A STUDY OF THE EFFECT OF NURSERY SCHOOL EXPERIENCE ON INTELLECTUAL PERFORMANCE AT TWO SOCIO-ECONOMIC LEVELS

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This is to certify that the

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ABSTRACT

A STUDY OF THE EFFECT OF NURSERY SCHOOL EXPERIENCE ON INTELLECTUAL PERFORMANCE AT TWO SOCIO-ECONOMIC LEVELS

by Vera Borosage

Statement of the Problem

The purpose of this study was to ascertain if nursery school attendance has any effect on the intellectual performance, as measured by testing instruments, of pupils who come from various socio-economic backgrounds. Specifically, the study attempted to assess the effect of a nursery school experience of a conventional comprehensive nature on the intellectual performance of disadvantaged children from a lower class milieu and children from a middle class background.

Design of the Study

To accomplish the stated purpose, a thorough review of the literature was conducted to become familiar with the changing philosophy regarding the effect of early experiences on intellectual development of children, and the role this has played on the advocacy of compensatory preschool programs for the culturally disadvantaged child. Some representative nursery school programs were described.

An experimental design was set up consisting of four groups of children, selected by social class, age and sex. Two social classes were represented: the disadvantaged lower social class and the middle class. One experimental and one control group was formed at each social class level. The independent variable was a nursery school experience over the period of one academic year.

Data consisted of: (1) description of the population; (2) description of the three testing instruments used in the study: the Stanford-Binet Intelligence Scale, Form L-M, 1960, the Peabody Picture Vocabulary Test, and the Bender Gestalt Test for Young Children; (3) information describing the components of the nursery school curriculum; (4) information dealing with the collection of data; and (5) computation and analysis of the data resulting from the subjects' performance on the testing instruments.

Major Findings of the Study

The major findings of the study may be summarized as follows:

1. The experimental treatment of a nursery school experience generally had no specific effect in significantly raising the I. Q. or in differential performance on any of the testing instruments.

2. There was some evidence, though not statistically significant, to support the effect of a nursery school experience. The lower class children who attended nursery school posted a mean gain in I. Q. between pre- and post-test scores on the Stanford-Binet while lower class children who did not attend nursery school posted a mean loss in I. Q.
3. There were significant social class differences in the performance on all three dependent variables (the testing instruments), all favoring the middle class children in both experimental and control groups.
4. There were sex differences in performance, especially in the lower class groups. Male subjects in both the experimental and control lower class groups generally posted a loss in I. Q. between pre- and post-test on the Stanford-Binet.
5. Study of correlations between test scores suggested that the Peabody Picture Vocabulary Test might be a better instrument to assess the intellectual potential of middle class children rather than lower class less verbally oriented children while the Bender Gestalt might be a better instrument for evaluating lower class children.

In addition to these findings, implications of these findings for further research were discussed.

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CHAPTER I

THE PROBLEM AND PURPOSES OF THE STUDY

As long as a generation ago, Russell and H. Lynd in their well known studies of Middletown, U. S. A. found that by the time a child entered school, he was already typed intellectually by his parents' economic status.[1] Children from the lower socio-economic groups came to school less well prepared than their middle class counterparts, and fell farther behind in academic grade levels each year. This comes as no surprise to the teachers in the nation's elementary schools. Quite consistently, surveys show variability in the range of school performance of public school pupils, be it in a specific skill like reading or in general academic attainment. The 1967 Yearbook of the National Society for the Study of Education has singled out two large overlapping groups: the "educationally retarded" pupils and the "disadvantaged."[2]

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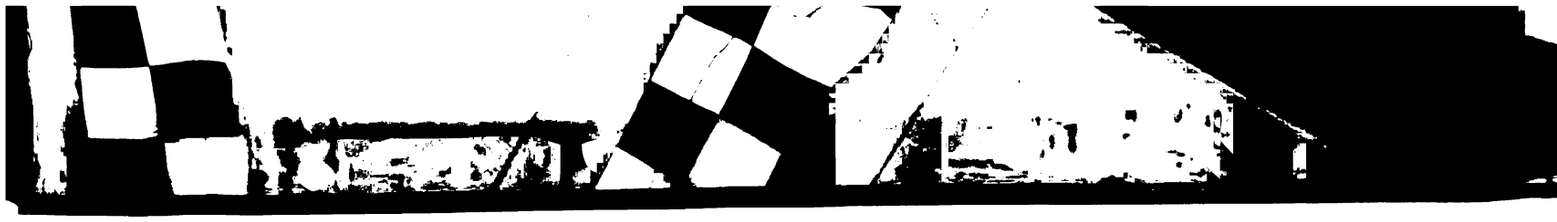
[1] Fred M. Hechinger, (ed.), Preschool Education Today: New Approaches to Teaching Three-, Four-, and Five-Year-Olds (Garden City, New York: Doubleday, 1966), p. 3.

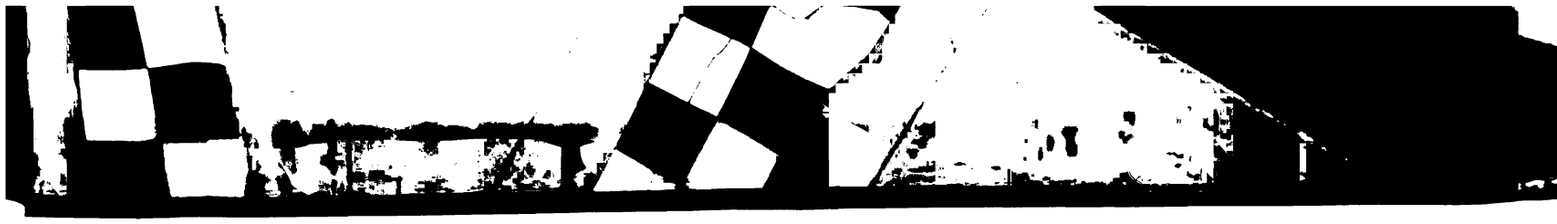
[2] The Educationally Retarded and Disadvantaged, Sixty-sixth Yearbook of the National Society for the Study of Education, Part I (Chicago: University of Chicago Press, 1967).



It is to these pupils that a facet of America's "war" on poverty addresses itself through preschool education. A particularly popular chapter with the American people has been the Project Head Start, inaugurated in the summer of 1965, under the aegis of the United States Office of Economic Opportunity (OEO).

A basic assumption of the Head Start Program is that a successful early group experience will mediate the effects of a limited socio-economic environment and improve a child's readiness for school and for academic performance. There has been a proliferation of programs and the Office of Economic Opportunity is currently gathering data as to their effectiveness.

