluded that

> Pupils taking part in compensatory education reading programs were not progressing fast enough to allow them to catch up to nonparticipating pupils.
>
> A number of pupils among both participants and nonparticipants had reading achievement levels below national norms. For both participants and nonparticipants that 'deficit' grew progressively greater in each succeeding grade level sampled. (p. 126)

The survey also found evidence that indicated that pupils with the greatest gains were among the less socially disadvantaged of the sample.

> High gain pupils [came] . . . from families of higher income, their parents had more education, the occupations of the parents had greater skills, and they were predominately white. (p. 126)

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*Education of the Disadvantaged: An Evaluative Report on Title I, Elementary and Secondary Education Act of 1965, Fiscal Year 1968, Office of Education (DHEW), Washington, D.C., April, 1960, ED 047 033.

The 1968 survey found that compensatory reading programs at grades 2, 4 and 6 had virtually a random chance either of improving or worsening children's test scores when compared to similar children not recipients of Title I funding (pp. 97 and 375). The report warned the reader that any evaluation of a federal project as mammoth as Title I is bound to suffer from inadequate information and limited cooperation from local teachers and administrators. In addition, most of the research was conducted with insufficient funding and technical expertise. Nonetheless, if Title I reading programs had been improving markedly the reading levels of children, we should expect to find a much greater percentage of programs showing positive results rather than negative results.

Roger Freeman, a White House education advisor, summarized the evaluations of Title I reading programs up to the summer of 1970:

> We now spend more than $1 billion a year for educational programs under Title I of the Elementary and Secondary Education Act. Most of these have stressed the teaching of reading, but before-and-after tests suggest that only 19% of the children in each program improve their reading significiantly; 13% appear to fall behind and two-thirds of the children remain unaffected--that is they continue to fall behind.

Following the release of the disappointing 1968 survey and the arrival of the Nixon administration in Washington, Freeman's statement was apparently indicative of a new mood in the Capitol. On one hand conservatives such as Freeman* used the national evaulations suggesting that

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*In April of 1969 Congressman John Ashbrook (of Ohio) quoted extensively from a paper written by Freeman, formerly of the Hoover Institution in Palo Alto, California. Entitled, "The Alchemists in our Public Schools," Freeman reviews the Higher Horizons, Banneker and Educational Improvement Programs, the Coleman Report and the U.S. Commission on Civil Rights Report of 1967. Drawing heavily on writings of Arthur Jensen, he attributes the failure of compensatory programs to the genetic inadequacies

the schools made no difference as ammunition to justify cutbacks in Title I funding. Alternatively, it is evident that the evaluations caused many liberals in USOE to become defensive once again in what McLaughlin describes as a scramble ". . . to satisfy the premises and precepts on which Title I was administered" (p. 57).

Why the Nixon administration did not arrange for the release of the 1969 survey* of Title I programs is puzzling to this writer. Originally, the 1969 survey, which used essentially the same research design as the 1968 evaluation, ". . . was intended to . . . replicate the 1968 effort" and provide further evidence to support the effectiveness of schooling.

> Since the 1969 survey was little different from its predecessor, its conclusions were not unexpected. The discouraging results of the 1968 survey had prepared USOE for the equally discouraging outcome of Gene Glass' report. . .(Ibid, p. 58)

According to McLaughlin, after Gene Glass, the Director of the survey, completed the report and USOE was informed officially of his negative findings his manuscript was never released.

> Although compiled and printed, it was not 'available' in the summer of 1970 even to qualified researchers under contract to DHEW's Title I Task Force. Gene Glass himself was not, at that time, able to distribute copies of the document, and the report now remains buried somewhere in USOE. Thus the report that was to provide 'definitive information on the efficiency of implementation of Title I ESEA and the effectiveness of that program' has never seen the light of administrative day, nor has it (officially) informed a single decision-maker. Since it failed to serve its main purpose for USOE--to provide positive data for a report to Congress--the report has been for all

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of most program participants. Changing the intelligence and achievement of genetically inferior poor children, he implies, is as futile as the attempts made by ancient alchemists to change common metals into gold.

*Glass, Gene, Data Analysis of the 1968-1969 Survey of Compensatory Education, (Title I).

practical purposes, suppressed.* (p. 59)

The burial of the 1969 survey may have been a turning point in the availability of evaluations stemming from the "three-tiered reporting scheme." After 1970 the required annual evaluations of Title I by the LEAs, SEAs and USOE are largely inaccessible.** We shall examine this problem further in Chapter VI. At this point it is appropriate to review the additional national evaluations of compensatory education which are not affiliated with the required annual evaluations ordered by Public Law No. 89-10 and ESEA. The remainder of this chapter will cover these evaluations by grouping them into the categories of "Early Childhood," "Exemplary Programs," and "Miscellaneous."

Early Childhood Evaluations

By far the best known enrichment strategy for disadvantaged young children is the Office of Economic Opportunity's Project Head Start which began in the summer of 1966. The first national evaluation of Head Start was a largely descriptive summary of programs in operation during that first Head Start summer by the Educational Testing Service (Boyd, 1966). Because the project was in operation for only a few weeks

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*Difficulty in obtaining negative evaluations of compensatory education is not peculiar to those commissioned by USOE. In attempting to obtain a copy of New York City's 1965 evaluation of Higher Horizons, this writer found it difficult to find persons in the New York City Board of Education who had even heard of Higher Horizons. After speaking with several people, I finally obtained a copy from Richard Turner, one of the former administrators of Higher Horizons. According to him, his personal copy was to his knowledge ". . . the only copy available."

**The ERIC Clearinghouse published over 100 Title I evaluations at the state and local level between 1968 and 1970, but only a handful have been published between 1971 and 1976.

before the survey was undertaken, it is meaningless to discuss ETS's handling of achievement gains. Perhaps the one finding of the report most relevant to our concern in this paper is that most Head Start Center directors ". . . reveal[ed] a preference for a supportive, unstructured socialization program rather than a structured, informational program." Only 36 percent of the directors seemed to support a "structured" or "articulated" pre-school program, a statistic which should take on considerable meaning later in this chapter.

A much more important evaluation of Project Head Start was conducted by Ohio University and the Westinghouse Learning Corporation* in 1969 (Ohio-Westinghouse, 1969). Basing its analysis on a sample of 104 Head Start Centers, Ohio-Westinghouse found the summer Head Start programs to be only "marginally effective," but concluded that many well planned full year programs were improving significantly the academic aptitude of the participants. Indeed many Head Start children who had begun the program well behind advantaged children on reading readiness measures approached the national norms by grade one. The measured achievement gains were greater for black children and for children in the southeastern states and central cities. Those encouraging reports of achievement gains were tempered considerably, however, by longitudinal data which indicated that the initial gains were not sustained. By the end of grade two most Head Start children who had gained during the pre-school years were little

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*The Impact of Head Start: An Evaluation of the Effects of Head Start on Children's Cognitive and Affective Development, Ohio University, Athens; Westinghouse Learning Corporation, New York, N.Y., Jan., 1969, ED 036 321

different on the standardized measures than similar children* without pre-school experience.

A later evaluation of Head Start by the Educational Testing Service (Shipman, 1971) reported the same pattern of gain and fade out described by Ohio-Westinghouse. Perhaps the most interesting finding of the Shipman study was in the area of language. It was reported that the Head Start children showed a greater discrepancy between their ability to comprehend language and use language than is typically found amond middle class children of the pre-school age.

> In sharp contrast to claims made by some educators that 'disadvantaged' children lack such comprehension, we found almost perfect understanding of prepositions and the understanding of negation. . . What this would imply then, is that rules governing the logical distinctions of negation and location (in, on, under, behind, etc.) are acquired very early by both disadvantaged and advantaged youngsters. [underline added]

Shipman suggests that language comprehension may be "native" and relatively uninfluenced by the environment while language usage may be more sensitive to environmental stimulation.

In the Ohio-Westinghouse evaluation of Head Start it had been suggested that ". . . some of the full year programs should be set up as experimental programs. . . to permit the implementation of new

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*There has been a good deal of criticism of the control group used in the Ohio-Westinghouse study. White (1970) had pointed out that the experimental group were those children who ". . . had remained in the target area after training." Perhaps the higher achievers moved out of the area to a better location. White calls for future studies to identify the treatment group beforehand.

Campbell and Erlebacher (1970) noted that the control group children came from a somewhat more advantaged background and that regression artifacts (each group regressing towards different group means) can distort the findings.

procedures and techniques and provide for an adequate assessment of results" (p. 10). In 1969 the USOE initiated a study of specific early childhood models entitled, "Planned Variation in Head Start and Follow Through." Bissell (1971) evaluated several experimental programs by grouping them into three general categories designated as "pre-academic" (behavioral and highly structured), "cognitive-discovery" (a structured Piagetian strategy developed by David Weikart), and the "discovery" (Bank Street-whole child approaches). (No longitudinal data was used in the analysis to measure "fade out" nor were the Head Start children compared with their more advantaged counterparts.) Bissell reported that the three approaches were roughly equally effective in raising measured intelligence and improving school readiness for at least one year with only a slight but statistically insignificant advantage for the more structured pre-academic and cognitive discovery models. In her conclusion, however, she appears to go beyond the data by stating the

> differences among Planned Variation approaches in both Head Start and Follow Through suggest a specificity of effects, such that in programs with specific objectives and well-formulated strategies to achieve these objectives somewhat more growth is found . . . than in whole child programs (p. 105).

A somewhat more sophisticated evaluation of Planned Variation in Follow through (only) was carried out for USOE by the Stanford Research Institute* (SRI) also in 1971. Three approaches to early childhood education were compared by SRI that roughly matched the categories of Bissell: (1) highly structured-behavioral, (2) cognitive discovery, and

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*Longitudinal Evaluation of Selected Features of the National Follow Through Program, Stanford Research Institute, Menlo Park, Calif., March, 1971, ED 057 266.

(3) open-"pragmatic." The trend suggesting a specificity of effects in the Bissell study reached statistical significance in the SRI report when children in programs using the three different apporaches were compared to non-Follow Through (NFT) control groups matched for race and socio-economic background. Follow Through (FT) participants in group one started behind the controls at the beginning of kindergarten or first grade but finished the academic year significantly ahead of the controls. However, in group two FT children started and finished behind NFT pupils in both kindergarten and first grade, and in group three FT children started ahead of NFT controls in kindergarten but did not match the gains of the NFT children, until the first grade when FT began to close the gap. SRI concluded that the sponsor groups whose approach is ". . . most structured and concentrates most explicitly on developing academic and preacademic skills showed a consistently higher level and rate of achievement measured by the pupil achievement test battery" (p. 25).

The report also noted that data from four grade levels (K-3) showed that FT children who had been enrolled in Head Start generally did better on the achievement measures than FT children without Head Start experiences. Unfortunately, the report included no information on whether Follow Through was able to sustain the achievement gains of the Head Start children, nor any data comparing the FT groups to national achievement norms.

Three additional important early childhood national reports which attempt to assess the longitudinal effects of early intervention have been written by Ryan (1974), Bronfenbrenner (1975), and Cline (1974, 1975). The Ryan and Bronfenbrenner reports take a close look at a

number of experimental pre-school programs, and the Cline studies review several Follow Through models. In Chapter VII the work of these authors will be discussed.

Exemplary Programs

Given the many problems associated with conducting national studies of school effectiveness similar to the one conducted by Coleman and the annual surveys attempted by USOE, a popular alternative strategy for evaluating the ability of the schools to compensate for environmental deprivation has been to search the nation for successful enrichment programs. Typically, a research organization would gather information on several hundred programs by an extensive reading of published and in-house program evaluations. Researchers would then make site visits for further study to those programs reportedly making month-for-month achievement gains that appeared to be based on hard data. If the close scrutiny confirmed that the programs were successful, the research organization would gather additional information on curriculum and methodology so these exemplary programs could serve as models for other educators constructing compensatory programs. In this section we will beiefly summarize the several attempts to identify successful programs leaving an examination of the two programs themselves to Chapter VII.

The earliest, the most publicized, and eventually the most extensive research for exemplary programs was conducted by the American Institute for Research (AIR) of Palo Alto, California. Under contract to USOE, AIR identified thirty-one exemplary programs from pre-school to grade twelve in its first two reports (Hawkridge, *et al.*, 1968; Hawkridge, *et al.*,

1969) which became the basis for the It Works Series, a thirty-one booklet package published by USOE providing detailed descriptions of each successful program. Twenty-one of these programs were selected in the 1968 report after AIR reviewed written reports of over 1,000 compensatory programs in existence from 1963-68, chiefly by searching ERIC, libraries and collecting data from over 300 mail requests.* Using the same process another eleven were identified in the 1969 publication.

In order to qualify for a site visit by AIR researchers, a program had to have some hard data indiciating pupil achievement gains of at least a month's learning for a month of instruction. Programs that only matched but did not exceed the national achievement rate were labeled only "moderately successful." "Successful programs" were only those that produced greater than 1:1 gains since AIR took the position "three" (see Chapter I, pp. 7 - 10) that disadvantaged children could only catch up to the national norm if they exceeded the achievement growth rate normally attained by advantaged children. In its review of the over 1,000 programs in the 1969 report, AIR comments on the difficulty in identifying successful programs.

> In the analysis of site data it became evident that few if any compensatory education programs are free from blemishes of sampling, design, testing, data recording, or interpretation. Many apparently successful programs could not meet the strict criteria established for this study. Some that did may have done so through the undetected biases in their data, rather than by their educational significance or success. (p. 1)

Although AIR did identify many programs that appeared to be successful,

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*From the Introduction, Hawkridge, 1969.

one can conclude from their reports that the AIR research was an indictment of both the quality of program evaluations and compensatory education itself. Following the 1968 and 1969 publications (which constituted the thirty-one exemplary programs widely publicized by USOE in the pamphlet It Works), AIR issued another report in 1971 (Wargo, 1971) that not only selected ten additional successful programs (begun after January, 1968) but included a follow-up study of the original thirty-one exemplary programs. In a summary report AIR (Wargo, 1972) explained that the forty-one exemplary programs identified by the three studies from 124 sites visited represented only 2.3 percent of the more than 3,000 documents initially reviewed. In the 1971 publication AIR lists the four primary reasons for program rejection as "(1) inadequate sample selection, (2) failure to employ reliable and valid instruments, and (3) failure to demonstrate statistically, any (4) educationally significant cognitive benefit" (p. iii).

> This study confirmed the conclusion of the earlier two studies in this series; namely, that very few compensatory education programs for disadvantaged children have clearly demonstrated success. . . It should be pointed out that most of the programs rejected during this study were not rejected because they were demonstrated failures, but rather because their evaluation methodology was so inadequate that a conclusion about success or failure could not be drawn. Clearly, improvement must be made in program evaluation before the effectiveness of compensatory programs can be fairly assessed. (pp. iii-iv)

The problem involving inadequate data and program failure continued to plague even the thirty-one exemplary programs identified in the first two AIR reports. According to the 1971 publication, of the twenty-seven still in operation only nine provided new "hard" data indicating that they had

remained successful.*

At this point it is appropriate to consider AIR's listing of features more characteristic of successful programs than unsuccessful programs.

"Pre-School Programs

- careful planning, including statement of objectives.
- teacher training in the method of the program.
- small groups and high degree of individualization.
- instruction and materials closely relevant to the objectives.

Elementary School Programs

- academic objectives clearly stated.
- active parental involvement, particularly as motivators.
- individual attention for pupils' learning problems.
- high intensity of treatment.