Preschool education has heretofore been available for interested parents in the middle and upper socio-economic classes, and it is only through Head Start that a national attempt has been made toward preschool education for underprivileged children. With schools having increasing difficulty in gaining educational funds for the total school program, perhaps the choice will have to be made to limit preschool enrichment to those children from less favored homes of lower socio-economic level, under the assumption that middle class children benefit from the "hidden curriculum" of their homes, thus paving the way to better performance in school without the additional enrichment of formal preschool education. As



Swift states in summarizing the inconclusive results in studies relating to the effects of nursery school attendance: "It is likely that families selecting nursery school experience valued and also provided at home, many of the same kinds of experience, reading of stories, encouragement of verbal communication, and opportunity for creative activity."

The Problem

It is in part the recognition that middle class children enjoy the benefits of an experientially rich home background with concomitant positive results in school performance that has undergirded Head Start's drive to enroll a substantial number of underprivileged children in prekindergarten programs across the nation. The implication was strong that the experiences of an enrichment program in a nursery school would compensate somewhat for the negative effects of the impoverished circumscribed background disadvantaged children endure.

To this end, the question can be asked: Is there a difference in the effect of nursery school education on intellectual performance of children before enrollment

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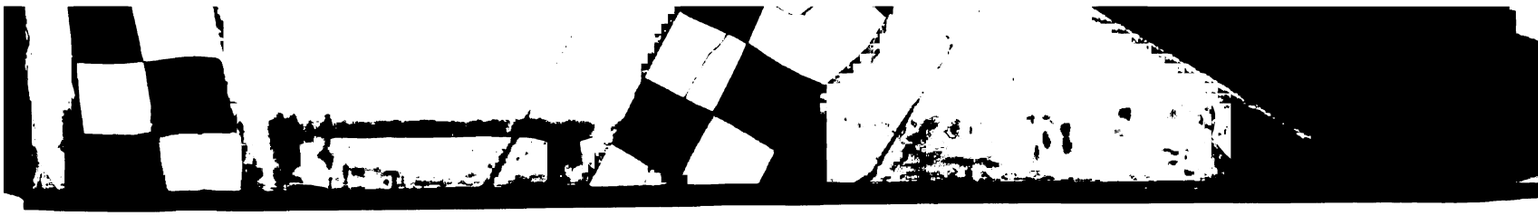
[3]Joan W. Swift, "Effects of Early Group Experience: the Nursery School and Day Nursery" in Review of Child Development Research, Vol. I, Ed. by Martin L. and L. W. Hoffman (New York: Russell Sage Foundation, 1964), p. 256.

in public school kindergarten at two socio-economic levels--the lower class and the middle class?

Importance of the Study

In the educational world, the decade of the sixties will probably be recorded as the time of the rediscovery of the young child, especially between the ages of three and six. From the beginning of the twentieth century, the growth of the child development movement has issued forth streams of literature and research on child growth and development. Much of this interest, however, centered around maternal health care for mother and infant, continuing into the early years with focus on the child's physical well being. Binet's work in intelligence testing, however, stirred interest in research on the intellectual capacity of children.

Interest in child growth and development led to facilities for nursery schools and day care centers. In the early years of this century, day care centers focused on custodial care, usually for children of working mothers in lower socio-economic groups. These were sponsored in the main through welfare agencies. Nursery schools, on the other hand, offered "educational" programs for children. The early nursery schools of the ninteeen twenties were mainly private or adjuncts to research and teaching departments of child development in universities. Some



of the well known were at the Iowa Child Welfare Research Station, Yale Clinic of Child Development, University of Minnesota and the Merrill-Palmer Institute in Detroit, Michigan. Most of the children in these nursery schools were from homes in favored socio-economic levels.

The most extensive work relative to the effect of nursery school attendance on children's mental development as measured by intelligence tests came out of studies at the Iowa Child Welfare Research Station during the thirties. They have been detailed in a series of research papers, and culminated in reviews reported in the 1940 edition of the Yearbook of the National Society for the Study of Education.[4] The issue at that time became very controversial, and was part of the larger question of the relative effects of nature and nurture in intellectual development to which no single answer has been found.[5] The issue was further embroiled in the limiting argument of whether intelligence was innate and, therefore, relatively unchangeable, or whether intellectual potential was affected, either negatively or positively, by environment. The controversy lay rather dormant until the early sixties when interest in the intellectual development of

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[4] Intelligence: Its Nature and Nurture, Thirty-ninth Yearbook, National Society for the Study of Education, Part II (Bloomington, Illinois: Public School Publishing Co., 1940).

[5] Swift, op. cit., p. 252.

children again became a matter of emphasis for early childhood education. Stott and Ball acknowledge this trend when they state:

> In very recent years, there has been a growing interest in cognitive development, in the role of stimulation in early intellective development and in the possibilities of facilitating optimal development, without pressure, but through an awareness of certain "critical periods" of development, being able to provide appropriate conditions of stimulation.[6]

Much of the research interest generated for understanding cognitive development in children has been nurtured by the translation of Piaget's writings, whose basic concept in his theorizing about the growth of intelligence is the importance of interaction between organism and environment. Escalona and Moriarity express this quite clearly when they note that:

> . . . it is correct to say that intelligence development is at all times dependent on what the organism is like. Yet since it requires environmental circumstances to mobilize the organism, and since the kind of transaction which develops depends on the objective content of that to which the organism must adapt, it is equally true to say that the development of intelligence depends at all times on the experiences encountered by the growing child.[7]

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[6]Leland Stott and Rachel S. Ball, Evaluation of Infant and Preschool Mental Tests (Detroit, Michigan: The Merrill-Palmer Institute, 1963), p. 1.

[7]S. K. Escalona and A. Moriarity, "Prediction of Schoolage Intelligence from Infant Tests," Child Development, XXXII (September, 1961), pp. 597-605.

An even stronger exposition is made by Hunt in his discussion of Piaget's developmental theories. He points out that Piaget writes:

> . . . that the rate of development is in substantial part . . . a function of environmental circumstances. The greater the variety of situations to which the child must accommodate his behavioral structures, the more differentiated and mobile they become. Thus, the more new things a child has seen and the more he has heard, the more things he is interested in seeing and hearing.[8]

In American society, the agency presumably most geared to provide environmental compensations is the school. According to Deutsch, "60 per cent of lower-class children are retarded two years or more in reading, by the time they leave the elementary school."[9] These differences, however, are smallest at the first grade level, and for Deutsch, this provides a rationale for the "intervention" program at the preschool level to mediate or overcome the negative effects for the lower class child of the discontinuity between home and school during the years before formal entrance into the school system.[10]

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[8] J. McVicker Hunt, Intelligence and Experience (New York: Ronald Press, 1961, pp. 258-259.

[9] Martin Deutsch, "Facilitating Development in the Preschool Child: Social and Psychological Perspectives," Merrill-Palmer Quarterly, X, No. 3 (July, 1964), p. 254.

[10] Ibid., p. 255.

Preliminary data from the Deutsch program in New York City indicate that children who have a preschool and kindergarten experience tend to be better able to cope with the intellectual demands of school learning. This experience is associated with higher group intelligence test scores that have persisted even until fifth grade.[11]

It should then be of considerable value to have knowledge of the growth in intellectual achievement that can take place by exposure to selective educational experiences during the preschool years. If evidence accumulates that an educational experience at the preschool level mediates the influence of poor home-community environment, then the message is clear for responsible educators--to provide a meaningful preschool experience, especially for the children of the lowest socio-economic groups whose experiential transactions with the environment tend to be too meager a base for intellectual performance as contrasted to those of a middle class environment.

Statement of Purpose

The purpose of this study was to ascertain if nursery school attendance has any effect on the school

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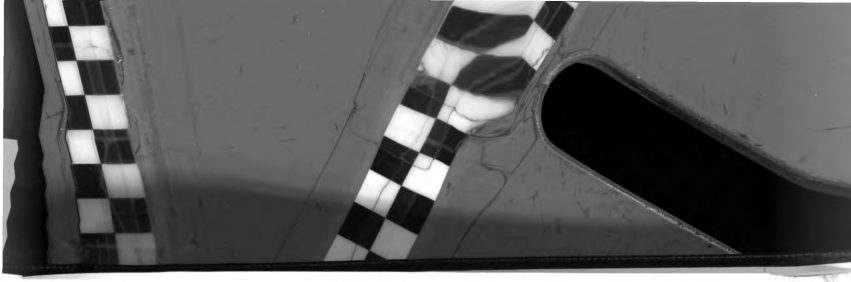
[11]Martin Deutsch, "Early Social Environment: Its Influence on School Adaptation," in D. Schreiber, Ed., Guidance and the School Dropout (Washington, D. C.: National Education Association, 1964), pp. 89-100.

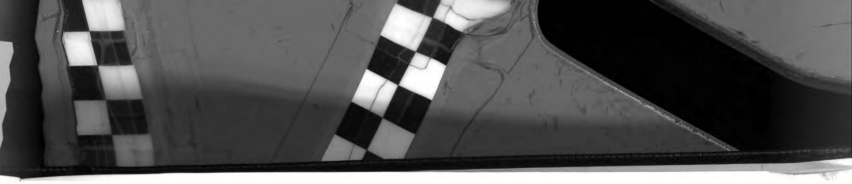


readiness, as indicated by intellectual performance on several testing instruments, of pupils who come from two different socio-economic levels. Questions of primary importance, from which hypotheses emerged, were as follows:

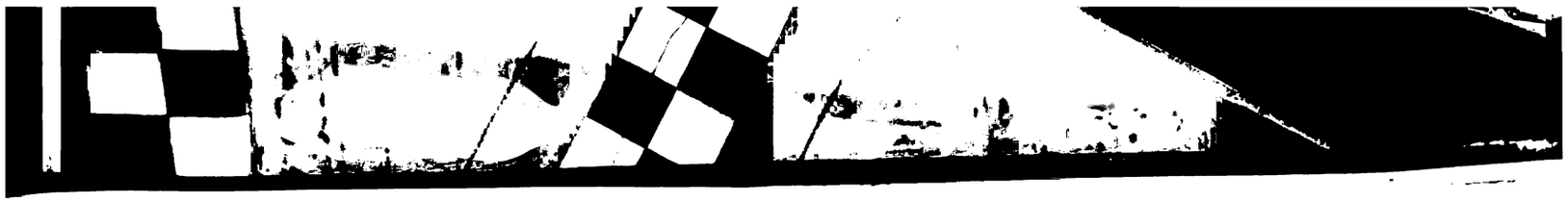
1. Are there any intellectual differences, as measured by test performance, between children of lower socio-economic status who have had a period of nursery school attendance and those of the same status who have not?
2. Are there any intellectual differences, as measured by test performance, between children of middle class backgrounds who have had nursery school attendance and those of the same status who have not?
3. Are there any intellectual differences, as measured by test performance, between children of lower socio-economic status and those of middle class status who have had nursery school attendance?

Statement of Major Hypotheses

In order to ascertain the effects of nursery school education on intellectual performance before kindergarten at two socio-economic levels, it was hypothesized that:



1. Children from lower socio-economic groups who have attended nursery school will perform at a significantly higher level than those children of the same socio-economic background who have not attended nursery school on the following:
   a. The Peabody Picture Vocabulary Test (PPVT)
   b. The Bender Gestalt for Young Children
2. There will be no significant difference between scores of middle class children who have attended nursery school and children of the same socio-economic background who have not attended nursery school on the following:
   a. The Peabody Picture Vocabulary Test (PPVT)
   b. The Bender Gestalt for Young Children
3. There will be no significant difference between scores of children from the lower socio-economic group who have attended nursery school and children in the middle class group who have attended nursery school on the following:
   a. The Peabody Picture Vocabulary Test (PPVT)
   b. The Bender Gestalt for Young Children
4. Middle class children who have not attended nursery school will perform at a significantly higher level than lower class children who have not attended nursery school on the following:



a. The Peabody Picture Vocabulary Test (PPVT)

b. The Bender Gestalt for Young Children

5. Children in the lower socio-economic group who have attended nursery school will show a greater pre- to post-test gain on the Stanford-Binet than those lower class children who have not attended nursery school.

6. There will be no significant difference between pre-test and post-test scores on the Stanford-Binet of middle class children who have attended nursery school and children of the same socio-economic background who have not attended nursery school.

7. Children in the lower socio-economic group who have attended nursery school will have a greater pre- to post-test gain in the Stanford-Binet than the group of middle class children who have attended nursery school.

8. There will be no significant difference between pre-test and post-test scores on the Stanford-Binet of the lower class children who have not attended nursery school and the middle class children who have not attended nursery school.

Assumptions

Assumptions underlying the major purpose of this study are:

1. The preschool years are decisive periods for intellectual development.
2. The rate at which a child grows and develops is unique for each individual regardless of his socio-economic background.
3. Nursery school education places emphasis on selective educational experiences (as opposed to mere custodial care).
4. Nursery school attendance is beneficial to the total development of the child.
5. Differences in intellectual development of children are attributable, in part, to differences in socio-economic status of the family.