Secondary School Programs

- academic objectives clearly stated.
- individualization of instruction.
- directly relevant instruction"

(Wargo, 1972, p. 185)

The characteristics identified by AIR as "most common" to all forty-one successful programs at all levels were the following:

"A. academic objectives clearly stated and/or careful planning.
B. teacher training in methods of the program.
C. small group or individualized instruction.
D. directly relevant instruction.
E. high treatment intensity.
F. active parental involvement."

(Wargo, 1972, p. 185-186)

The AIR exemplary program characteristics give substantial support to the trend reported by Bissell and the statistically significant evidence collected by SRI suggesting that well-planned, structured programs

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*Of these 27, one did not have any new data, 5 would not release their data, 7 presented inadequate data, and 5 had adequate data which indicated the program was no longer successful.

such as Head Start and Follow Through produced greater achievement gains. Further support for the importance of well-defined objectives and planning as well as AIR's finding regarding parental involvement came from the Center for Educational Policy Research (CEPR) at Harvard (which was created, you will recall, in 1968 largely to reanalyze the data of the Coleman Report, culminating in the publication of Jenck's book, Inequality, in 1972). The CEPR study (McLaughlin, *et al.*, 1971), prepared for USOE, reviewed some 750 Title I program evaluations at the elementary school level (grades one to three) focusing on two treatment processes (structure and parental involvement) that earlier research had suggested were effective in increasing the achievement of disadvantaged pupils. The report simply presented one paper on structure and another on parental involvement. The parental involvement paper included no data on achievement growth, but did conclude that ". . . there is some evidence that parent training programs, which help the parents learn to be effective teachers in the home can effect achievement gains." However, "more involvement in school affairs seems not to have this result" (from the Introduction, p. 4). The paper on structure reported that most compensatory programs were not highly structured (ETS in 1966 also suggested this at Head Start Centers, see p. 136), but those that did were unanimous in producing encouraging achievement gains.

> We found that highly structured, prescriptive and teacher directed programs were extremely atypical of Title I programs and thus constitute a small sub-sample of projects.* However, every such program we located

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*Of 672 programs sent to the Center by SEAs throughout the country as promising projects, only about 10 percent were described as structured. The Center appealed to the SEAs to specifically identify additional structured programs and forty more were added to the sample. (p. 17)

> reported a minimum of a month gain on standard tests of verbal ability for every month of school. Results of the more typical general enrichment programs, on the other hand, were highly variable. While a few such programs met the minimum success standard of 1:1, most did not, even in this universe of SEA nominated 'successful' programs. (From the Introduction, p. 2) [underline added]

Eighty-five percent of the evaluations reviewed by CEPR had data that was so inadequate that these programs had to be eliminated from consideration; consequently, the Center would only review thirty-four structured programs. Nevertheless, it is encouraging that each of these programs reported achievement gains of 1:1 or greater.

The Center warns the reader, however, not to use their limited data to reach any conclusions that Title I "works" or even that structured programs represent a very small sample. In addition:

> Evaluations are done to satisfy several different groups of people--seldom is the researcher on the top of the list. Evaluations are often political documents, and must be read with that in mind.
>
> The most serious problem presented by the evaluations, however, stem from the lack of control, lack of randomization, and the concomitant possible confounding of treatment effects. Teacher differences, pupil characteristics or other programs/experiences in the school, not the treatment itself, may account for post-test gains. For example most Title I evaluations do not make selection criteria clear. When--as is sometimes the case--children are chosen for their potential rather than degree of educational disadvantage, the likelihood of impressive gain scores increases. (p. 17)

CEPR feels that inflated pupil potential may have been the case at one of the sites they visited in Robbindale, Minnesota, a Minneapolis "inner ring" suburb receiving Title I funds for the bottom 8 percent of underachievers in the Robbindale District. Only .750 of 30,000 Robbindale students come from AFDC families and comparing underachievers in this district with low achievers in North Minneapolis may be like comparing "apples and oranges." (p. 18)

(Foat, 1974; Talmadge, 1974).

The Gordon and Brownell study published in 1972 reviewed 222 of 247 compensatory programs which had been identified as promising by a literature search, state Title I coordinators, and various other researchers. They established nine criteria to choose successful programs which included affective changes, positive community reaction, and program longevity. It did not require, however, achievement rate gains of 1:1, only requiring "positive change[s] in academic achievement by valid instruments at .05 significance." Because of its difficulty finding programs meeting its criteria as "exemplary," ten programs were identified as "exemplary of trends, progress, and problems." The study is poorly organized and since it does not give us specific data on achievement gains, it is of little value.

Another study that confuses this writer is the RMC Research Corporation reports for USEO published in 1974, that attempted to identify and package exemplary compensatory programs that were "relevant," inexpensive (less than $475 per pupil), replicable, and effective. The criteria used to measure effective achievement deserves further interpretation. RMC states that a successful project must have pupils with "achievement gains at least one-third of a standard deviation greater than expectations based on national norms or control group scores." Or in other words:

> The mean post-test standard score of project participants had to be one-third standard deviation higher with respect to the national norm than the mean pre-test score of the same children. (Tallmadge, 1974, p. 16)

Are the achievement gain expectations based on national norms for project participants .7, 1.0, or their previous rate of achievement? Does the one-third standard deviation gain with respect to national norms mean

the norms for disadvantaged children or advantaged children? Since three of the exemplary programs selected by RMC were also identified by AIR it might be assumed that the criteria for achievement gains are at least 1.0, but it would surely be a good deal clearer if RMC stated the rate of achievement increase in these terms.

In any event, RMC originally attempted to identify eight models drawn from the earlier research of AIR and other researchers, but only three of the programs labeled successful by previous reviews met the "rigorous established criteria." Consequently, RMC scanned over 2,000 projects before finding six that met their criteria for cost, replicability and achievement and in Chapter VII we will discuss further these exemplary projects.

Unlike AIR and CEPR the RMC Research Corporation did not find any easily identifiable common characteristics of the six models. The projects ranged in grade level from k - 9, used a variety of techniques and did not always involve much structure.

> It is clear from the above [description] that there is no single key to success in compensatory education. What characteristics make the selected projects work while so many others fail can only be the subject of speculation at the present time. (Foat, 1974, p. 14)

Miscellaneous Evaluations

There have been several attempts to assess the effectiveness of compensatory education by summarizing some of the relevant literature. An early review by Gordon and Jablonsky (1967) of Head Start, ESEA, and Upward Bound Programs noted the "fade out" at the pre-school level and the disappointments associated with compensatory education programs for older children. (". . . When one looks at their impact on academic

performance. . . it is obvious compensatory education as presently practiced is either insufficient or irrelevant to the needs of disadvantaged young people. . .," p. 2) In a later bibliographic review (Gordon and Kourtrelakes, 1971) with particular attention to the USOE 1969 Survey, Gordon did not find the general picture any more encouraging. ("Participants in the compensatory programs continued to show decline in average achievement in comparison to non-participants," p. 23) but did find that certain exemplary programs, particularly those using "the tightly structured programmed approach," showed some promise. The review also noted that the very lowest achievers among the disadvantaged population have shown "some slight benefits" from compensatory education "although specific input variables" correlating with achievement were not easily identifiable (p. 23). A critical review of the compensatory education research by the Rand Corporation published in the same year (Averch, *et al.*, 1971) expressed the frustrations in attempting to isolate specific factors related to greater learning.

> Research has not identified a variant of the existing system that is consistently related to student educational outcomes.
>
> We must emphasize that we are not suggesting that nothing makes a difference, or that nothing works, rather we are saying that research has found nothing that consistently and unambiguously makes a difference in student outcomes. The literature contains numerous examples of educational practices that do seem to have significantly affected student outcomes. The problem is that other studies, similar in approach and method, find the same educational practices to be ineffective; and we have no clear idea why this discrepancy exists. In short, research has not discovered any educational practice (or set of practices) that offers a high probability of success over time and place. (pp. x, xi) [underline Averch]

General reviews by the USOE (Menges, *et al.*, 1972 and AIR (Wargo, *et al.*, 1972) illustrate that optimism and pessimism can depend on what

criteria is uded to label compensatory education "successful." After reviewing sixteen large-scale evaluations by federal, state, and local authorities plus several state and project evaluations, Menges implies that most Title I participants are still falling further behind. Nevertheless, some improvement is better than none:

> Some would hold that schools can do little or nothing to overcome a poor child's personal history and environment, while others would hold that schools can overcome almost all obstacles to learning for all children. Our assumption is that if schools can produce improvements in learning for disadvantaged children of even relatively modest order, this constitutes success when weighted against the formidable challenge to the schools which these other conditions present. . ." (p. 5)

Wargo, however, found some gains for participating Title I children but found "little evidence. . . [of] any positive impact" from Title I projects because ". . . participants gained less. . . than non-participants and consequently fell further behind their non-participating peers and national norms (Wargo, p. 9) [underline Wargo].

Finally, a lengthy review of early childhood programs by the Huron Institute (White, *et al.*, 1973) and a fine summary of secondary and higher education projects by Tinto and Sherman (1974) summarized two of trends evident in so many enrichment programs: fade out and poor reporting. In the following paragraph White is referring only to I.Q. in early childhood programs, but it is conceivable that a similar "wash out" of initial achievement gains occurs at higher levels as well.

> The effects of most pre-school projects on I.Q. do not persist beyond the second or third grade. Rate gain in the pre-school groups slows by the end of the first grade, while controls show an increase in scores at school entry. The gap between experimental and control children decreases. I.Q. scores gradually decline to a level higher than the initial I.Q. but not significantly different from that of comparable children without pre-school

> experience. This "wash out" suggests the pre-school projects do not exert a permanent impact on intellectual level. (p. 186)

At the secondary level Tinto and Sherman note regretfully that most programs have failed to augment pupils' rate of achievement but save their greatest criticism for the evaluations themselves.

> The studies. . . suffer from weaknesses in their designs and measures. They have infrequently utilized pre-post test scores and, if they have, the absence of control or comparison groups makes it difficult to determine whether gains resulted from the program's treatments, maturation, intervening variables, or falsification of data. Title I evaluations are particularly susceptible to design deficiencies. (p. 37)

As we have seen, Tinto and Sherman's observations regarding Title I effectiveness and the poor quality of the research at lower levels is shared by a number of other observers of the field of compensatory education.

Summary

This chapter has reviewed the major national evaluations of compensatory education which have been conducted in this country since 1965. We will conclude this chapter by summarizing the most significant impressions of the national evaluations by the following list:

1. Evaluations at the national level cited in this chapter are unanimous in suggesting that the vast majority of compensatory education programs are not reducing the cumulative deficit in achievement that normally exists between advantaged and disadvantaged children.

2. There is evidence that school inputs such as funding, resources, and variation in curriculum have little effect on pupil achievement. What little influence school inputs have seems to relate more to the achievement of children from low income families than to the academic

growth of pupils from more affluent backgrounds.

3. The composition of the student body seems to have a small but consistent relationship to the achievement of disadvantaged children. In the case of most minority children there is evidence that achievement increases when the percentage of white children in a school is above fifty.

4. There is evidence that teacher behavior has a greater effect on pupil achievement than any other school input factor and that teacher characteristics have more invluence on the achievement of disadvantaged children than on advantaged children.

5. Apparently feelings of destiny control are strongly related to pupil achievement, but it seems the school has little to do with engendering these feelings of internal control.

6. Home background apparently has a greater effect on pupil achievement than school environment.

7. There is evidence that many pre-school programs have raised the academic aptitude of disadvantaged children but that these gains tend to fade shortly after the program terminates.

8. Apparently the majority of compensatory education projects are rather unstructured general enrichment programs.

9. The most successful compensatory education programs appear to be those which are most structured.

10. The evaluation component of ESEA has assured the states and localities considerable autonomy. Consequently, without strong federal guidelines for collecting and reporting achievement data, the reports from the LEAs and SEAs are often difficult to interpret.

CHAPTER VI

STATE AND LOCAL EVALUATIONS

A number of observers have noted that the Title I evaluations conducted by the SEAs and LEAs have generally found compensatory education to be more effective than have the various national evaluations. In 1972 the American Institute for Research (AIR) mentioned the phenomenon in a summary of a national evaluation the Institute had written on Title I.

> There is little evidence at the national level that the program has had any positive impact on eligible and participating children. Data from state and local levels do, however, provide evidence that some Title I projects have had a significant positive impact on participating children. (Wargo, 1972, p. 9)

In 1973 the National Advisory Council on the Education of Disadvantaged Children wrote:

> Compensatory education programs are locally designed and it is impossible for national evaluations to have impact on local programs. Compensatory education programs are state approved with federal regulations. When the local evaluation is compared with a national evaluation, more successful programs are evident. (p. 19)

In a more recent article by Samuel Halperin, formerly Director of the Office of Legislation of USOE and now Director of the Institute of Educational Leadership in Washington, stated that achievement gains of a month's learning for months of instruction ". . . are now being made by most districts in most states" (p. 8). Implicit in these statements is the notion that the states and localities, being smaller political entities,

are reporting data on a more homogeneous student population. Moveover, at the lower levels there is less diversity in the curriculum and instructional techniques. At the state and local levels the evaluator can have greater control of the input variables because there are fewer of them. Therefore, his report may be a more accurate assessment of the effects of special schooling on disadvantaged children. At the national level the evaluator is burdened by a myriad of educational methods employed on an extremely heterogeneous population, and the chances of a "canceling effect" occurring in a national survey is greater than in a smaller study (see Chapter IV, pp. 106, 107).

While a "canceling effect" may indeed occur less frequently in a smaller-scale study, it is probable that most of the alleged discrepancies between the pessimistic national evaluations and the optimistic state and local evaluations can be attributed largely to the difference in the quality of the evauations. In my reading of the various national evaluations and a random sample of the state and local evaluations it has become quite obvious that the national studies usually involve far more sophisticated research than the smaller surveys. Cross-sectional surveys such as the Coleman Report and the Ohio-Westinghouse evaluation of Head Start were based on random samples of the data and were subjected to detailed analysis by persons with considerable expertise. At the state and local level, however, conclusions suggesting substantial pupil achievement gains have been drawn usually from data which is questionable for any scientific interpretation. Commonly missing from these evaulations are the names of the achievement measures, pre- and post-test scores, representative samples and control groups.

State Evaluations

Considering the initial political opposition to Title I, the complexities of the American federal system, and the inevitable administrative problems which accompany the implementation of an act so far-reaching as ESEA, it is understandable that state evaluations of the first year or two were often little more than descriptive propoganda. For example, in 1966 Massachusetts (Massachusetts State Department of Education, 1966) and Hawaii (Ige, 1966) report numerous optimistic subjective statements from program personnel throughout their respective states, and Maryland simply suggested that Title I ". . . provided experience which should result in improved levels of achievement and much improved general attitudes toward education." Similarly, California's 1966 report (Law and Madden, 1966) could only state that "objective tests" had revealed that most Title I pupils had acheived a month's growth for month of instruction. Later reports, however, generally do not improve markedly, and it is difficult to escape the feeling that local personnel in their eager pursuit of federal money have often deliberately omitted negative data and have thereby distorted the impact of Title I on pupil achievement.

Typical of such apparent misrepresentation of research data are the 1970 evaluations of Missouri (Missouri State Department of Education, 1970) and Virginia (Virginia State Department of Education, 1970). The Missouri report analyzed the results of various standardized reading tests given to some 24,000 Title I pupils throughout the state and concluded that the average gain was roughly .8 of a year. This figure is of little value,

for we are not told how many of the roughly 120,000 pupils enrolled in Title I particpated in reading programs. But .8 can hardly be called an achievement rate gain of any real educational significance since low income children typically progress at about .7. Missouri feels, however, that these gains represent a substantial improvement in pupil achievement.