There are differing opinions on the advisability of universal education for four year olds, depending on the person's belief in the efficacy of the home experience before formal schooling.[12] However, the Educational Policies Commission of the National Education Association has affirmed the principle that compensatory education should begin at the age of four for those children whose homes and cultural milieu, because of either social or economic deprivation, have provided patterns of both cognitive and affective deficit.[13] At the same time, there is some

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[12]Educational Policies Commission of the NEA, NEA Journal (November 1966), p. 10.

[13]Ibid., p. 8.

opinion among educators that preschool education be not universal but should be limited only to those "disadvantaged" children in our society.[14]

That there are many programs involved within the framework of intervention is evident from the increasing reports of results. The preliminary findings concerning the effects of preschool enrichment programs for the culturally deprived are predominantly positive, but a few negative implications have appeared.[15]

Recent theoretical formulations stress that intelligence is not a fixed entity but needs stimulation from, and interaction with, the environment to flourish.

This premise undergirds much of the rationale for preschool programs. One of the most frequently cited effects of a period of attendance in a nursery school program is an increase in intelligence as measured by standard tests. Again family background appears as an important factor. Even a well conducted nursery school can add little to the intellectual stimulation of children from privileged homes.[16]

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[14]Mabel M. Mitchell, "I Oppose It," NEA Journal, (November 1966), 10.

[15]Clay V. Brittain, "Preschool Programs for Culturally Deprived Children," Children, XIII (July-August 1966), 131.

[16]W. C. Olson, and B. O. Hughes, "Subsequent Growth of Children With and Without Nursery School Experience," in Intelligence: Its Nature and Nurture, Thirty-ninth Yearbook, National Society for the Study of Education, Part II (Bloomington, Illinois: Public School Publishing Co., 1940), pp. 237-244.

In summary, it is believed that preschool programs can enhance the intellectual development of children, especially among those socially disadvantaged from lower class homes.

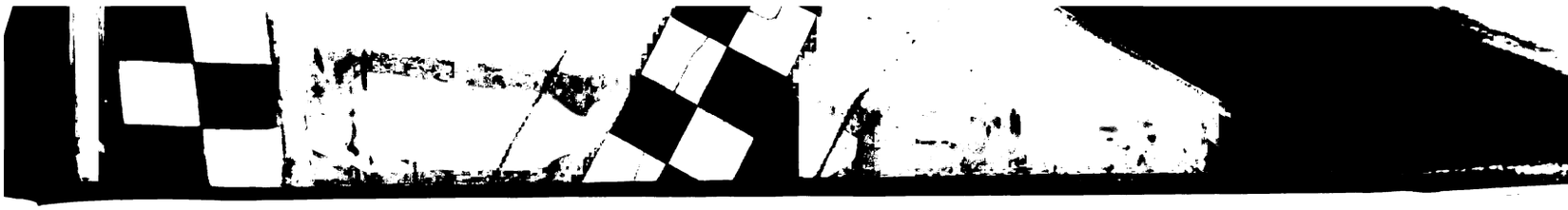
Limitations of the Study

This study is limited to children of lower and middle socio-economic groups who reside in the Lansing-East Lansing area in the state of Michigan.

Since the preschool enrichment program provided the culturally deprived children was supported by Michigan State University funds, the nursery school groups were called "community" groups rather than Head Start groups. The children included in the study were all in the four-year-old range who would be eligible for public school kindergarten in September 1967 because their fifth birthdays arrived before December 1, 1967.

Socio-economic status was determined for both groups by Warner's Index of Status Characteristics with the following four components: (1) dwelling area, (2) house type, (3) occupation, and (4) source of income. This allowed a few children to come from families whose incomes were slightly over the $3,000 yearly limitation placed by the Office of Economic Opportunity (OEO).

The period of study covered one academic year from September 1966 through June 1967.



The study concerned itself primarily with the measurement of differences in intellectual development as measured by tests indicating intellectual performance and did not focus on social and emotional development.

Definition of Terms

Deprivation

The terms "culturally deprived," "educationally deprived," "underprivileged," "socially or culturally disadvantaged" appear in use interchangeably in current literature.

According to Riessman, the term "culturally deprived" refers to "those aspects of middle class culture--such as education, books, formal language--from which these groups have not benefited."[17] Since these areas are part of a nursery school program in mediating the effects of a limited socio-cultural environment, the above terms will be used interchangeably for the lower class children and families included in the study, with some stress put on the term "disadvantaged" as a more general term of deprivation.

Nursery Education

This term will encompass nursery school programs of appropriate educational experiences conducted specifically

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[17]Frank Riessman, The Culturally Deprived Child (New York: Harper and Brothers, 1962), p. 3.

for children in the two- to five-year range. It will be used interchangeably with the term "preschool education," "preschool programs," and "enrichment program."

Socio-economic Status

In this study, the phenomenon of social class was determined by the scale devised by William Lloyd Warner and his associates.[18] This scale is named the Index of Status Characteristics. For its criteria, it employs: (1) occupations, ranging from the professional fields to unskilled workers, (2) sources of income, ranging from inherited wealth through salaries and wages to public welfare, (3) house type, large homes in good condition to homes in very poor condition, and (4) dwelling areas lived in from exclusive areas to slums.

Informal Communication Network

It was the experience of this investigator that families with young children had knowledge of, and were aware of, which families in a neighborhood had four-year-old children not in nursery school. They communicated by telephone and by "word-of-mouth" discussions regarding the nursery school program as set up at Michigan State University. To simplify any reference to this type of communication which greatly facilitated the

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[18] W. L. Warner, and Mildren H. Warner, What You Should Know About Social Class (Chicago: Science Research Associates, 1953), pp. 22-25.

recruitment of subjects, it was labelled for this study as the "informal communication network."

Organization of the Remainder of the Study

The remainder of the study will include a survey of current literature in three areas: these will be considered in Chapter II under the sub-titles of: (1) Effects of Early Experience on Mental Development, (2) Early Intervention Programs at the Preschool Level, and (3) Studies of Specific Preschool "Intervention" Programs. In Chapter III, a description of the population and procedures used for collecting data will be presented. Analysis of the data with resultant findings will be discussed in Chapter IV. A summary and recommendations for further study will be given in Chapter V.