> The impact of Title I upon the total educational achievement of eligible educationally deprived children in the state of Missouri has been great. . . The normal expected gain for the total population is one year gain in academic achievement per year of instruction. Title I students have gained about .8 of a year on the average. This number becomes really significant when we consider that the gain without Title I assistance might have been from .2 to .5 of a year of achievement. This consideration indicates real impetus toward the continuation and intensification of Title I. (p. 11)

In the Virginia evaluation one is encouraged by a significant gain in reading of some 8,000 children until it is learned from piecing together statistics from various charts that this figure represents only a small percentage of the roughly 89,000 pupils in Title I reading programs throughout the state. Just how many pupils actually took standardized reading tests is impossible to determine, for the report only stated that 86.5% of the local educational agencies used the S.A.T. Another table showing a mean reading gain of 1.29 months for 3,894 children omits the grade of the pupils and does not inform the reader that the children constitute only a tiny fraction of Title I students. Nevertheless, near the beginning of the report Virginia summarized this sloppy evaluation in the most optimistic and misleading terms:

> The educationally deprived child enrolled in Title I instruction has improved his educational position relative to others in his grade. His rate of learning has been

accelerated. This conclusion is reached as a result of extensive use of standardized tests and analysis of all data submitted to the state by local educational agencies." (p. 7)

While the evaluations cited above are typical of the twenty-five state evaluations which composed the random sample, it would be unfair to leave the reader with the impression that all the state evaluations were poorly constructed. Four of the twenty-five were rather well written and appeared to be an intellectually honest, empirical attempt to describe and/or assess the effectiveness of Title I programs. Since the poor quality of most of the state evaluations in the sample make it difficult to draw any conclusions from them regarding the influence of Title I on pupil achievement, it may be appropriate to summarize briefly these four studies. The Iowa evaluation of 1967 (Foley, 1967) was done by the University of Iowa and impresses one as a sophisticated professional effort to describe the various Title I programs and isolate environmental variables which may contribute to pupil underachievement. There was a good deal of demographic data comparing Title I and non-Title I pupils throughout the state, but unfortunately the report contained no information on pupil achievement gains. The Hawaii evaluation of 1967 (Tapscott, 1967) provided the pre-test and post-test scores for all the projects in the state submitting standardized test results (65 out of 110). Although approximately one-third of the projects with test date did not for some reason give the grade level of their pupils, the Hawaii report was one of the best descriptions of changes in pupil achievement of any evaluation in the sample. The report states that ". . . the majority of the projects did produce achievement gains in reading that

were greater than would be normally expected," and my reading of the tables confirmed that generalization. Most of the projects reported gains of greater than .7 (the expected gain) with several (a minority) indicating a growth rate of 1.0 or above. An even better evaluation was conducted in Hawaii* in 1970 by the state university (University of Hawaii, 1970) that reported achievement test data on 2,759 participants out of a total of roughly 79,000 pupils in Title I projects. Of the 2.759 participants 42.2 percent were making gains of 1.0 or more, 30.5 percent were achieving at a rate less than 1.0, and 22.2 percent made no gains at all or did more poorly on the post-tests than on the pre-tests. Finally, the Rhode Island Evaluation of 1971 by the State Department of Education (Rhode Island State Department of Education, 1971) appears to be an honest attempt to measure the impact of Title I on pupil achievement. Data on reading achievement was available for only approximately one-third of the Title I population (5,375 out of 15,071), but all of the districts reported a mean gain of 1.0 or better with some turning in growth rates over 2.0 on the Gates-MacGinitite Reading Test.

Although the Hawaii and Rhode Island reports** are a good deal better than the remaining twenty-one state evaluations of the sample, it is obvious that the three surveys are weakened considerably by the omission of test scores for the majority of Title I participants and the absence of control groups. Surely it would be a repudiation of empirical inquiry to

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*Hawaii was drawn three times in the 25 state evaluation sample.

**The 1967 Iowa evaluation is not included in this discussion because it did not report data on pupil achievement.

reach any conclusions (as some have done) or even make any generalizations about the effect of Title I on pupil achievement based on evaluations such as these. Nevertheless, despite the limitations, when one reads the reports of researchers who appear to have made an objective effort in data collection and analysis to piece together a picture of Title I, he cannot simply dismiss their findings as meaningless. In reviewing the handful of professional state studies and even the many more that seem to be primarily political documents, one gets an impression that a significant minority of Title I participants in many states are making at least 1:1 monthly gains. Just who these children are and whether Title I was the intervening variable is not clear at this time.

A recent attempt to make some sense (and, unfortunately, make some policy inferences) from the bewildering state evaluations was made by the Stanford Research Institute (SRI) under contract with USOE. In its report SRI noted that "a major problem with many of the SEA Title I reports, especially prior to 1971-72, is that the reported [achievement] means are often based on very small, nonrandom samples." In order to check their accuracy, SRI ". . . established a quality sample composed of only those states in which 50 percent or more of the participating Title I students were reported on" (p. 16). In comparing the "quality sample" with the "national sample" (which included all SEA surveys) it was found that achievement gains of the former sample were not only as great but actually somewhat greater than the national samples at most grade levels, particularly since 1971-72. SRI comments:

> Although the evidence is far from overwhelming, it indicates that the inclusion of states with only a small sample of the reading participants results in an underestimate of effects. This in turn suggests that if we had data on all participating Title I students, the upward trend might even be stronger. (p. 18)

Unfortunately, SRI concludes the preceding paragraph by suggesting strongly that Title I is working in the short run (". . . in a majority of cases, schools reached a major goal set for them: to develop Title I projects that achieve month-for-month gains") without warning the reader of many other serious flaws with many SEA evaluations besides unrepresentative sampling. But SRI evidence that increasing the percentage of reported Title I achievement scores may even increase the overall achievement measn is an extremely interesting and unexpected finding.

It was mentioned earlier that after 1970 most of the state evaluations have not been released for publication by USOE. According to Thomas Thomas, SRI's Director of the Educational Policy Research Center and senior author of the SRI review cited above, his team had to travel to Washington to gain access to the more recent state reports. Why they have not been published is unclear to this writer, but Thomas did state that the more recent state evaluations were generally of better quality than the earlier studies.* However, in his state survey he does not give any explanation as to why the later reports are superior, except that since 1971-72 more states are reporting a greater percentage of achievement test results.

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*From a telephone conversation in October, 1975.

Local Evaluations

In 1971 the Center for Educational Policy Research at Harvard (McLaughlin, 1971) made the following comment on state and local evaluations:

> . . . it is difficult to learn from Title I evaluations. Local and state evaluations are typically useless as a basis for scientific conclusions or policy inferences. In addition, our field visits have indicated that local evaluations are often misleading and in some instances patently false. Local programs generally have neither the initiative, interest or expertise to carry out useful, scientific evaluations. (p. 7)

If the reader recalls the frustrations of AIR in identifying exemplary programs with scientific evaluations, it is probable that the CEPR statement that the local studies are typically "difficult to learn from" is an accurate observation. It is interesting, however, that from reading my random sample of forty-four local reports published in ERIC one can get the impression that the local evaluations typically may not be as poor as the state evaluations. Of the nine studies which made up the 20 percent sample, three were relatively well written, two might be described as fair, and only four can be labeled as poor or as very similar in quality to the great majority of the LEA evaluations drawn in the state sample.

In the local sample each of the three "good" evaluations found that Title I was ineffective while all four "poor" LEA reports suggested that the mean achievement rate gains of project participants changed significantly. A rather well-written evaluation by Virginia Polytechnic Institute (Weber and Montgomery, 1969) of a Title I reading program for the Montgomery County Schools in Virginia reported not only the pre-test, post-test Metropolitan Achievement Tests in reading and vocabulary for

grades 1 - 9, but included a control group and a good commentary on the study's limitations (elements apparently rarely found in the SEA or LEA surveys). The study found no significant difference between the Title I group and experimental group on the MATs and concluded that the disadvantaged children participating in the compensatory reading program continued to fall further behind* the national norms. Another impressive evaluation of several Title I reading programs was conducted by the Milwaukee Public Schools (Milwaukee Public Schools, 1970). Perhaps the most important part of this study was an evaluation of the Reading Center, one of AIR's exemplary programs described in its first report in 1968. Over the three year period of 1966-69, the Reading Center children performed no better on standardized tests than a control group of "similar non-project pupils." The evaluation of ESEA programs in 1970-71 for the Newark School District in New Jersey was done by the Communication Technology Corporation (Communication Technology Corporation, 1971). The report appeared to be intellectually honest and provided a rather sophisticated analysis of achievement test scores. The evaluation found that the mean achievement gains for Title I pupils to be well below the national average and suggested that the effectiveness of the program be judged by citywide rather than nationwide norms.

At this point there is little need to cite specifically the remaining local evaluations of the sample. Typical of the four "poor" local evaluations and scores of SEA surveys is the 1967 report by City Board of

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*Mean gain of .77 for grades 1 - 9 on word knowledge; .69 for reading.

Education of Camden, New Jersey, which illustrates rather impressive achievement gains in reading for a large percentage of some 1,100 pupils (out of 2,164) enrolled in Title I corrective reading projects at both the elementary and secondary school levels. Only the achievement gains of grades 2 - 6 are included,* and there is no demographic data on these participants other than a note that they are pupils "behind" with the "potential" to catch up. There are no pre-test scores, no data on pupil achievement before entering Title I and no control groups.

Although this writer questions the apparent assumption of some other observers that both the state and local evaluations are of equally low quality, one is safe in generalizing that collectively evaluations at the state and local levels are less sophisticated studies than the national surveys. A good deal of the discrepancy between the pessimistic national reports and the more "promising" state and local surveys probably results from the greater objectivity of the national evaluations.

Persons of the CEPR at Harvard noted the lack of "expertise, interest, and initiative" of local evauators, and for some LEAs they might have added the word "defiance." This "get Washington off my back" attitude may be illustrated by the Title I annual report of Billings, Montana, in 1970 (Billings Public Schools, 1970). The document included little more than copies of several standardized forms reporting test results which were filled out by hand in an apparent haphazard manner. A glance at the forms revealed that usually on the Metropolitan Achievement Test if there were pre-tests there were no post-tests, and if there

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*Regarding secondary school achievement, the report simply states that the mean achievement growth is .9.

were post-tests there were no pre-tests! Yet one of the "major problem areas" Billings identified as second in importance was excessive paper work. But the number one problem area for many of the educators of Billings, Montana, was identified as "cooperation with the Office of Economic Opportunity."

> The actions of this group (C.A.P.), sponsored by the O.E.O., would lead one to question the compatability of motives between the O.E.O. and our democratic way of life. (p. 13)

"If giving you measured changes in achievement will get you off our backs, we'll give them to you," Billings seemed to be saying. Accordingly, some children in the charts jumped a whopping 60 percentiles on the Stanford Diagnostic in only a few months while roughly just as many other were reported to make dramatic declines. Indeed, one unfortunate soul fell in a single year from the 62nd to the 8th percentile on the Stanford Diagnostic. At least one LEA in Billings, Montana, was not interested in inflating achievement gains to establish a closer financial relationship with Washington, D.C.

CHAPTER VII

PROGRAM EVALUATIONS

The data from large-scale evaluations of compensatory education at the national level have generally indicated that the schools have been unable to effectively compensate for the influences of home environment. Because some of the findings of the national surveys may have been distorted by a "canceling effect," it is important to review smaller studies of compensatory education. Conclusions by state and local evaluators on the effectiveness of ESEA programs have generally been more encouraging, but collectively the quality of these evaluations is so poor that it is extremely difficult to learn much from them. A clearer picture of the effectiveness of compensatory education can be attained, however, by examining specific programs which have had sophisticated evaluations conducted. Some of these studies are quality LEA Title I Annual Reports while many others are experimental longitudinal program investigations. In this chapter we will look first at some of the exemplary programs identified mainly by AIR and secondly at the pre-ESEA Higher Horizons Program in New York City. Thirdly, we will review early childhood programs by focusing on longitudinal studies of several pre-school programs and a few Project Follow Through models.

Elementary and Secondary Exemplary Programs

You will remember that in Chapter V (pp. 142-145) the American Institute for Research (AIR) was commissioned by the USOE to conduct an extensive search for Title I programs that were producing achievement gains of greater than 1:1 on standardized tests. In two reports (Hawkridge, 1968; 1969) AIR identified thirty-one such programs that had "hard" data as evidence, and these programs constituted USOE's It Works Series. An additional ten "successful" programs were added to the group by a third AIR publication (Wargo, 1971) two years later which brought the total exemplary programs reported by AIR to forty-one. In the 1971 report AIR also followed up on the thirty-one programs collected in the first two studies to see if they were still successful. Because there seems to be a tendency for many compensatory education programs to initially report substantial achievement gains followed by a leveling off to either marginal or even negative effectiveness, our discussion of the AIR research will focus mainly on only those elementary and secondary school programs of the 1968 and 1969 reports that were judged as remaining successful in the third report. At the elementary and secondary level the first two reports listed twenty-one successful programs in operation between 1963-69. However, following the reluctance of several programs to release additional hard data and after an AIR analysis of the hard data that was provided, only six of these programs could be interpreted as remaining successful in the 1971 report. Using a success criteria of greater than month for month achievement gains, the following programs appear to have continued their effectiveness.

Intensive Reading Instructional Teams (IRIT), Hartford, Connecticut.

This is an elementary reading and language program for inner city children which enrolls each year roughly 500 participants from cooperating schools. IRIT has removed children in grades 3 - 6 from their regular classrooms to one of four centers where they receive roughly one hour of instruction daily in each of the following three areas: decoding and word attack skills, vocabulary and comprehension development, and individualized reading. Using an eclectric approach to reading, IRIT concentrates on (1) improving pupils' sound-symbol knowledge to facilitate unlocking or decoding an unknown word; (2) training participants to read for understanding; and (3) encouraging children to read on their own by making reading an enjoyable experience. Children attent IRIT for ten week sessions during the morning and return to their regular classrooms in the afternoon. In operation since 1964, the program is well organized with a number of behavioral objectives, extensive team planning, and a systematic process for collecting standardized test data (from It Works Series, pp. 14-15).

From 1965-1968 IRIT reported impressive achievement gains (well above month-for-month), but did not report grade equivalent gains to AIR in 1969 and 1970. From personal communication with Robert J. Nearine, an administrator of the program, I was able to obtain evaluation data for the year 1973-74 which revealed greater than 1:1 gains for the vast majority of program participants.

The criteria for selection of students for IRIT may play a major role in the program's reported success. Although children are not usually

admitted to the program unless they are ". . . below grade level in reading achievement, and are not achieving up to expectancy," it appears that IRIT pupils are more highly motivated academically than many other low-achieving disadvantaged children. In the 1973-74 evaluation report by the Hartford Public Schools it is stated that "children must be able to respond cooperatively in this type of situation." The report also emphasizes that ". . . preference should be given to students who have a good attendance record."

There is no information in the AIR reports or from the evaluation report cited above on IRIT pupil achievement after they have completed the ten week sessions.

After School Study Centers, (ASSC), New York, New York. These late afternoon laboratories emphasizing reading and math skills were called only "marginally successful" by AIR because the achievement gains were only month-for-month. In operation since 1964, disadvantaged children in grades 2 - 6, one year or more behind in reading or arithmetic, were eligible to attend the Center for two hours each school day on a voluntary basis. In 1967 each of the more than 100 centers was staffed by two administrators, several teachers and a part-time secretary. Between October, 1964, and May, 1967, roughly 13,000 children attended the centers for special instruction in reading and arithmetic (from It Works Series, pp. 15-16).

Summer Junior High Schools, (SJHS), New York, New York. Beginning in 1967 several of New York City's Summer Junior High School operated highly structured reading and mathematics instructional programs for low achieving, poverty-stricken children. In six of the SJHSs achievement

gains on the Metropolitan Achievement Test after a five-week session were .3 years in reading and .5 years in math. According to Bernard A. Fox, the former coordinator, the ". . . program has become defunct since decentralization"* and a planned longitudinal study was never conducted. AIR did not report any achievement data on SJHS pupils following their summer schooling.

College Bound Program, (CBP), New York, New York. Since 1967 this program has made an intensive effort to attract promising disadvantaged children to the prospect of college by offering beginning high school students smaller classes (15 to 18), double English sessions, additional counseling, and "cultural enrichment" field trips. CBP operated during the regular school year and over a six-week summer period. Only the summer session was labeled "successful" by AIR. The program seems to have been effective in its goals of enrolling and keeping many low-income students in college. According to Eleanor Edelstein, Acting Director of CAP, roughly 70 percent of the program's first graduating class in 1971 graduated from college in June of 1975.**

Project R-3, San Jose, California. Begun in 1967 Project R-3 enrolled disadvantaged students, largely Mexican-Americans, in the eighth and ninth grade in a well-planned interdisciplinary basic adademic and technological skills program. Eligible students had to be at least one year but not more than two years behind the national norms in either math

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*Personal communication.

**Personal communication.

or reading. AIR reported that the project was successful in producing a mean achievement gain of greater than 1:1 for its fifth grade participants for two successive years (from It Works Series, p. 30).

Programed Tutorial Reading Project, (PTRP), Indianapolis, Indiana. This program has employed a highly structured tutorial programed approach to the teaching of reading to first graders in daily fifteen minute sessions. The tutors were generally high school graduates with no special training, who were carefully supervised by professionals. The technique was developed over several years at the University of Indiana before it was implemented in 1965 in several Indianapolis schools. PTRP produced impressive achievement gains for most program participants, and similar programs are now in existence throughout the country (from It Works Series, pp. 19-20).

This writer obtained a copy of an unpublished four-year follow-up study of PTRP by one of its founders, Douglas G. Ellson of Indiana University. In 1971 Ellson gave the Stanford Diagnostic Reading Test to a majority of the children who constituted the first experimental and control groups in 1967.

> The data show that although one year of programed tutoring in reading significantly improved reading achievement and reduced the rates of retention and assignment to special education classes for a period after the termination of tutoring, the differences were not permanent: four years later the differences between children who were tutored and those who were not had disappeared. (Ellson, 1971, pp. 26-28)

Apparently the fade out noted frequently following pre-school enrichment programs is also evident following special treatment at the first grade level.

Before discussing other exemplary programs chosen by other researchers, it is appripriate to pass judgement on and to try to bring some order to the AIR findings. First of all, despite the difficulty finding programs with hard data, it is astounding that AIR could identify only six programs at the elementary and secondary level out of the thousands initially reviewed that reported for a sustained period achievement gains of 1:1 or greater.* Surely if a large percentage of compensatory education programs were closing the cumulative achievement deficit that exists between the typical advantaged and disadvantaged child, many more successful projects would have been identified. Secondly, given the variety of methods employed by the six programs which spanned grades one to ten there does not seem to be any easily identifiable technique that is most effective at any particular age level. Thirdly, it is apparent that all six programs were well planned and with specific measurable objectives. A fourth point is that at least three of the programs are apparently geared for children who are not really typical of the majority of disadvantaged students. After School Study Centers and Summer Junior High Schools probably attracted the more highly motivated pupil who is willing to spend two hours each afternoon or part of his summer vacation in intensive reading and mathematics programs. New York's College Bound Program seems to be reserved mainly for the

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*AIR used a success criteria of greater than 1:1. After School Study Centers were labeled marginally successful because they produced only 1:1 gains. Intensive Reading Instructional Teams did not report greater than 1:1 gains in AIR's follow-up study, but were included here because this writer obtained a more recent evaluation that reported impressive achievement gains.

small percentage of pvoerty-stricken youth that by grade ten has potential for college work. In addition, Hartford's Intensive Reading Instructional Teams seem to exclude a large percentage of that area's inner city youth by its insistence that participants have demonstrated an ability "to work successfully within an intensive program," be "cooperative," and have good attendance records. Only Project R-3 and the Programed Tutorial Reading Project may work with children drawn pretty much at random from the disadvantaged school age population.

Finally, it is evident that only the College Bound Program (which has produced a large number of college graduates) and Programed Tutorial Reading have reported any longitudinal data on pupils who have either remained in the same program for more than a year or have left the program after a year. Whether the initial impressive achievement rate gains of these programs continue after a single year's treatment or tend to fade as reported in the Indianapolis Project is unknown at this point.

It appears that the only exemplary program selected by AIR that collected and reported longitudinal achievement data on the progress of pupils during their participation in the enrichment experience was the More Effective Schools (MES) project in New York City. MES was identified as a successful program by AIR in its 1968 report but was judged no longer effective in the 1970 follow-up study. Shortly after MES began in September, 1964, this elementary school program operating in seventeen schools reported impressive achievement gains (well above 1:1) on the Metropolitan Achievement Test (MAT) in word knowledge and reading. An independent evaluation by the Psychological Corporation (North, *et al.*, 1969)

reported, however, that these gains were not sustained.

MES is described in the It Works Series summary as an elementary level program designed to prevent ". . . academic failure in the early years by a combination of techniques--prekindergarten, small classes, special subject teachers, heterogeneous classes, and intensive teacher training in the strategies of team teaching and nongraded instruction" (p. 14). Typical of a general enrichment "whole child" program, "MES aimed at improved performance in reading and mathematics, as well as producing pupil interest, high staff morale, and a generally enthusiastic atmosphere." It was stated that "curriculum innovations were left to the initiative of the individual teacher, ample audo-visual equipment and extra supplies were provided, and neighborhood volunteers were recruited to assist in the implementation of the program" (p. 14). According to the Psychological Corporation evaluation the reading achievement scores on the MAT of children who had recently entered the MES program did not differ significantly at the beginning of grade two from the reading MAT scores of children in the control schools. However, by the end of the third grade mean achievement levels in most MES schools surpassed the national norm in word knowledge and reading. At that point the average MES third grader was well ahead of most of his counterparts in the control schools. In the 1968-69 school year the Psychological Corporation analyzed the MAT reading scores of only those MES and control group children who had taken the tests in the second and third grade, nearly four years after the original testing in the fall of 1964. At the end of the fifth grade ". . . differences between the means of the groups

of paired MES and control schools in word knowledge and reading were not large enough to be statistically significant." The report explained that "the means of both groups fell below the national norm for this grade level (5.7) by three to eight months" (pp. 109-110). The evaluation of MES by the Psychological Corporation provides evidence which suggests that fade out may occur in some compensatory programs while the participants are still enrolled.

Unlike AIR, the RMC Research Corporation (Foat, 1974) has not published a follow-up report on the six exemplary programs it identified in 1974, and apparently none of the RMC model programs reported any longitudinal data. Nevertheless, we will list RMC's "successful,"* programs and offer the evaluator's comments on any common characteristics these programs may have. Two of the RMC programs (Project R-3 in San Jose, California, and Intensive Reading Instructional Team in Hartford, Conn.) were specifically identified by AIR and a third (Programed Tutorial Reading in David County, Utah) was modeled after another AIR model, the Programed Tutorial Reading Program in Indianapolis. Therefore, a brief description is only required for the three remaining RMC programs: Project Catch Up of New Port Beach, California, High Intensity Tutoring Center of Highland Park, Michigan; and Project Conquest of East St. Louis, Illinois.

These three programs have used a variety of methods on children from the early elementary to junior high school years. Project Catch Up has been in existence since 1966 and offers extensive instruction in

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*In Chapter V it was mentioned that the achievement criteria used by the RMC Research Corporation was ambiguously worded, (See p. 148).

reading and math to some 600-700 children in grades k - 9 who are predominately from Chicano and Oriental American backgrounds. Extensive use is made of paraprofessional tutors for short reading sessions similar to the method developed at the University of Indiana and used in the Indianapolis schools. The High Intensity Tutoring Center uses student tutors to improve the reading and math achievement of disadvantaged children in grades 6, 7 and 8. Begun in 1970, it is a highly structured tutorial program. Project Conquest, of East St. Louis, Illinois, is an elementary school reading program which started in 1965. The program employs a highly structured, individualized approach in 45 minute sessions held 4-1/2 days a week. According to Foat, Project Conquest ". . . children are selected on the basis of their failure to read up to their potential or at grade level, and they are released when they reach one of these established goals" (p. 49).

Before commenting on the RMC exemplary programs, let us glance at the eight elementary and secondary school programs that AIR labeled successful in 1971. You will remember that in their third report AIR not only followed up on programs selected in the 1968 and 1969 publication, but selected ten additional successful programs which began after January, 1968. Two of these programs were at the pre-school level and will not be included in the following list.

Diagnostic Reading Clinic, Cleveland, Ohio. This program provides diagnostic and remediation services for disadvantaged students severely retarded in reading in grades 4 - 7. An interdisciplinary staff of reading specialists, psychologists, nurses and speech and hearing

specialists work with pupils until they are one year behind their reading expectancy level based on the "Bond-Tinker formula" (I.Q. x number of years in school + 1.0).*

The Fernald School Remediation of Learning Disorders Program, Los Angeles, California. This compensatory program at UCLA provides services for both advantaged and disadvantaged children from grades 3 - 9 emphasizing individualized instruction, a low student-teacher ratio and a "free atmosphere." At UCLA disadvantaged and advantaged participants gained above 1:1 in reading achievement but attempts to use the Fernald method in the regular schools has not produced 1:1 gains.

Higher Horizons, Hartford, Conn. Housed in the Hartford Public School and serving 100 disadvantaged children achieving well below expectations, the program emphasized language remediation, individualized instruction, team planning, intensive counseling, and cultural enrichment. The program has had little effect on measured intelligence but has produced achievement gains in reading well above 1:1.

Lafayette Bilingual Center, Chicago, Illinois. This bilingual program appears to offer nothing unusual, i.e. instruction in Spanish before transition to English, affective objectives, etc. Program participants are from grades 6 - 8.

Project MARS (Make All Reading Serviceable), Leominster, Mass. A compensatory reading program involving four public and three parochial schools, pupil participants come mainly from the city's sizable French, Italian, and Puerto Rican ethnic groups. Reading specialists are free to

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*I.0 is added because all children start school at grade one.

choose from a number of reading methods in their daily forty-five minute contact sessions with pupils.

PS 115 Alpha One Reading Program, New York, New York. This program uses a "gamelike" approach with pupets, filmstrips, and picture stories to accelerate the growth rate of disadvantaged first graders.

Remedial Reading Laboratories, El Paso, Texas. Serving Mexican American pupils in grades 4 - 12 the program works mainly with pupils whose reading level is considerably below expectations based on I.Q. scores (from Hawkridge, 1971, pp. 51-207).

Without longitudinal data it is impossible to determine if RMC programs are effective for a sustained period. Similarly there has been no follow-up by AIR on its most recently selected successful programs to see if they remained effective. Nevertheless, we may assume that these programs have produced achievement gains for at least one year's duration. And since they represent some of the most promising programs of the thousands reviewed by the two research organizations, they surely deserve our further attention.

In discussing these programs it is important to try to come to grips with two principal questions: (1) how many of these projects can be duplicated throughout the country so that the cumulative deficit between typical disadvantaged and advantaged pupils can begin to be arrested, and (2) what, if anything, do these programs have in common? Regarding duplication, the most promising programs appear to be the tutorial projects in Michigan and New Port Beach (which use a method similar to the one developed at the University of Indiana) and the

"gamelike" approach to reading employed by the Alpha One Reading Program. These three programs appear to serve children more typical of most disadvantaged learners than Hartford's Higher Horizons Program, and Cleveland's Diagnostic Reading Clinic which concentrates on providing remediation service for disadvantaged children who are severely retarded academically. Apparently, the Fernald School is only successful under laboratory conditions and Remedial Reading Laboratories work mainly with children who are not achieving up to their potential as determined by I.Q. scores. Project MARS, with large numbers of French and Italian children, probably serves a population that has fewer cultural barriers to overcome than most disadvantaged blacks, Chicanos and Appalachian whites. Why the Lafayette Bilingual Program is successful while so many others have failed is a mystery, for the program appears to be nothing more than a typical enrichment program. Whether programs reporting impressive gains for what may be atypical disadvantaged children can have the same success with other children from poor socio-economic backgrounds remains to be seen.

As far as identifying any common characteristics of these programs is concerned, it is obvious that the six RMC and eight AIR projects represent a number of methods that are effective at different ages for diverse pupil populations. The RMC Research Corporation noted that ". . . there is no single key to success in compensatory education. What characteristics make the selected projects work while so many others fail can only be the subject of speculation at the present time" (p. 24). However, AIR noted again in its 1971 report that well planned, more structured

programs with specific academic objectives were more characteristic of successful than unsuccessful programs. And with the possible exception of Project Catch Up, all of the RMC programs appear to be highly structured academic models.

Comparing Structured and General Enrichment Models

The other major national search for exemplary programs by Harvard's Center for Educational Policy Research (CEPR) did not include descriptions of the many programs that reported month-for-month achievement gains. CEPR did report, however, that structured programs appeared to be more successful than general enrichment programs and offered descriptions which will be reproduced here that typified the two approaches. According to CEPR the following ". . . guidelines for reading teachers in Grand Island, Nebraska, Title I schools illustrates well the program methodologies articulated by structured programs" (p. 13).

"Guidelines for Reading Teachers in Target Schools, Grand Island, Nebraska

I. Treatment must be based on understanding of the child's instructional needs.
   A. Diagnose reading problem.
   B. Plan an individual reading program.
   C. Start instruction at success level.
   D. Hit directly at the errors.

II. Program should be highly individualized.
   A. Instruction should be specific, not general.
   B. Instruction should be energetic.
   C. Work should be with a small group or an individual.

III. Remedial instruction should be organized instruction.
   A. Know the expected sequence of word recognition skills and levels of comprehension.
   B. Keep a good cumulative account of child's progress.

IV. The reading process must be made meaningful to the learners.
   A. Enable child to develop his needed skills and understand their usefulness.
   B. Make child aware of and help him to understand his difficulty.

V. Consideration of child's personal worth is necessary.
   A. Disadvantaged children usually feel insecure and defeated in school.
   B. Laziness is a symptom, not a disease.
   C. The child must be respected so that he can learn to respect himself.

VI. The reading program must be encouraging to the student.
   A. Children are discouraged by their own failure.
   B. Teachers must be optimistic and positive.
   C. Student must be made aware that he is progressing day by day, week by week.
   D. This reading experience must be pleasant and free from pressures.

VII. Materials and exercises must be suitable to the child's reading ability and instructional needs.
   A. Reading materials must be abundant.
      1. Suitable level of difficulty.
      2. Suitable in type to meet needs.
      3. Material new to the pupil and on his individual interest level."

(p. 14, by Donna S. Homes, Director of Reading, Title I, ESEA)

"In contrast to a structured approach," generalized enrichment programs have the following characteristics:

"1. Multiple program objectives reflecting attention to the development of the 'whole child'--e.g. cognitive, affective, and physical objectives.

2. Program content is often based on a general inventory of student grade level needs, rather than individual diagnosis and prescription.

3. The academic program content is often merely an extension of typical classroom methodologies."

The following guidelines are from a Title I program CEPR feels is ". . . representative of general enrichment programing philosophy and design."

The main aim of the _____ Title I program is to make a difference in the educational opportunities for 726 educationally deprived children in seven of the county's elementary schools.