CHAPTER II

REVIEW OF THE LITERATURE

Early childhood is a period of extremely rapid growth in all the physical and intellectual dimensions. A particular aspect of growth creating a continual controversial topic is mental growth in children. Just what proportion of a child's mental growth rests on "nature" or "nurture" was a subject of much debate during the twenties and thirties, with the pendulum of belief swinging in favor of predetermined development, strongly influenced by the beliefs and prolific writings of Arnold Gesell. He attached great importance to the "mechanism of maturation" by which a child would automatically go through certain stages of development in the "unfolding" of his potential fixed by his genes and relatively unchangeable by "accelerated" (or "decelerated") environmental experiences.[1] Gesell emphasized this point when he said that "environmental factors support, inflect

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[1]Leland H. Stott, and Rachel S. Ball, Evaluation of Infant and Preschool Mental Tests (Detroit: The Merrill-Palmer Institute, 1963), p. 14.

and modify, but . . . do not generate the progressions of development."[2]

Child development research in the twenties and thirties was predominantly concerned with normative studies on physical growth, socio-emotional patterns, the development of motor skills, and language development, the latter often assessed quantitatively by the number of words spoken or understood at different age levels.[3] Concurrently, however, due to Binet's work in the testing of intelligence, a great deal of enthusiasm was engendered in America for the mental testing movement. Lewis M. Terman's Stanford revisions of the Binet Scale beginning in 1916 were a "potent reinforcer for the assumption of fixed intelligence."[4] Many of the textbook writers of that era apparently adopted the point of view urged by Gesell in his writings. He summarized his theory when he stated:

> All growth is lawful and in that sense determined. All growth is self-limited. Growth is mainly determined by previous growth. . . . Growth potency is broadly and fundamentally determined

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[2]Arnold Gesell, "The Ontogenesis of Infant Behavior," in L. Carmichael (ed.), Manual of Child Psychology (2nd ed.; New York: Wiley and Sons, 1954), pp. 335-373.

[3]L. Carmichael (ed.), Manual of Child Psychology (New York: John Wiley and Sons, 1946).

[4]Stott, op. cit., p. 13.

> by inheritance. Basic developmental tempo, trend, and temperament are mainly inherent individual characteristics.[5]

Even in the midst of this general belief, however, some dissenting opinions were expressed. One notable example was Harvey A. Carr. In 1926 he wrote a version of his views which are strikingly similar to the "interaction" view of mental development which is discussed later in this chapter.

Carr wrote:

> All experiences of the individual during life are thus organized into a complex but unitary system of reaction tendencies that determine to a large extent the nature of his subsequent activity. The reactive position of the individual, i.e., what he does and what he can and cannot do, is a function of his native equipment, of the nature of his previous experiences and of the way in which these have been organized and evaluated. . . . Neither is this ability (intelligence) native in the sense that its development is not dependent upon environmental influences. . . . The ability is natively conditioned in that we are born with the capacity to develop in this manner.
>
> The assumption that all individual, group, and racial differences of I. Q. are wholly determined by innate differences of constitution must be discarded because of the fact that the I. Q. is often altered during the course of development.[6]

Alfred Binet, himself, commissioned by the French government to devise tests and to study the nature of

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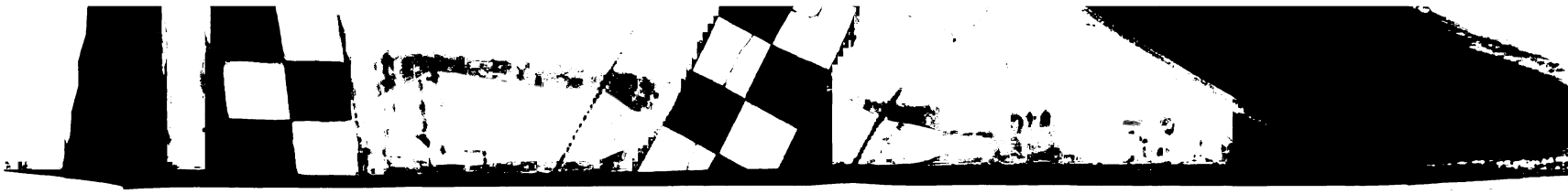
[5]Arnold Gesell, The Guidance of Mental Growth in Infant and Child (New York: The Macmillan Company, 1930), p. 297.

[6]Harvey A. Carr, quoted in Stott and Ball, op. cit., p. 16.



school retardation, did not hold to the view that intelligence is a genetically fixed quantity.[7]

The implication of these differing schools of thought as to the effect of environmental influences on mental development is particularly pertinent to the premises undergirding preschool "enrichment" programs for the culturally disadvantaged children so popular in America today. In view of what is generally known of the more competent academic performance of children from middle class status, the concept of predetermined fixed intelligence would make irrelevant the schools' attempts to affect the learning potential or capacity to learn of children who come from homes in the lower socio-economic levels with their correspondingly limited experiential environments.

Both theoretical thinkers and educational practitioners are currently challenging this point of view. Educational researchers describing the part a culturally deprived environment plays in producing depressed intellectual performance in children would take exception to Gesell's beliefs when he stated:

> As it is, the inborn tendency toward optimum development is so inveterate that he [the child] benefits liberally from what is good in our practice, and suffers less than he logically should from our unenlightenment. Only if we give respect to this inner core of inheritance can we respect the important individual differences which distinguish infants as well as men.[8]

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[7] Ibid., p. 11.

[8] Gesell, op. cit., p. 299.

The concept of the fixed I. Q. as a corollary of mental development, however, had begun to be questioned by researchers in the late twenties and early thirties. A few of their studies, briefly described in the next section, added substance to shifting theoretical points of view toward predetermined intellectual capacity.

Effects of Early Experience on Mental Development

The first in a series of studies in which the concept of environmental stimulation as a factor in children's mental development was considered was published by Beth Wellman in 1932. She reported marked changes in the I. Q.'s of children and attributed them to changes in environment, a large part of which was preschool attendance.[9] In the years following this initial report there were published a series of papers and studies by Wellman and her co-workers at the Iowa Child Welfare Research Station, all of which generally supported the view that the sort of environmental stimulation young children experience was an important factor in their development.[10,11,12,13]

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[9] B. L. Wellman, "Some New Bases for Interpretation of the I. Q.," Journal of Genetic Psychology, XLI (1932a), 116-126.

[10] B. L. Wellman, "The Effects of Preschool Attendance Upon the I. Q.," Journal of Experimental Education, I (1932b), 48-69.

[11] H. M. Skeels, R. Updegraff, B. L. Wellman, and H. M. Williams, "A Study of Environmental Stimulation:

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[illegible]

These studies were heavily criticized by other researchers in the field, notably Florence Goodenough.[14] In 1940 she and Maurer compared nursery school and non-nursery school children as to change in I. Q. after one year's preschool experience of the experimental group. At the end of one year of nursery school experience, the nursery school group and the non-nursery group showed exactly the same average gain in I. Q.--4.6 points. The authors' general statement was that:

> None of the analyses that we have been able to make warrant the conclusion that attendance at nursery school has any measurable effect whatever upon the mental development of children. Those that have this training do no better on standardized intelligence tests than those who have not had it; they are neither more nor less advanced in school, and those who have attended longest and most regularly do not excel those whose period of enrollment was short and broken by frequent absences.[15]

An Orphanage Preschool Project," in Studies in Child Welfare (Iowa City: University of Iowa, 1938), 15, 4.