The program said it could focus

A. on reading, writing, spelling, listening and talking so that the children can progress and benefit from the academic offering of the school,

B. on their health so that they may have the physical and emotional stamina to learn to live and live to learn,

C. on their acceptance of themselves (and their fellowmen) as persons of worth and respect."

The program outlined the following means by which the above objectives are to be met:

"A. Instructional activities centered in the language arts.
1. Five additional teachers to relieve classroom load.
2. Twenty-four teacher aides.
3. Audio-visual technician.
4. Instructional materials to provide a multi-sensory approach.

B. Cultural enrichment to provide
1. Experience with art media.
2. Reproduction of art masterpieces.
3. Recordings of fine music.

C. Clothing on emergency basis only.

D. Free lunches--approximately 500 children.

E. Health services--dental and medical emergency.

F. Social work aides--communication between school and parent." (p. 16)

It is significant that CEPR found that all of the so-called "structured" programs in their sample reported achievement gains while most general enrichment programs either appeared to be ineffective or submitted such poor evaluations that their data had to be disregarded. Of course, it must be remembered that CEPR visited only four sites and closer scrutiny

may have raised serious questions about the validity of the evaluations submitted by the structured programs (see Chapter V, pp. 144-147). Nevertheless, it must be emphasized that highly structured academic programs apparently represent only a small minority of compensatory education programs, but it is the more structured programs that seem to have the greatest effect on pupil achievement. Therefore, it is conceivable that if many more programs abandoned the "general enrichment/whole child" approach described in the CEPR study, compensatory education might be judged far more effective.

A Closer Look at a Model Program

Before moving to longitudinal studies of pre-school enrichment programs, it is appropriate to conclude this section of exemplary elementary and secondary programs by glancing at some longitudinal data from one of the earliest, largest, and most influential compensatory education program that ever existed in this country. The Higher Horizons Program of New York City (see Chapter V, pp. 107-108) was in operation from 1959-1965 and served as a model for many of the compensatory programs envisioned by several persons instrumental in the construction of ESEA. Following the release of an evaluation of Higher Horizons by New York City's Board of Education in 1965 that found the project ineffective (which occurred only a few weeks after ESEA was passed by Congress) the program was terminated. This writer has obtained a copy of that evaluation (Wrightstone, *et al.*, 1964) from one its authors, Richard Turner. According to Turner, his copy of the evaluation is probably the only copy in existence.*

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*From a telephone conversation, February, 1976.

You will remember that the U.S. Commission on Civil Rights Report of February, 1967, informed us that the evaluation by the City Board of Education had found that after three years of the program there was little difference in the achievement of children in the Higher Horizons and control schools. However, the Commission report does not give us any clues as to why the program was initially labeled successful and later judged ineffective.

A review of the evaluation's longitudinal report of reading achievement may give us some idea of what happened. The study included the Metropolitan Reading Test scores of 855 third grade pupils who took the tests for the first time on November 4, 1959, less than a month after Higher Horizons was initiated. The mean grade score for the 855 children at that sitting was 2.73 which was roughly a month and a half behind the national grade score of 2.87. Approximately six months later on April 28, 1960, Higher Horizons children again took the Metropolitan Reading Test and the test scores of the same 855 pupils were obtained. In this six month period these third grade children had made a substantial gain in reading achievement. Their April grade score was 3.46 which was more than a month above the expected grade score of 3.34 based on the national norm. At this point most Higher Horizons participants were exceeding a month's learning for month of instruction and closing the cumulative deficit. Roughly eleven school months later on May 16, 1961, the Metropolitan Reading Test was given once again, and the test scores of the same 855 students, now in the fourth grade, were analyzed. This time the mean grade score was 4.21 just below the national grade score of 4.26. In that eleventh month interval most Higher Horizon children (while

still in the program) had begun to fall behind. Table 3 taken from the Higher Horizons evaluation, illustrates the test scores on the three dates.

Table 3

Differences Between Actual and Expected Mean Grade Score for Reading Comprehension of Pupils on the Three Testing Dates

	Nov., 1959	April, 1960	May 1961
Actual grade score	2.73	3.46	4.21
Expected grade score	2.87	3.34	4.26
Difference	-0.14	+0.12	-0.05

(From Wrightstone, *et al.*, 1964, p. 50)

Table 3 reveals that the initial gains made during the first six months of Higher Horizons were not sustained. During the second year of the program fade out occurred and the cumulative deficit was evident once again. The evaluation by the Board of Education describes this phenomenon.

> The actual gains in reading comprehension made in the first six months of this study was 7.3 months, in the next eleven school months the gain was 7.5, a total of 14.8 for sixteen school months. These actual gains were compared with the expected gain for this population. The expected gains for the first six months was 4.7 school months, for the next eleven school months 9.2, a total gain of 13.9 months for sixteen school months. During the first six months, the actual gain exceeded the expected gain by 2.6 months, in the subsequent eleventh (sic) month period, the expected gain was greater than the actual gain by 1.7 months. (p. 52)

The evaluation did not report test score data at three different intervals for any other subject skill, so we do not know, for example, if a fading out also occurred in math. We know only that in math between

grades 4 and 6 Higher Horizons children nearly kept pace with the expected gains and enjoyed a three month advantage over the controls at the sixth grade testing. In reading, however, the evaluation concluded their chapter comparing the reading of Higher Horizon and control pupils by writing the following sentence:

> From the data presented it may be concluded that the Higher Horizons pupils included in this study did not show greater gains in reading comprehension from the third to the sixth grade than did pupils in comparable non-Higher Horizons schools. (p. 57)

It is likely that many of the optimistic reports of Higher Horizons effectiveness were based on the early reading gains that occurred during the first 6 - 7 months of the program before the fade out.* Apparently the similar achievement pattern evident in the More Effective Schools program was also responsible for its selection by AIR as an exemplary program, only to be judged later "no longer effective." As we shall see in the next section the fade out following initial gains is very common in pre-school programs that have collected longitudinal data. Just how frequently this leveling off of achievement may occur at the elementary and secondary school levels is unknown at this time because very few programs follow pupil achievement for more than one year.

Pre-School Programs

At the pre-school level most programs have concentrated on raising the measured intelligence of disadvantaged children. Given the strong

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*Perhaps the most influential early report released by the Board of Education was the First Annual Progress Report, 1969-60 that showed a mean MAT reading gain of .8 for 800 Higher Horizons pupils in the six month period between November, 1959, and April, 1960. (Schreiber, 1960)

relationship between I.Q. and achievement test scores, many pre-school educators have postulated that enrichment programs that permit children to enter elementary school with I.Q.s of about 100 or higher will enhance children's chances of experiencing academic success. Urie Bronfenbrenner (1975) in his review of early intervention programs addresses the importance of the measures of cognitive ability.

> There are few scientists or citizens who would dismiss as inconsequential the demonstration that a particular form of early intervention can enable children to solve problems of the type presented on tests of intelligence at a level of competence comparable to that of the average child of the same age. Whereas performance below the norm on tests of this kind cannot be taken as firm evidence that the child lacks mental capacity, attainment of the norm year after year does mean that the child both possesses intellectual ability and can use it. (p. 3) [underline by this author]

It is unfortunate that "the attainment of the norm year after year" Bronfenbrenner speaks of is extremely rare in follow-up studies of pre-school intervention projects. The several longitudinal studies of experimental pre-school programs usually report the same phenomenon publicized by the Ohio-Westinghouse evaluations of Head Start in 1968: the initial gains in I.Q. that occur during a year or two of pre-school enrichment which fade out by the time the children reach the second or third grade. By fade out I mean that the early increase in children's I.Q. begins to level off and then decline to a point that is not significantly different from control group children who have never attended a pre-school program.

The following eight longitudinal pre-school programs are among those that have received the greatest publicity and have employed the most sophisticated research designs.

Bereiter-Engelmann. This behavioristic teacher-directed academic model originating at the University of Illinois has received considerable publicity for its success in dramatically raising the I.Q.s of participating disadvantaged children from the Champaign-Urbana community by nearly 20 points (Bereiter and Engelmann, 1966; Engelmann, 1970). The model has been used throughout the country, but apparently his highly structured program with its strongly emphasized verbal component has been unable to sustain the early gains with fade out occurring shortly after entry into the first grade, (Bereiter, 1972; Weikart, 1972; Stanley, 1972).

The Ypsilanti Perry Pre-School Project. This experimental program began in 1962 under the direction of David Weikart. It is a structured cognitive model relying heavily on Piagetain theory on the acquisition of intelligence. The program emphasized parental involvement with a project staff member visiting the home of each child once a week. The program successfully raised the I.Q.s of participants well above the controls but by the third grade these gains were nearly washed out, (Weikart, 1970; 1972).

Early Training Project, Nashville, Tenn. Begun by Susan Gray and Rupert Klaus of George Peabody College in 1961, this pre-school program employed a rather structured, cognitive "whole child" approach for three summers before school entry. During the school year staff members visited the home regularly to work with mothers in the areas of reinforcement and verbal communication. But like Bereiter-Englemann and Weikart, the Gray-Klaus research found that promising early gains of experimental groups over controls had almost faded by the end of the fourth grade. (Gray and Klaus, 1970).

The Howard University Pre-School. This experimental program began at Howard in 1963 to determine if disadvantaged children enrolled in a traditional nursery similar to middle class children could obtain normal I.Q.s. This goal was accomplished during the pre-school experience but by the end of the second grade the I.Q. differences between the experimental and control groups were no longer statistically significant, (Herzog, Newcomb, and Cisin, 1972).

The Karnes Ameliorative Pre-School Program, Urbana, Illinois. Now housed in the same building as the defunct Bereiter-Engelmann pre-school at the University of Illinois, the Merle Karnes pre-school has since 1960 had behavioral objectives and structure within a cognitively oriented whole child academic model with a heavy emphasis on parental involvement. Karnes has reported that the early I.Q. difference between experimental and control group children faded almost entirely by the end of the third grade, (Karnes, 1974).

Developmental Research Laboratory, Temple University. E. Kuno Beller, the mastermind and director of this program, is one of the only well-known early childhood experimenters to measure longitudinally the effectiveness of a traditional pre-school. Emphasizing the further development of the child's curiosity and creativity, Beller has reported highly significant I.Q. differences remaining between experimental and control groups at the end of the third grade. No data is provided on academic achievement with the exception of school grades which reveal only that experimental girls but not boys have a slight advantage over controls in grade four, (Ryan, 1974).

Learning to Learn Program, Jacksonville, Fla. A promising structured cognitive pre-school project, the Learning to Learn nursery school has raised the I.Q.s of participants on the average of twenty points (87.7-107.4) while control group children in a traditional pre-school were unaffected (88.1-86.8). Highly significant differences have been reported between the two groups at the end of the first grade (107.0-91.1) (Sprigle, 1974) and at the end of the second grade with another wave of children (103.6-86.3) (Van de Riet and Resnick, 1973). Achievement test data also reveals significant differences between the experimental and control groups.

Initial Enrichment Program, New York, New York. This program was initiated by Martin Deutsch in 1958 and evolved into a comprehensive five year program from pre-kindergarten through the third grade with a heavy emphasis on language development, self-discipline, and individualized instruction. At the end of the third grade one wave of experimental groups maintained a slight but significant advantage over control groups in I.Q. (Deutsch, *et al.*, 1974).

If one judges effectiveness by a program's ability to maintain the initial gains in I.Q., it is evident that the most promising early intervention projects are the last three from the list of nine just described: The Developmental Research Laboratory, the Learning to Learn Program, and the Initial Enrichment Program. An analysis of the research data of several experimental pre-school programs by Bronfenbrenner (1975), however, raises doubts about the effectiveness of the Beller and Deutsch models. Bronfenbrenner argues that "motivational effects" may have inflated

the Beller results.

> [There]. . . is the possibility of motivational bias in favor of the nursery families who were self-selected through their positive response to a written invitation sent out by the schools and against the children in the . . . comparison group, whose parents did not enter them in school until the first grade. (p. 15)

Regarding the Deutsch project, a five year intervention program that begins at age three and continues through the third grade, Bronfenbrenner remarks that in the case of at least one wave of children ". . . the means for the experimental group showed the characteristic hairpin turn while the children were still in the program." He states that "at the final testing, after the children had been exposed to five years of the intervention, the I.Q. difference between the experimental and randomized control group was a non-significant four points." Bronfenbrenner does not cite, however, a more recent article by Deutsch in 1974 which reported that a later wave of children were significantly ahead of the controls at the end of grade three. In this wave some fade out did occur, however, while the children were still in the program. The most encouraging program of them all appears to be the Learning to Learn Pre-School in Florida. Differences in I.Q. favoring the experimental group at the end of the second grade are reported to be seventeen points. Because the maintenance of such large I.Q. gains by the end of grade two is extremely rare in early intervention programs, it is important for researchers to take a closer look at the Florida data.

Having reviewed the more significant pre-school programs we can address the question of which curriculum is more effective. DiLorenzo (1969), in a review of pre-school education in New York State, has found

that the greatest initial gains in measured intelligence occur more often in highly structured academic programs. Similarly, Karnes (1969) reported that greater gains are obtained in a behavioral model and her own well-structured and highly verbal cognitive program than in a more tranditional nursery and a Montessori school that emphasized sensory-motor development.

Perhaps the most interesting commentary on variation in program effectiveness was made by David Weikart (1972) following his longitudinal study of three pre-school models: his own cognitively-oriented Piagetian program, a behavioristic programed approach, and a child-centered traditional model.

> Much to our surprise, each of the three programs did unusually well on all criteria, greatly exceeding the improvement expected from general habituation and rapport. . . More importantly, the initial findings indicated no significant differences among the three curricula on almost all measures employed in program assessment. . . (average Stanford Binet I.Q. gains in the three programs by 3 year olds of 27.5, 28.0 and 30.2 [respectively] by 3 year olds in the first year).
>
> As far as various pre-school curricula are concerned, children profit intellectually and socio-emotionally from any curriculum that is based on a wide range of experiences. In almost the sense that Chomsky (1966) uses in talking about the development of linguistic competence, a child has the potential to develop cognitive skills and good educational habits if he is presented with a situation which requires their expression.
>
> In short, no specific curriculum has the corner on effective stimuli, and children are powerful enough consumers to avail themselves of what the market offers. (pp. 39-40) [underline by this author]

Weikart also noted that although the curriculum of the three programs was rather different, all three models, at least initially, had a staff that was well organized and planned their program carefully.

> The curriculum is for the teacher, not the child . . . the successful curriculum is one that permits the structuring of the teacher to guide her in the task of adapting the theory she is applying to the actual behavior of the children. An unsuccessful curriculum is one that permits the teacher to give her energies to areas unrelated to her interaction with the child within the theoretical framework or fails to give her class guidelines for using her time in planning, in interaction with the children . . . (p. 40).

Although the Weikart observation seems to be based only on his involvement with three programs, his argument may throw some light on the processes by which children acquire knowledge. His position, similar not only to linguistic nativism but to Stephens' theory of spontaneous schooling, seems to be that children exposed to an environment with a certain minimal structure have the innate ability to abstract regularities from that environment. This process may take the form of synthesizing Chomsky's hypothesized universal tone patterns or systematizing comprehension of planned interaction between the school and the child. The teacher need not program the child by a complex array of reinforcers to activate his need to grow cognitively. All that is required is that teachers assure some structure to the child's activities. This may come in a well-planned display of visual stimuli by an "open" teacher in a classroom as well as in a Skinnerian classroom with its individually programed contingencies of reinforcement. There are no formulaes for maximizing the unfolding of a child's learning capacities, for those capacities in most cases will manifest themselves robustly if a well prepared teacher has given considerable thought to the schools interaction with the children.

Follow Through Programs

For a major project that has been in operation since 1967, there are relatively few published evaluations of Project Follow Through. What little data exists does not really measure the impact of Follow Through or Head Start children who have emerged from their pre-schooling with significantly higher I.Q.s. This is both unfortunate and puzzling. For unlike most compensatory education programs the Government has entrusted the education of Follow Through children through Planned Variation to less than two dozen sponsors throughout the country.

The most recent evaluations of the Follow Through Planned Variation models are being done by ABT Associates in Cambridge, which under contract with USOE, is conducting a four-year study of the effects of Follow Through. An analysis of the data from two of those years has already been published and the evaluations of years three and four will be released in 1976-77 and 1977-78.*

In their first two reports (Cline, 1974; Cline, 1975) ABT Associates does little more than compare the effects of different sponsors on children who have been in Follow Through for only a year or two. The 1975 study has reported that only one sponsor, (the Southwest Educational Development Laboratory) a bilingual program, has had a "strong" effect on both math and reading. Two other "most successful projects" are reported to be a behavioral program at the University of Kansas which has had strong effects on word analysis and math and "some effect" on reading,

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*From a telephone interview with Richard Anderson of ABT Associates, one of the authors of the Follow Through evaluations, March, 1976.

and a British infant school model at the Educational Development Center which has had strong effects on math, no effects on reading, and negative effects on word analysis. By "strong effects" ABT means that Follow Through children have shown statistically significant gains in comparison to children in control groups. In the remaining models three of the sponsors have produced very mixed results at their various sites and four others have had a mostly negative effect on Follow Through children.*

The ABT Associates' reports have found little in common among the three most successful projects.

> These are three very different approaches to compensatory education, and in general they are dealing with quite different samples of children. . . The best that can be stated as summary is that these are several ways, routes to effective education for low-income children, and these routes may be specific to place and types of children. (p. viii)

Chapter VII can be summarized by a listing of the major aspects which have been discussed.

1. The search for exemplary programs by AIR and RMC (which visited many sites at the elementary and secondary levels) has produced only a handful that have been successful for more than a year or two.

2. A review of program evaluations by CEPR at Harvard suggests that many structured programs are reporting month-for-month gains. Unfortunately, CEPR bases this judgement mainly on a reading of the evaluations, not on site visits.

3. Generally speaking there is evidence that the most successful programs are the more structured models with some evidence that careful

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*Mixed Results: The Far West Lab (a responsive environmental model); The University of Oregon (reinforcement oriented) and the University of Florida (parent education and "cognitive stimulation").

Negative Results: The University of Arizona, Bank Street, and the University of Pittsburg.

planning in itself, rather than a rigid curriculum, is the variable that correlates with greater pupil achievement.

4. There is strong evidence that fade out occurs following the termination of pre-school programs and some evidence that this phenomenon may occur during enrichment programs at the elementary school level.

5. There is limited data on Project Follow Through, but what research exists suggests that only two or three sponsors are having much success and their gains are mostly in math.

CHAPTER VIII

CONCLUSION

In order to come to grips with the question of whether the schools can reduce significantly the inequality in cognitive achievement which exists among the social classes, it is important that we reflect upon the evaluations of Title I and associated programs in conjunction with the premises which constituted the rationale for compensatory education. If the major premises are valid, the disappointing results of most compensatory education programs may be explained by the failure of educators to construct and implement on a national basis the kinds of school experiences which can compensate for whatever negative effects an environment of socio-economic poverty may have on scholastic achievement. On the other hand, if one or more of the major premises are of questionable validity, it is conceivable, given our present knowledge, that equalizing substantially educational achievement may be either virtually impossible because of genetic determinants or highly improbable without a reconstruction of the socio-economic order.

The Three Premises

The first major premise underlying the rationale for compensatory education which was offered in this paper was that the environment has considerable influence on measured intelligence and school achievement. Given the large amount of contradictory findings of the innumerable nature-nurture studies and the political pressure which so often

influences the research in this area, it is impossible at this point to offer anything more than a working hypothesis. It is hypothesized that the environment does have a substantial influence on measured cognition but only if we are comparing the variation in scholastic aptitute which exists between either children grossly deprived or most children from low socio-economic backgrounds and most children from middle to high socio-economic environments. Collectively, the research on animals, the handful of cases of identical twins raised in markedly different environments, the institutional studies of such researchers as Spitz and Skeels, and the longitudinal data gathered by the Wheelers and Lees suggest strongly that under certain conditions the environment's interaction with an organism has a great deal of influence on I.Q. If animals or humans are grossly deprived of sensory-motor stimulation similar to the isolation of Denenberg's rats or the deprivation of Skeel's orphans, these conditions may prevent the natural unfolding of the organism's genetic potential. In addition, while sustained residence in poverty-stricken rural areas or inner city slums may not effect cognition in an absolute sense these environments appear to have a rather substantial influence on children's performance on standardized intelligence and achievement tests.

On the other hand, it is apparent that beyond a certain environmental level the variation in measured intelligence of a given population is effected very little by the environment. Normally, the I.Q.s of identical twins reared apart are more similar than fraternal twins or siblings reared together, and the measured intelligence of foster children are

closer to their natural parents whom they have never seen than to their unrelated legal parents. Arthur Jensen has argued that there is a single environmental threshold which lies well beneath the modern slum dwellers (who simply lack the amenities of middle class life) level of deprivation and applies only to those persons severely deprived such as the orphans in one of Dennis' Iranian institutions who were kept in the supine position for most of their first three years of life. Jensen has ignored, however, not only the reports which have found that continued residence in a culture of poverty correlates with decreasing I.Q., but has given little attention to the twin cases collected by Newman, Freeman, and Holzinger. It has been demonstrated that in the six cases of greater social and economic environmental differences separating the identical pairs, the mean I.Q. spread was thirteen points and that the average difference might even be greater if the Chicago Group had used a more sophisticated method to estimate environmental advantage. In none of these six cases did the environment of the disadvantaged twin come at all close to the gross sensory-motor deprivation that Jensen feels is necessary if the environment is to have a profound influence on I.Q. In fact, it was suggested that the environmental differences between the pairs in the six Chicago cases roughly approximated the distinction between the environments of today's middle class children and children from low socio-economic backgrounds.

If the environment is responsible for much of the differences in scholastic aptitude between most advantaged and disadvantaged children, it would appear that our second premise (a low socio-economic environment

inhibits the development of intelligence and school achievement) is also correct. The validity of premise two may depend upon whether one views a culture of poverty as inhibiting intelligence in an absolute sense or simply depriving its members of the cognitive skills that are deemed important by the greater American population. Since most proponents of compensatory education seem to have accepted the deficit model (essentially an ethnocentric attitude picturing the economically impoverished as also culturally impoverished), we can question the correctness of this assumption. While the genetic capacities of children reared in near isolation in attics or in orphanages may be seriously impaired, it is unlikely that most children of the economic underclass are intellectually retarded.

In Chapter III we reviewed some of the major areas within a culture of poverty which were assumed to inhibit cognition: motivation, language, and stimulus deprivation. Regarding motivation it was noted that many educators in the early 1960s assumed that most children from poor socioeconomic backgrounds were victimized by low aspirations and weak ego development. In addition, harsh punitive child-rearing practices were thought to have stifled the development of the intrinsic will, thereby placing many disadvantaged children in a position of dependence or submissiveness in the schools. It was pointed out, however, that findings from much of the socio-psychological research seriously challenged the notions that persons from economically impoverished backgrounds had fewer dreams of upward mobility or lower self images than their more affluent counterparts. The aspirations and egos of many low status people were often reported to be as high if not higher than middle class

people, and in the case of blacks more recent data collected by Coleman (1965) and Soares and Soares (1971) found little evidence of relatively low self-esteem. A person's ego may be more dependent upon his assessed social status within his immediate frame of reference than on his position relative to the larger and more socially distant population. Aspirations, however, at least in this society, seem to be influenced by the material ideals of fame and fortune that are subscribed to by civic leaders and commercial advertising. Given the politican's desire to solicit the vote of the poverty stricken, the businessman's concern with the advertisement of his product, and the media's interest in extensively communicating these messages, it would indeed be puzzling if the poor had significantly lower aspirations than the remainder of the American population. In the case of authoritarian child rearing, there is little evidence that such practices have any relationship to achievement and no evidence that they cause a greater submission to the dictates of the school authorities.

The major affective distinction between the typical disadvantaged and advantaged child seems to be in the area of destiny control. People from low socio-economic backgrounds apparently feel that they have less invluence over the course of future events than more socio-economically advantaged people. This attitude may explain why some researchers have reported that low expectation of success (as opposed to low aspiration for success) and feelings of alienation from society's major institutions are more characteristic of people from economically impoverished backgrounds. It is also important to remember that Coleman found that greater feelings of future control had a strong positive correlation with achievement.

In the area of motivation we have seen that the differences between

the social classes may not be as great as many proponents of compensatory education once assumed, i.e. that low socio-economic status does not appear to weaken general self image or lower aspirations but may contribute to feelings of powerlessness. But at this point we must also ask what relationship culturally determined differences in the affective domain have on inhibiting cognition in an absolute sense. It is hypothesized by this writer that in addition to lesser feelings of destiny control, lower academic self image (as opposed to general self image) is more characteristic of disadvantaged than advantaged children* and that low academic esteem causes many children to acquire a somewhat negative attitude toward the school's cognitive curriculum. This negative academic self image combined with feelings of alienation from the larger society and reliance on fate may cause many disadvantaged children to actively pursue activities largely independent of academics. But these factors should not effect children's mental capacities. The boy who rarely attends his high school biology class may show up daily for the neighborhood basketball game; the high school dropout who will not study an hour for a G.E.D. exam may spend many hours analyzing and repairing a malfunction in the engine of his automobile. It is not that most disadvantaged children are not motivated. It is simply that they are often motivated by different things than more advantaged children. Because the home of the middle class child normally provides ample reinforcement for the cognitive curriculum of the school and gives him a feeling of success in some degree of control over his academic progress, the process of schooling is seen as a natural extension of his community environment.

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*EPPS (1969) studied the self concept of ability of black students in both Northern and Southern schools but did not find a lower self concept of ability among the black pupils in his sample.

This marriage of the home and the school is not characteristic of the experiences of lower socio-economic children and therefore their cognitive activity is directed to a greater extent to other areas apart from school academics.

The contention that there is a language of poverty that inhibits cognition has been neutralized in recent years by the writings of persons from the field of linguistics. Linguists have argued that educators and psychologists have made two serious errors in their attempts to design reading programs for a great many low income underachievers: (1) they have assumed that non-standard English, particularly black English, is really an inferior language, and (2) have all but ignored the basic structural differences of standard and non-standard English and the difficulties this causes for many disadvantaged children in learning to read.

In a review of the rationale behind compensatory programs, Day (1973) contends that the language of the disadvantaged was usually viewed as deficient in content and intellectually restrictive. For example, Day notes that Martin Deutsch viewed the dialects of the disadvantaged as language characterized by implied meaning and extra-linguistic communication such as gestures. In addition, Deutsch saw lower class speech as deficient in structure and syntactic organization. Whether the compensatory remedy was the relatively unstructured Bank Street School or the highly systematic Bereiter and Engelmann model, the child's inadequate language needed considerable treatment before substantial cognitive growth could occur. Day points out that teaching the child middle class or

standard American English (SAE) was seen as the logical cure. Most linguistis, however, take strong exception to the notion that non-standard English (NSE) is a deficient language. While a person who speaks only NSE may be at a social, economic, and academic disadvantage, the dialect itself does not restrict cognition.*

Although the logic and vocabulary of NSE and SAE are similar and each is equally precise in syntax and enriched in lexicon, some linguists contend that there are fundamental structural differences between so-called "black English vernacular" (BEV) and SAE which is likely to seriously interfere with the black child's achievement in reading. The two dialects may have very different origins which could be partly responsible for their dissimilarity in such areas as pronunciation and grammar.**

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*Goodman (1965) argues that the language of the impoverished black child ". . . when he enters school is just as systematic, just as grammatical within the norms of his dialect, just as much a part of him as any other child's is." Baratz (1970) contends that black children employ a different but "well ordered, highly structured, highly developed language system." Certainly the most exhaustive research of the speech patterns of lower income black youth in urban areas has been conducted by William Labov (1965, 1972). By analyzing tape recordings of gang members in a variety of informal circumstances, Labov rather convincingly demonstrates that "black English vernacular" is rich in symbolism, abstraction, and complexity.

> The concept of verbal deprivation has no basis in social reality. In fact, Negro children in the urban ghettoes receive a great deal of verbal stimulation, hear more well-formed sentences than middle-class children, and participate fully in a highly verbal culture. They have the same basic vocabulary, possess the same capacity for conceptual learning, and use the same logic as anyone else who learns to speak and understand English. (pp. 59-60)

**Bailey (1966) and Stewart (1970) suggested that BEV did not evolve from middle English as did SAE. "American Negro dialects," says Stewart, "probably derived from a creolized form of English, once spoken on American plantations by Negro slaves and seemingly related to creolized forms of English which are still spoken by Negroes in Jamaica and other parts of the Carribbean." Since slavery there has been enough of a merger between Negro dialects and SAE to preclude considering the former truly Creole

What are the consequences of this linguistic analysis of dialect differences for the classroom teacher? First of all, linguists argue that teachers must forget their notion that NSE is sloppy, disorganized, "lazy" speech and recognize that no language is structurally superior to any other. Kenneth Goodman (1965) points out that when a child is told flatly that his speech is "wrong" it may lead very often to a considerable lessening in self esteem.

> In a very real sense, since this is the language of his parents, his family, his community, he must reject his own culture and himself, as he is, in order to become something else. This is perhaps too much to ask of any child. (p. 858)

Therefore, in teaching the child SAE, the teacher must be extremely careful not to reprimand the child for using incorrect speech. SAE should be taught to the child as simply another dialect which, because of its widespread use, is important to know. Secondly, the teacher must have knowledge of the fundamental structural differences among SAE and NSE, so he can better facilitate the child's acquisition of a second dialect. Day (1972, 1973) has gone a step further by proposing that we not only lessen our ethnocentrism and increase our knowledge of NSE but recognize the interrelatedness between thought and speech and give the child ample opportunity to organize, speculate, and create by the use of his own language. Goodman and others have even suggested that we

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**(Continued from p. 205) dialects today. There has survived, however, in BEV some creole structural features. William Labov (1972) does not comment on the possible origins of these structural differences but does provide us with an excellent summary of many of the features of pronunciation, grammar and lexicon which distinguish BEV from SAE. For example, because of some very real differences in the use of "r", the cluster of consonants, the possessive and the "ed" suffix by speakers of BEV, many low income black children simply cannot make the necessary transition required by the schools to achieve in SAE.

teach the child to read in his own dialect first before even attempting to make any transition to standard English.

It was noted in Chapter III that the arguments advanced by Martin and Cynthia Deutsch that the poor were typically deprived of the stimuli that is necessary for normal intellectual growth were based largely on conjecture. There can be little doubt that many children from low socio-economic backgrounds lack many of the material amenities of the middle class, but it may be erroneous to suggest that the absence of wall pictures and the sparsity of toys and furniture in themselves prevent the activation on innate achievement potential. The Deutsch position on stimulus deprivation was based mainly (1) on the finding (Katz and Deutsch, 1963) that among Negro lower-class boys the "good" readers were superior to "poor" in shifting auditory and visual modalities, sustaining attention, and detecting signals and (2) the observation (C. Deutsch, 1964) that higher socio-economic status correlated with better performance on an auditory discrimination test. In the former study the audio-visual performance difference between good and poor readers at grade one had almost disappeared by grade five, yet Deutsch still argued that many disadvantaged pre-school and early elementary children needed "specific intervention" to correct perceptual and auditory problems caused by environmental inadequacies. In the latter study, the auditory test results may mean very little given the fact that lower socio-economic children normally perform more poorly on many tests that measure discrimination skills.