[12]H. M. Skeels, and E. A. Filmore, "Mental Development of Children from Underprivileged Homes," Journal of Genetic Psychology, L (1937), 427-439.

[13]M. Skodak, "Children in Foster Homes: A Study of Mental Development," in Studies in Child Welfare (Iowa City: University of Iowa, 1939), 16, 1.

[14]Florence Goodenough, "Look to the Evidence: A Critique of Recent Experiments on Raising the I. Q.," Educational Methods, XIX (1939), 73-79.

[15]F. L. Goodenough, and K. Maurer, "The Mental Development of Nursery School Children Compared with That of Non-Nursery Children," Thirty-ninth Yearbook of the National Society for the Study of Education, Part II (Chicago: The University of Chicago Press, 1940), p. 176.

The controversy aroused by the Iowa studies stimulated other research. Among these was McHugh who published a monograph dealing with preschool experience in relation to I. Q. changes in a group of 91 children with a mean age of 62 months. He administered a Binet test initially; then the children were given 30 three-hour sessions of preschool (kindergarten) experience, after which they were retested. Among his conclusions were:

1. Children do make significant mean gains in I. Q. scores as a result of such preschool experience.
2. I. Q. gains from preschool experience are "adjustment gains" rather than growth in intelligence.[16]

Most of this early research, however, involved children, both in the experimental and control groups, who came from middle and upper-middle class backgrounds. The global experience of attendance at nursery school as mentioned in the studies described above might not have been the crucial variable in explaining the lack of definitive results in favor of nursery school experience. Comprehensive reports on these early studies are gathered in the 1940 edition of the Yearbook of the National Society for the Study of Education.

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[16]G. McHugh, "Changes in I. Q. at the Public School Kindergarten Level," Psychological Monographs, LV (1943), No. 2.

Today's interest in the intervention of a nursery school experience for culturally disadvantaged children bases many of its premises on newly conceived theories like those of the Geneva school, especially Piaget. With Piaget's work becoming increasingly available in translation, more research is being generated in support of his principles underlying the interaction of the organism with his environment. Piaget's main thesis is that development of the intellect, like all development, comes about through the interaction of the organism (with his fixed developmental potential) and his environment. Hunt is a vocal supporter of this "new" interactionist theory of mental development.

Hunt's thesis is of relevance to a philosophy in support of an early intervention experience for culturally deprived children when he says:

> As the infant's schemata have been accommodated to a wider and wider range of circumstances, variations in a wider and wider variety of circumstances acquire the capacity, through the discrepancy principle, to evolve his interest . . . he becomes curious about more things. With curiosity he develops what is commonly called initiative. This hypothesis provides a pretty explanation for the effect of early experience on later capacity.[17]

Also lending support to Piaget's thesis regarding the importance of early interaction with environment for development are studies made in conjunction with

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[17]Hunt, op. cit., p. 263.

orphanage-reared children. One of these was Dennis' study of children living in an orphanage in Teheran, Iran. The orphanage building was clean but lacking in adequate staff and physical facilities resulting in a very limited experiential environment for its children (they spent most of their time in their cribs). Dennis discovered that only 42 per cent could sit alone during their second year; only 40 per cent could walk, even when holding on to things, in their third year; and only 8 per cent could walk alone before the end of the third year.[18]

Ausubel, although critical of many studies dealing with the effects of environmental deprivation and enrichment (prior to 1957) because of poor controls, intervening environmental variables not accounted for, and some structural weaknesses in intelligence tests, nevertheless feels their findings are relevant to the question of the modifiability of intellectual capacity.[19] A decade ago he suggested that the weight of evidence in the literature offered two tentative conclusions:

> First, serious and prolonged deprivation, especially during late infancy and the preschool years, seems capable of inflicting permanent

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[18]W. Dennis, "Causes of Retardation Among Institutional Children," Journal of Genetic Psychology, XCVI (1960), 47-59.

[19]David P. Ausubel, Theory and Problems of Child Development (New York: Grune and Stratton, 1958), p. 605.

> damage on intellectual growth. Second, enrichment of the existing environment can only effect substantial improvement of intellectual status in young children with a prior history of serious deprivation.[20]

It is of interest to note that this was written prior to 1957 before the contemporary focus on Head Start and other compensatory education programs. Of more recent vintage is Bloom's review of the research on child development in which he postulates that the years before four years of age is the time of greatest intellectual growth (50 per cent of one's intellectual potential) and, therefore, the optimal time for intervention programs.[21]

The subject of the changing concepts in the theoretical beliefs about man and his development has also interested J. McVicker Hunt. In a paper prepared for the Arden House Conference on Preschool Enrichment in New York, 1962, Hunt outlines these changing beliefs as the "psychological basis for using preschool enrichment as an antidote for cultural deprivation."[22] He summarizes the evidence from psychological research to show:

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[20] Ibid.

[21] Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: John Wiley and Sons, 1964), pp. 78-79.

[22] J. McVicker Hunt, "The Psychological Basis for Using Preschool Enrichment as an Antidote for Cultural Deprivation," Merrill-Palmer Quarterly, X (July 1964), No. 3, p. 209.

[redacted]

> (1) that the belief in fixed intelligence is no longer tenable; (2) that development is far from completely predetermined; (3) that what goes on between the ears is much less like the static switchboard of the telephone than it is like the active information processes programmed into electronic computers to enable them to solve problems; (4) that experience is the programmer of the human brain-computer, and thus Freud was correct about the importance of the experience which comes before the advent of language; (5) that, nonetheless, Freud was wrong about the nature of the experience which is important, since an opportunity to see and hear a variety of things appears to be more important than the fate of instinctual needs and impulses; and finally, (6) that learning need not be motivated by painful stimulation, homeostatic need, or the acquired drives based upon these, for there is a kind of intrinsic motivation which is inherent in information processing and action.[23]

In summary, the literature has increased rapidly in explanation of, and support for, compensatory programs for the disadvantaged: for the preschooler, in particular, it takes the form of a nursery school experience.[24,25,26]

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[23] Ibid., pp. 241-42.

[24] Symposium on Early Deprivation and Enrichment, Child Development, XXXVI (December, 1965), No. 4, pp. 829-898.

[25] A. Harry Passow, ed., Education in Depressed Areas (New York: Teachers College Press, Columbia University, 1963).