Despite their limited research data and the possibility that millions of children throughout the world are not impaired intellectually by crowded living conditions and a paucity of household objects (relative to the American middle class), Martin and Cynthia Deutsch implied that human cognition in some absolute sense could be effected by stimulus deprivation. This contention seems to have been widely accepted in some educational circles in the middle sixties.

The relationship of environment to cognition and the effect of low socio-economic status on intelligence may be summarized by a listing of five major assumptions which have emerged from my reading of the literature.

1. The existing variation in I.Q. among most persons reared in the mainstream of American society are largely genetic.

There have simply been too many case studies of identical twins and foster children, separated from their families very early in life, that have suggested a strong relationship between heredity and I.Q.

2. In the case of children reared in extremely deprived environments, the environment can inhibit the natural unfolding of genetic potential.

When children are kept in hospitals in the supine position and are virtually isolated from humanity and material objects, they can be accurately labeled culturally deprived. By definition humanity means individuals interacting within a cultural context. A child's intelligence will be severely impaired without the opportunity to communicate symbolically as a member of a human society. Arthur Jensen is probably correct when he states that at this level of sensory-motor deprivation a child's genetic capacities cannot be properly activated.

3. In the case of children reared in a low socio-economic environment, the environment normally does not restrict innate intellectual capacity.

The assumption that a child is retarded cognitively who speaks a distinct urban dialect or is unfamiliar with newspapers and magazines may be as erroneous as suggesting that he is retarded physically because he does not play baseball, golf, and tennis. Proficiency in intellectual skills and physical skills depends largely on culturally determined criteria. It is suggested that most people throughout the world develop those cognitive competencies that are vital for survival within their particular culture. Within a given culture heredity surely plays an important role in determining cognitive achievements. But the suggestion that one's culture or linguistic code depresses one's intelligence in an absolute sense is highly questionable given the fact that there is no absolute definition of intelligence.

4. The environment of children from low socio-economic backgrounds in American society is likely to be detrimental to performing normally on standardized tests of intelligence and achievement.

Although a culture of poverty may not inhibit cognition in an absolute sense, it does tend to place its members at a disadvantage when examined by intellectual and achievement tests constructed by persons from the more socio-economically advantaged sector of society. Relative to the dominant culture's definition of scholastic aptitude and performance, millions of American children are intellectually retarded.

5. The mean differences in I.Q. and level of achievement that exist between the socio-economically advantaged and disadvantaged in American society are largely if not exclusively caused by differences in the environment.

We have noted that the variation in I.Q. among members of the mainstream of American culture are mainly genetic, and this phenomenon is probably applicable to the variation in measured intelligence among people from the various sub-cultures as well. Given an environment with similar contingencies of reinforcement, genetic endowment appears to play the dominant role in standardized test performance. On the other hand, when children from one environment with one set of reinforcers are compared with children in another social milieu, on tests which reflect the culture of one of these groups much more than the other, the environment plays a significantly greater role in the mean group differences.

In light of the foregoing discussion it will be argued that premises one and two of the rationale for compensatory education are generally valid if we keep in mind that the definitions of intelligence and achievement are culturally determined. Tests that attempt to measure cognitive aptitudes probably tell us very little about the innate mental abilities (relative to the middle class) of most persons in this society who are raised in a culture of poverty. There is no question, however, that disadvantaged children tend to do relatively poorly on these tests despite the probability that the environment associated with low status and income is largely responsible for these children's underachievement. One can seriously challenge the scientific validity and the ethnocentrism of Oscar Lewis and the interpretations of the Basil Bernstein linguistic data. The student can also scoff at conclusions reached about self concept and stimulus deprivation, based

as they were on considerable conjecture. Nonetheless, it is likely that differences in motivation, language, sensory stimuli and a host of other factors collectively contribute powerfully to the relatively poor achievement of most children from low socio-economic backgrounds.

If by the early 1960s the research provided strong evidence that the environment did have a substantial influence on measured cognitive aptitudes and performance, it was also evident that there was very little data to support the third premise that "the schools could compensate for the retardation in children's intelligence and school achievement which is caused by a poor socio-economic environment. At the elementary and secondary school level educators had essentially nothing more than the optimistic reports from a few compensatory education programs such as Higher Horizons in New York and Project Banneker in St. Louis. At the pre-school level there was little data to support Bloom's critical periods hypothesis that early environmental input had a sustaining effect on cognition or even that early enrichment was capable of raising the I.Q. for a short period. Nevertheless, a sizeable and influential segment of the American educational community, acting much more on faith than scientific evidence, committed much of its energy and talents to the construction and implementation of compensatory education programs.

An Interpretation

Let us now reflect on the evaluations of compensatory education in conjunction with the three major premises of the rationale. After approximately fifteen years of experimentation with compensatory education, there is very little evidence that enrichment programs have been able to reduce the cumulative achievement deficit that exists among the advantaged and disadvantaged population. A handful of programs that seem to involve the more highly "motivated" pupil have some hard data suggesting that they may be successfully closing the gap, and there is evidence that highly structured programs may be able to produce 1:1 gains for at least a short period. On the whole, however, if we use cognitive achievement on standardized tests as our criteria, it appears that the vast majority of children who have participated in compensatory education have been virtually unaffected. Later in this chapter further attention will be given to those programs and methods that show some promise. But at this point I shall attempt to offer a possible explanation for the disappointments of compensatory education. It must be emphasized that this explanation is based on intuition as well as impressions gained from a reading of the literature. Since it is largely conjectural, it is at best only a working hypothesis.

The Main Culture, Sub-Culture and Cognition. It was stated that there is strong evidence that the environment plays a major role in the variations in measured intelligence that exist between most people in the mainstream American culture and most people from either a culturally deprived environment or from certain sub-cultures of poverty.

In the case of culturally deprived individuals (beings who have lived for a prolonged period virtually isolated from human society), it seems that environmental deficiencies of this magnitude usually prohibit the activation of genetic potential. It is the extremely sensory-motor deprived institution-reared children observed by Harold Skeels, Rene Spitz, and Wayne Dennis who Arthur Jensen argues are beneath the minimal level of environmental stimulation necessary for the normal unfolding of innate capacities. Jensen does not attempt to explain just where this environmental threshold may lie, but let us assume that it exists at the point of culture. In other words, until a child enters into language communication with other members of a normal speech community, he is culturally deprived, and without culture (a species specific symbolic transmission of knowledge) his intellectual genetic endowment is rigidly contained. Normally children reach this point of acculturation around the age of two. In rare instances, however, such as the Kingsley Davis reports on Ana and Isabelle, individuals have remained at a precultural level for many years. Culturally deprived beings such as these are surely cognitively retarded beings. Without exposure to the family of man these individuals would likely be considered mentally deficient by any culture's standards.

In the case of people within subcultures of poverty in the United States, these persons have obviously reached the threshold of intellectual genetic activation. As members of unique linguistic communities, they have generally acquired those intellectual skills that are deemed essential for survival within their particular cultures. For most people in the sub-cultures of poverty, low I.Q. and poor school

achievement should not be interpreted as absolute intellectual retardation. In all probability, they are simply retarded relative to the cultural mainstream by the intellectual standards of many persons within the cultural mainstream. Nevertheless, since many persons from low socio-economic backgrounds in the United States live in a sub-culture within a competitive American society, it is important that they not only master the survival skills of their immediate community but demonstrate an average level of competency in the cognitive skills stemming primarily from the larger community.

In order to maximize a person's chances of attaining normal intellectual growth as it is defined by the dominant culture, it seems that it is important that the person be raised in an environment that reinforces to a considerable degree the cognitive behavioral patterns of the dominant culture. In the separated twin studies we have seen that those children who were reared in an environment similar to their genetic equals hardly differed at all from their identical counterparts in I.Q. at adulthood. On the other hand, separated identical twins whose environments differed to a somewhat greater degree produced rather striking differences in I.Q. The reader may remember from the study by the Chicago Group that of the six pairs who differed in I.Q. by twelve points or more, the "less intelligent" twin in each of the six cases was raised in an environment which was considered socio-economically disadvantaged. The I.Q.s of these twins fell in the dull normal to dull range (92, 89, 85, 77, 77, 66). On the other hand, the "brighter" twin in each case was raised in an environment that approximated typical middle American cultural standards. In five of the six cases the higher

I.Q. twin fell into the dull normal to bright normal range (92, 96, 97, 106, 116). Therefore, from the twin data one may hypothesize that there is a critical point somewhere outside the cultural milieu of mainstream America which delineates people on the basis of their ability to be receptive to the cognitive patterns of the mainstream culture. It is suggested that most children from home backgrounds that approximate the American norm (whether they be lower middle class or recent English speaking immigrants with family solidarity) are in front of that point of receptivity and any differences in their I.Q. and other members of greater American main culture are largely genetic. Outside of this point, however, (somewhere, perhaps, between the lower middle class and the sub-culture of poverty) the environment becomes largely responsible for whatever mean differences there are in the measured intelligence of the dominant population and those persons residing along the fringes of the American main culture.

The Role of the Schools. In mainstream American culture, as in any culture, the fundamental cognitive patterns are created and perpetuated by the totality of the social milieu, with the major institutions of family and peer association playing very critical roles in this process. The schools in American society serve primarily to structure or formalize these fundamental cognitive patterns, but as marginal institutions they have far less influence on the acquisition of these patterns than the remainder of the environment. As formal associations that house children for only a few hours a day for approximately one-half of the days of a given year, their influence on overall intellectual growth is relatively slight.

In the sub-culture of poverty the basic cognitive patterns originate as well from the totality of the environment with institutions such as family and peer association playing major roles. Within these sub-cultures the schools do not serve to structure or formalize the sub-cultural cognitive patterns but to teach the academic system of the dominant culture. Since the schools are intricately interwoven with the intellectual processes of the main culture but only overlap the cognitive patterns of the sub-culture of poverty, the measured achievement rates of most socio-economically advantaged and disadvantaged children differ. And given the assumption that children are effected far more by the processes that happen outside of school than those that occur within the school, it is virtually impossible for this single institution to compensate for the powerful influences of the sub-cultural environment.

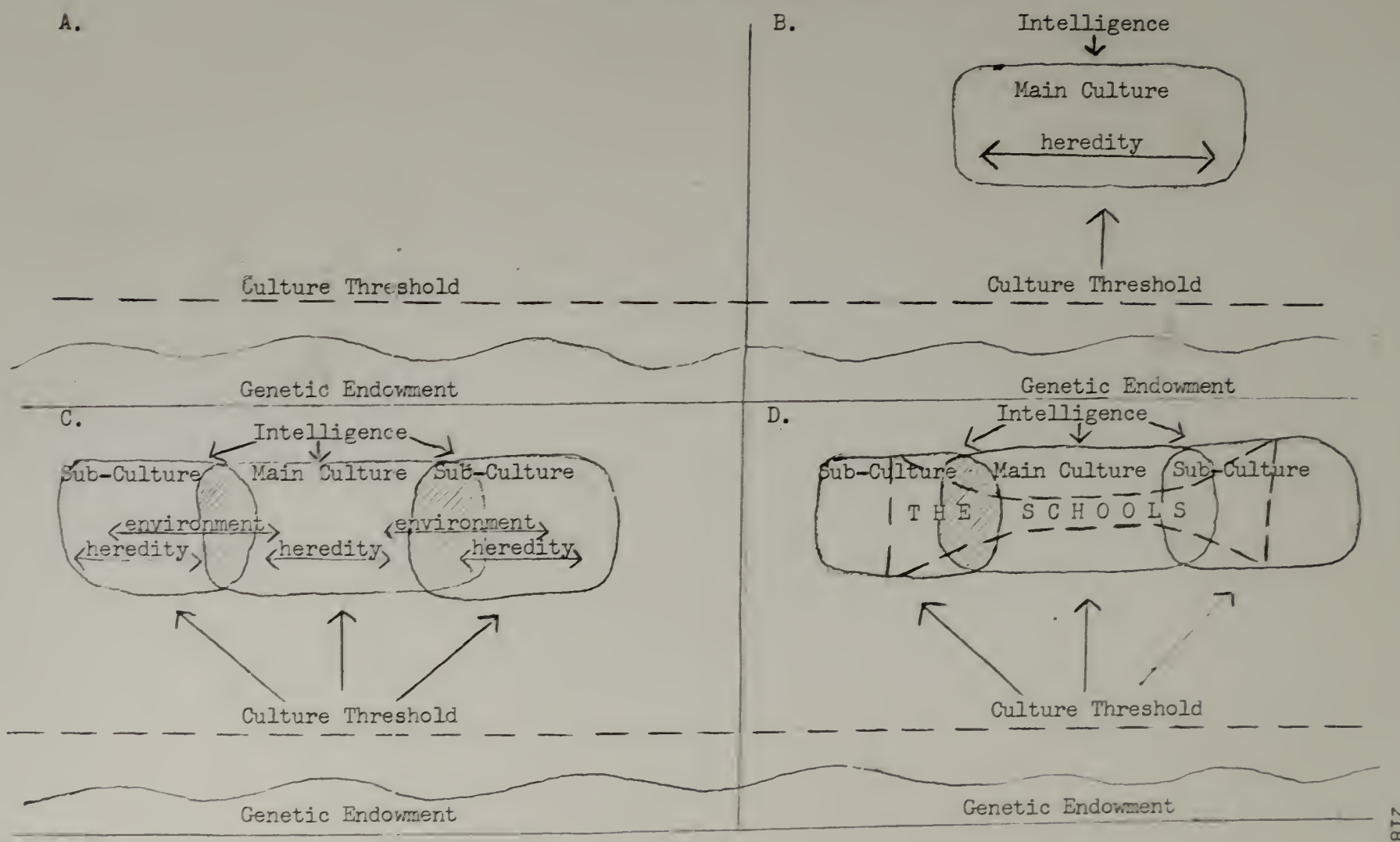
In this nation the principal strategy for equalizing achievement has been to simply extend the cognitive processes of the dominant culture to the sub-culture of poverty. While there is some evidence that such techniques as more hours of English and greater teacher-pupil interaction have had some effect on the achievement of disadvantaged pupils, it is unlikely that compensatory education can reduce a cumulative achievement deficit that is caused largely by cultural differences. Without the critical environmental reinforcers of the cognitive processes of the dominant culture, the great majority of children in the sub-culture of poverty are likely to continue to fall further and further behind their counterparts from the dominant American culture.

The interaction of the environment, culture, and schooling can be summarized by the chart illustrated in Figure 2. At the level of culture the environment acts as a threshold to activate human genetic capacities (Box A) and people create a culture such as the main American culture (Box B). The three circular figures at the top represent not only the dominant American culture but two sub-cultures of poverty (Box C) Within each of these cultures variations in the intelligence of most persons are due largely to genetic differences, because most persons have had approximately equal access to the environmental reinforcers that determine the cognitive processes. The differences between the mean cognitive aptitudes of people in the main culture and the two sub-cultures, however, are caused largely by environmental differences.

It is important to recognize that in this illustration the main culture has defined intelligence in absolute terms. Normally persons within this main culture are receptive to the cognitive patterns of their culture and collectively establish the I.Q. and school achievement norms. On the other hand, most persons within the sub-cultures are less receptive to the cognitive processes that the main culture has defined as intelligence. At some point in the shaded areas in this diagram persons may be exposed enough to the reinforcers of the dominant culture to allow them receptivity to that culture's cognitive processes. A minimal exposure may take the form of the thirteen environmental process variables identified by Wolf (Chapter III, pp. 81) or some combination of family solidarity, feelings of destiny control, and exposure in the home to main cultural artifacts such as reading materials

FIGURE 2.

THE INTERACTION OF THE CULTURAL ENVIRONMENT,
COGNITION, AND THE SCHOOLS



and standard American English. At that point their I.Q. and school achievement relative to most persons within the main culture is determined largely by genetics.

The spaced line running through the main culture and into the sub-cultures in Box D represents the schools. This institution structures or formalizes the cognitive processes of the dominant culture and attempts to extend that system to the sub-cultures. An equalization of achievement is not attained, however, because the cognitive patterns of the sub-cultures are not in harmony with the intellectual processes of the main culture.

Further clarification of the hypothesized interaction between culture and schooling may be gained by addressing a few of the conventional explanations for the alleged failure of compensatory education.

1. It is not the schools but the students who have failed.

Arthur Jensen has argued that compensatory education has failed and that the fundamental reason may be that disadvantaged children in general and black children in particular are intellectually deficient in an absolute sense. While it is surely conceivable that absolute differences in intelligence may exist among the classes, the races, and even between the sexes, it is illogical to use the alleged failure of compensatory education as one of the explanations. Normally children from the sub-cultures of poverty appear to learn more from the schools than children from the main culture. When the schools are closed for a sustained period (such as they were on the eastern shore of Maryland

because of an integration dispute and during the 1967 New York City teachers' strike) the academic achievement of middle class students continued at almost the normal rate while the achievement of poor children suffered considerable decline. It is likely, of course, that in these instances a sizeable percentage of middle class children were enrolled in private schools or were tutored at home. But this is surely not the case during the summer recess when the same phenomenon occurs. The Stanford Research Institute (Thomas, 1975) has estimated that only half of the achievement difference between the advantaged and disadvantaged school populations can be attributed to the ten months of public school. The remaining half of the cumulative deficit occurs during the summer recess. Therefore, it is suggested that disadvantaged children learn much if not most of their academic skills, as measured by the standardized tests, from the schools while middle class children acquire most of their measured academic aptitudes from the home. The reader will note that in Figure 2 the bowtie drawing of the school's role represents a greater influence on the academic skills for the two subcultures than for the main culture.

2. It is not the children but the schools that have failed.

While there is little question that the American schools could provide better services for children from low socio-economic backgrounds, it is questionable that in any state remotely approaching their present form that the schools could compensate fully for the environment of most disadvantaged children. This argument assumes that the schools have "worked" for the middle class because they are representative of the

dominant culture, and if only the schools could be made "relevant" for the poor, the achievement rate of the disadvantaged would be accelerated. Once again, persons who cling tenaciously to this position may fail to comprehend the relatively meager role the school plays in the development of measured academic achievement. It has been known for years in educational circles that variation in curriculum and methodology have very little or no effect on pupil achievement in American society as a whole (Stephens, 1968; Gage, 1963). Consequently, it should come as no surprise that the innovations associated with compensatory education have little influence on the achievement of disadvantaged children. Indeed the only variable that appears to correlate rather consistently with the achievement of disadvantaged pupils (but not advantaged pupils) is the degree of structure of the educational experience. Therefore, it can be argued that the traditional American school is more suited to the development of the cognitive skills of children from the sub-culture of poverty than the more open, progressive approach used commonly in compensatory "enrichment" programs. Indeed, a highly structured approach should be more effective with children from the sub-culture of poverty for it attempts to present some of the cognitive processes of the dominant culture in a systematic way. Compensatory programs that encourage children to discover these processes on their own are unlikely to have any positive effect and may even be detrimental.

3. Compensatory education has failed because it has been unable to sustain treatment.

There is no question that poor planning and inadequate funding have prevented the majority of pupils enrolled in compensatory education

programs from a sustained exposure to this special schooling. It has been argued, for example, that the initial gains cultivated by Head Start could be maintained throughout the public schools if the children had the same attention they receive at the pre-school level. This argument appears logical and may be valid. Nonetheless, Project Follow Through has been in operation since 1967 and there is no data, to this author's knowledge, that indicates that any Follow Through program has, in fact, been able to sustain the gains of Head Start children. The evaluations of Follow Through by SRI and ABT Associates have dealt almost exclusively with equality and specificity of effects of Planned Variation models. Surely, if Follow Through programs have been sustaining the initial gains of Head Start, it would have been well publicized by now.

Attempting to collect longitudinal data on pupil achievement in compensatory education programs is perhaps the most frustrating exercise for the researcher in this field. This writer has conversed with officials at AIR, ABT Associates, the New York City Board of Education, Merle Karnes, Urie Bronfenbrenner, Sheldon White, David Cohen, and a research assistant on Edmund Gordon's staff in an effort to obtain hard longitudinal data. Each of these persons was interested in obtaining such data, but only Richard Turner, of the New York City Board of Education and one of the authors of the 1965 Higher Horizons Evaluation by the Board of Education could offer any real assistance. He mailed me his own copy (probably the only copy still in existence) of the 1965 evaluation report on Higher Horizons, and it reports clearly that fade out in reading occurred in Higher Horizons during the course of the program.

This evaluation together with the U.S. Commission on Civil Rights Report on evaluations of More Effective Schools in New York City and Educational Improvement Program in Philadelphia gives us some evidence that fade out may be occurring at all levels while children are still in the programs and not simply following the program's termination. This is extremely meager evidence, to say the least, but the fade out phenomenon is precisely what one should expect if Figure 2 and the explanation accompanying it have any validity.

When children enter a compensatory education program two things may occur to explain the initial academic gains. (We are assuming here that there have been proper controls for statistical regression toward the mean.) At the pre-school level the cognition of a disadvantaged child in a structured academic program may accelerate relative to his middle class counterpart. This might be expected considering the probability that the middle class child is either not in school at all or is in a traditional nursery school. Consequently, on measures such as the Peabody Picture Vocabulary Test and reading readiness tests the disadvantaged child may approach or even exceed the national norms. The gains of the disadvantaged child may be maintained until the middle class child enters the first grade and then the cumulative deficit begins to reappear. This is to be expected for now the advantaged child begins his formal academic training and his achievement growth rate increases. In other words, it is not just a fading of gains of the disadvantaged child that widens the achievement gap but the acceleration of the advantaged child once he enters school. Before the latter child entered school he had powerful reinforcers from the environment that

permitted him to grow at the mean rate based on national norms. At grade one, however, he now has the school as well as the environment working for him and his cognitive growth takes on a new dimension. The lower class child with only the school working in his favor falls further behind. By grade three or four the initial gains of the Head Start child have been almost lost completely, for he is now little better off than his didadvantaged counterpart without pre-school experience. But once again the latter child has entered school for the first time in the first grade and cognitive growth may increase modestly at this point. And if one looks at the control group I.Q. scores in several of the longitudinal pre-school studies, this increase often occurs. Since it is improbable that there are any optimal moments or magic years when cognition can be influenced permanently, the disadvantaged child without pre-school experience begins to "catch up" with the Head Start child.

The second thing that may occur to explain the initial gains and possible fade out that occurs in compensatory education programs at the elementary and secondary level involves a somewhat different phenomenon. The initial gains may be produced by the Hawthorne effect or some experimenter bias effect, but it is also conceivable that in any new situation a person with limited knowledge may learn at a rapid rate for a short period. For example, in a compensatory reading program such as Higher Horizons an entering second grader (who is already behind his middle class counterpart) may for a period of a few months increase his reading growth rate relative to the national norm. The new and exciting approach to reading employed by a Higher Horizons type program may trigger this acceleration. In order to sustain these gains, however, the child must

have an opportunity to practice his reading outside of school. The middle class child is provided this opportunity by the powerful reinforcers in his home environment while the lower class child is denied this opportunity. Therefore, a fade out of thk initial gains begins to occur since the cognitive processes of the sub-culture of poverty offer little reinforcement for this academic skill.

A Commentary on the Future

What implications does this review of compensatory education have for future strategies and policies?

1. Equalization of the environment: resources. If differences in the environment are largely responsible for the mean differences in measured cognitive achievement that continue to exist between children from the dominant culture and various sub-cultures, it is probable that any strategy to significantly reduce this achievement deficit must involve a greater equalization of the environment. Since many of the cultural differences that effect achievement seem to be associated with economic class, it is probable that a substantially greater equalization of resources would contribute to a significant reduction in this achievement gap.

As the "great equalizer" the schools have long been viewed as an institution that permitted the less fortunate to grow academically and thereby grow economically. It is suggested here that just the opposite generally occurs. Normally people improve their economic position before they are able to significantly improve their academic performance. Regarding upward mobility, the schools and the immigrants, David Cohen (1970) has pieced together some standardized achievement test data collected by the U.S. Immigration Commission and members of the Teachers College faculty. According to Cohen there is some evidence that the percentage of some immigrant groups academically retarded by grade level changed hardly at all between the years 1900 and 1930. Perhaps it was only after immigrants such as the Italians, Irish, and

Russians improved their economic conditions that their academic achievement significantly increased.

It is probable that considerable improvement in economic conditions must occur before most of today's disadvantaged children significantly improve their academic achievement. It is unlikely that simply continuing the modest social reforms of the 1960s will have much effect. It appears that many proponents of these social policies assumed that such reforms as extending the franchise and curbing job discrimination would suddenly awaken the energies and will of millions of persons residing in the sub-cultures of poverty. It seems evident now that much more fundamental economic changes are necessary to assure a much greater eqalization of wealth.

2. Deemphasizing the academic meritocracy. One of the important consequences of a socialistic society is that there is little need for people to match the achievement norms of a given population before they become lucratively employed. But if this society does not permit poor people to exercise substantial political control over the means of production, it is conceivable that the gross economic inequalities that presently exist may subside if we deemphasize the educational meritocracy. Surely the rather recent emphasis on the importance of academic achievement is not firmly rooted in an American ethos that has included a fundamental respect for hard work and manual dexterity. Today there is some evidence that a significant segment of the young population attaches less value to a college education than their counterparts did a few years ago. If greater numbers of young people pursue careers in the manual

vocations, it would necessitate a lesser emphasis in the schools on an academic curriculum. Strong vocational programs would have to exist to meet pupil demand and many disadvantaged children would be given a greater opportunity to acquire marketable manual skills.

3. Equalizing the environment through boarding schools. If de-emphasizing academic merit means expanded vocational education, the greatest resistance to such a strategy is likely to come from people residing in the sub-cultures of poverty. Encouraging low achievers to enter trade schools has been viewed by many blacks, in particular, as a racist, elitist policy to perpetuate social inequality. It is argued that if minority peoples are to exercise greater power in this society, it is vital that a substantially greater percentage of minority children master the basic academic skills and gain access to higher education. The middle class child achieving at grade level who in high school chooses a vocational curriculum over an academic track is one thing. The ghetto youth who must pursue a manual trade because he is weak academically is another matter.

Another strategy to equalize the environment and provide poverty-stricken children with more career alternatives is to allow disadvantaged children the opportunity of residing in public boarding schools. Apparently, as long as the schools remain marginal institutions the environmentally determined differences in achievement that exist between the dominant culture and the sub-cultures of poverty are likely to continue. However, if the schools can directly influence the cognitive growth of children for a good deal more than a few hours each school day, it is possible that the achievement deficit could be substantially reduced or even eliminated.

It would be important, of course, that the boarding schools create an environment that permits children to become imbued in the cognitive processes of the dominant culture. Inevitably, this procedure would undermine many of the social norms and habitual practices of the sub-cultures of poverty. In order to prevent cultural genocide it would be important that representatives of the various subcultures have control over the design of the residential environment. Accordingly, these persons could include in the boarding school atmosphere both the critical cognitive environmental variables characteristic of the dominant culture and many of the environmental processes from the children's sub-cultural background. For example, the boarding schools might want to employ staff members who address the children in both standard American English and black English vernacular. The books, periodicals and educational games that may be available would not have to mirror similar artifacts in typical middle class homes, but reflect much of the cultural heritage of the minority group.

Boarding schools have played important roles in the education of numerous populations from the royal courts of the middle ages to the public schools of England and the academies of America in more recent times. Today, residential schooling exists in much of sub-Sahara Africa, Israel and the Soviet Union. Currently, in this country, private boarding schools are still available for many of the well-to-do, while the only residential institutions available for most of the poor are the armed forces and the public jails.

4. Structured programs. Another strategy which must be pursued is further experimentation with and longitudinal measurement of well-planned,

highly structured compensatory education programs. It must be remembered that the great majority of compensatory education programs in existence since the early 1960s seem to have been general enrichment programs similar to the model offered by Harvard's Center for Educational Policy Research (see Chapter VIII, pp. 181-182). The relatively few structured designs that have been in operation appear to be much more successful than the general enrichment programs at least in the short run. If further research provides additional evidence that the former approach is more effective than the "whole child" method, children from the subcultures of poverty should have the choice of enrolling in a highly structured program. This writer has reservations about the impact of highly structured programs on children's affective growth. In addition, he doubts that this type of curriculum or any other educators may construct will be able to significantly reduce the inequality in cognitive growth that exists among various socio-economic groups in American society. But if it can be demonstrated that a rigid programmed approach can improve even marginally the achievement growth rate of disadvantaged children, educators must offer them this alternative.

5. The Importance of Research as a Policy. Finally, it is important that as we move toward the 1980s researchers in the field of education and associated disciplines--from the various agencies and institutions, both public and private--coordinate our efforts under the guiding principles of science rather than the seductive influence of unexamined faith and vested interests. During the early 1960s many people in the behavioral sciences went well beyond the data in proposing that the schools could occupy a major role in efforts to curb the vicious cycle of

poverty. Often trapped by their own decencies in an idealistic age and captured by an educational mystique long apart of the American ethos, liberal scholars hypothesized that the process of schooling could compensate for environmentally determined differences in achievement. As the decade wore on, it became apparent that political and economic interests were often instrumental in distorting the evaluations of Title I and associated programs, and by the end of the decade it is this writer's opinion that shades of opportunism began to color the conclusions of the hereditarian school.

The most unfortunate consequence of the Arthur Jensen analysis, to my mind, is that it has polarized the issues, forcing an identity with either one of two extreme positions. Fearful that questioning the influence of schooling would label them as biological determinists, many educators clung tenaciously to the position that the schools really could make a difference. As a result, the findings of such skeptics as James Coleman, Christopher Jencks and David Cohen, released during a period of considerable social turmoil, often have been misunderstood. Now that we as a nation have been subdued by social and economic exigencies, intellectually honest reflection should characterize our research.

Cooperatively scholars must address a number of critical issues regarding the learning processes of a heterogeneous population. For example, we need to develop a more sophisticated understanding of the nature of intelligence so we can come to grips with the question of whether we can build a pluralistic society and accurately assess intellectual capacities by any standardized cognitive measures. In addition,

we need to comprehend much more clearly what institutions within a given culture are primarily responsible for developing and transmitting cognitive processes. Hopefully, further analysis of existing data and additional collection of new information will give us some answers. And hopefully, in the 1980s the energies of the nation will be re-awakened and the social problems of poverty will once again capture the attention of a large segment of the citizenry. If the findings of further research on the effects of schooling have been carefully arrived at and objectively reported, and if these further findings in many ways parallel the tentative conclusions reached in this paper, that body of knowledge should be used by educators as an instrumental force to encourage more fundamental social reform to increase substantially the equalization of achievement.

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