[26] Joe L. Frost, and Glenn R. Hawkes, eds., The Disadvantaged Child: Issues and Innovations (Boston: Houghton Mifflin, 1966).

Early Intervention Programs at the Preschool Level

The Head Start Programs sponsored in 1965 by the Office of Economic Opportunity caught the public's interest and conscience as a means of providing an enriching prekindergarten experience for a half-million or more of the nation's disadvantaged children.[27] However, a number of researchers had been experimenting with intervention programs prior to that date.

It is possible that before any reports of preschool intervention programs can be reported, attention must be given to the differing philosophies of curriculum for preschools that have emerged since the focus of interest on the preschool child.

Briefly, there appear to be three approaches to nursery school curriculum, each one of which apparently has affected the results of intervention programs: the traditional nursery school curriculum; programs employing more structured nursery school methods; and a relatively new approach, that of the task-oriented curriculum. The continuum focuses on the emphasis the teacher puts on structure in relation to teaching cognitive learnings to children.

The traditional nursery school curriculum emerged from the "needs of the child," a focus on socio-emotional

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[27]Fred Hechinger, "Head Start to Where," Saturday Review, XLVIII (December 18, 1965), p. 58.

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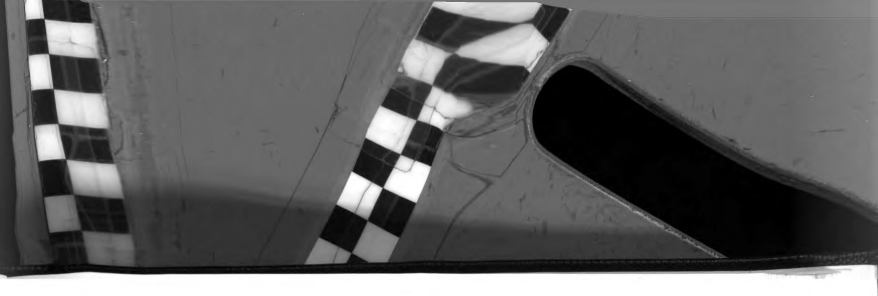

development, and a permissive unstructured and relatively non-teacher directed curriculum. Sears and Dowley in their review of research on the nursery school seem to describe it best:

1. Meeting organic needs and establishing routine habits: eating, elimination, sleeping, washing, dressing, undressing.
2. Learning motor skills and confidences: climbing, running, jumping, balancing; learning to use the body effectively.
3. Developing manipulatory skills: using scissors, crayons, paste, paints, clay, dough, etc.; building with blocks, working with puzzles, beads, tying, buttoning.
4. Learning control and restraint: listening to stories, sitting still, reacting to music, etc.
5. Developing appropriate behavior: independence-dependence in adult-child relations; coping with fear, angry feelings, guilt; developing happy qualities, fun, humor, healthy optimism.
6. Psycho-sexual development: identification, sex role learning, formation of conscience.
7. Language development.
8. Intellectual development: cognitive learning; concept formation; self-understanding and self-esteem; creativity; academic subject matter.[28]

Many of the Head Start programs operated with variable programs based on the traditional-conventional techniques. Two programs reported in the literature are Alpern's Community Center Project and Strodtbeck's Reading Readiness Project.[29,30]

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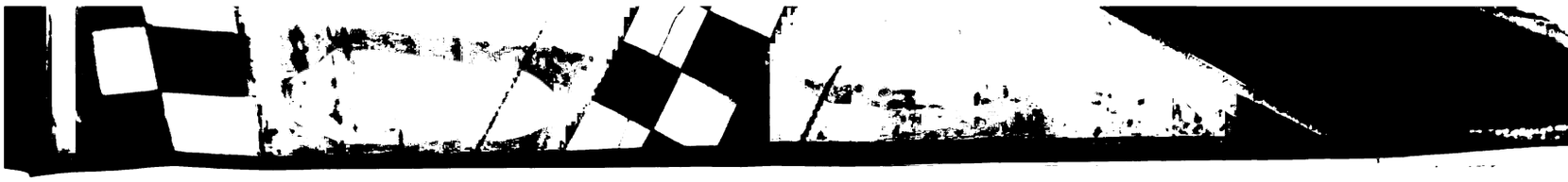
[28]Pauline S. Sears and Edith M. Dowley, "Research on Teaching in the Nursery School," in N. L. Gage, (ed.) Handbook of Research on Teaching (Chicago: Rand McNally and Company, 1963), p. 822.

[29]G. I. Alpern, "The Failure of a Nursery School Enrichment Program for Culturally Disadvantaged Children," American Journal of Orthopsychiatry, XXXVI (1966), 244-245.



Strodtbeck's project was part of a larger project in which he set up three different types of nursery school programs: (1) a "reading readiness" nursery; (2) a highly permissive "therapeutic type" school in which teachers were expected to function as surrogate mothers; and (3) a "conventional" nursery. The "conventional" nursery program was described as one in which the "teacher prevented aggression and risk-taking, demonstrated materials, gave a maximum of warmth, food and creature comforts." Preliminary reports indicated that children in all three programs made gains as measured by the Stanford-Binet and the Peabody Picture Vocabulary Test, with the "highest" gain scored in the "conventional" school.[31]

The second type of curriculum that has emerged is the program that provides a more structured and teacher-directed emphasis in terms of teaching specific cognitive and language learnings. The basic teacher-child relationship of the traditional curriculum stressing social-emotional adjustments with peers, good work habits, etc. is preserved. Many of the same traditional nursery school materials and activities are used, but the teacher focuses

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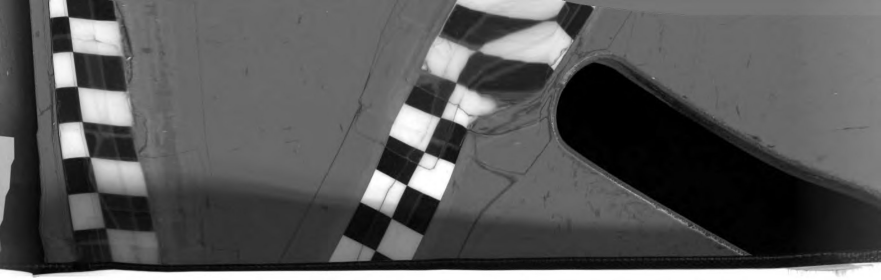
[30]David P. Weikart, "Results of Preschool Intervention Programs," (paper presented at the University of Kansas symposium on the Education of Culturally Disadvantaged Children, May 6, 1966), p. 9.

[31]Evelyn G. Pitcher, "An Evaluation of the Montessori Method in Schools for Young Children," Childhood Education, (April, 1966), p. 490.



their use toward achievement of preplanned goals, Weikart puts this category under the rubric labelled "structured nursery school methods."[32]

Examples of nursery programs offering this type of "intervention" program for preschoolers are Kirk's Early Education of the Mentally Retarded Project, Gray and Klaus's Early Training Project, Deutsch's Preschool and Early Elementary Education Project, the Perry Preschool Project, and Dawe's Institutional Training Program of a generation ago.[33,34,35,36,37]

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[32]Weikart, op. cit.

[33]S. A. Kirk, Early Education of the Mentally Retarded (Urbana: University of Illinois Press, 1958).

[34]Susan W. Gray and Rupert A. Klaus, "An Experimental Preschool Program for Culturally Deprived Children," Child Development, XXXVI (December, 1965), 887-898.

[35]Martin Deutsch, "The Disadvantaged Child and the Learning Process," in Education in Depressed Areas, ed. by A. Harry Passow (New York: Teachers College Press, Columbia University, 1963), pp. 163-180.

[36]Weikart, op. cit., pp. 18-54.

[37]Helen C. Dawe, "A Study of the Effect of an Educational Program Upon Language Development and Related Mental Functions in Young Children," Journal of Experimental Education, XI (1942), 200-209.

The third and most recent type of curriculum is called the "task-oriented" preschool. This is typified by Bereiter's program at the University of Illinois and fully described in his book.[38] His experimental program is based on the premise that mere enrichment of experience is not enough to help the culturally deprived child to overcome the deficiencies that will hamper academic success. Bereiter, therefore, selected three specific content areas to teach in the most direct manner possible. Basically, it is a teacher-directed, deliberately planned sequential task approach to the three content areas: basic language training, reading, and arithmetic. The program provides lessons "involving demonstrations, drills, exercises, problems, and the like."[39]

Studies of Specific Preschool "Intervention" Programs

Not all intervention programs for disadvantaged preschoolers report glowing results. One study which resulted in negative findings after nursery school experiences of a traditional type was Alpern's Community Center Project.[40]

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[38]Carl Bereiter, and Siegfried Engelmann, Teaching Disadvantaged Children in the Preschool (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1966).

[39]Ibid., p. 63.

[40]Alpern, op. cit., p. 244.

This project was conducted by a government sponsored Community House which had had programs for a lower socio-economic population for many years. Forty-four four-year-old culturally deprived Negro children were tested with the Stanford-Binet and three aspects of "readiness" (first three subscales on the Metropolitan Readiness Test, Form R). On the basis of these initial tests, two groups, each with twenty-two children, were matched for sex, I. Q. and "readiness." The experimental group attended nursery school three times a week over a seven-month period. Average attendance was 72 sessions. The curriculum was designed to: (1) increase language skills, (2) develop positive attitudes toward the concept of teachers, learning and school, and (3) increase knowledge of middle-class values and experiences.

At the completion of the program, all children in the two groups were retested. Statistical analysis of data indicated the following: (1) there were no differences in intelligence between groups at time of initial or second testing, (2) both groups made significant gains in all three readiness measures from initial to second testing, and (3) there were no significant differences between groups in any of the readiness tests. Alpern questioned the assumptions concerning the benefits to "poor" children of a nursery school "enrichment" program as evaluated in this study. He indicated the data

"clearly demonstrates the need for careful controls in evaluating nursery school programs."[41] The program has been slated for further follow-up.

An earlier major study attempting to increase intellectual functioning of "poor" children was executed by Kirk in 1958. These children came from inadequate, psychosocially deprived homes in several cities in central Illinois and were considered "educable mentally retarded."[42] The "intervention" consisted of two years of a general nursery school program tailored to the mental level of the children plus additional clinical tutoring for some children with specific mental disabilities as revealed by diagnostic study.

The project employed a number of tests to assess the progress of the children in intellectual change. An attempt was also made to measure social development. All change scores on the Stanford-Binet were statistically significant for the experimental groups when compared with change scores obtained by control groups. However, when the control groups had attended special or regular classes for one year, their mean I. Q.'s had increased near those of the experimental group. (Control: Binet 82.7; Kuhlman, 80.8; Experimental group: Binet 84.2; Kuhlmann 81.7.)

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[41] Ibid., p. 245.

[42] Kirk, op. cit.

An interesting conclusion by Hodges and Spicker made after reviewing the study concerned the fact that:

> The major gains had been made by control children without organic etiologies who had come from adequate homes in which the parents were cooperative and interested in the welfare of their children. Children with organic involvements and those who had come from psychologically as well as economically inadequate homes had not made significant I. Q. gains when school experiences were begun after CA 6. It appears, therefore, that community preschool education experiences, although desirable for all culturally deprived educable mentally retarded children, are essential only for those children who are also psychosocially deprived.[43]

One of the early studies in the current series on the disadvantaged child was initiated by Gray and Klaus (1965) in Murfreesboro, Tennessee, and named the Early Training Project.[44] It involved experimental and control groups of Negro preschool children. The authors state the purpose as follows:

> . . . is an attempt to see whether it is possible by specially planned techniques to offset the progressive retardation in cognitive development and school achievement that characterizes the culturally deprived child as he passes through his years of schooling . . . we have attempted to develop a research "package" based on those variables that, on the basis of research on social class, cognitive development and motivation, seem most likely to be related to the differences in school performance between middle class and culturally deprived children.[45]

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[43] Walter L. Hodges, and Howard H. Spicker, "Effects of Preschool Experiences on Culturally Deprived Children," in The Young Child, ed. by Willard Hartup and Nancy L. Smothergill (Washington: National Association for the Education of Young Children, 1967), p. 266.

[44] Gray and Klaus, op. cit., p. 887. [45] Ibid., p. 888.

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In summary, the project provided a treatment of three special summer school experiences and three years of home visitation for one group (T_1), two summer experiences and two years of home visitation for the second group (T_2), and no intervention for the third (T_3) and fourth (T_4) control groups. At the initial pretesting of the four groups, there had been no significant I. Q. differences among the four groups. By the end of the second grade, the mean I. Q. of the two experimental groups combined was significantly greater than the two control groups combined.[46]

This study is still in process, but there appears to be reported small and reasonably consistent long term gains in intellectual level for the children in the experimental group, while the intelligence for children in control groups remained relatively constant. This was reported at the end of the second grade.[47]

Another long-term project of intervention both with preschoolers and their mothers is the Enrichment Program for Disadvantaged Children conducted at the Institute for Developmental Studies in New York City under the

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[46] See also, Early Training Project (Gray and Klaus, 1965, 1966a, 1966b; Gray, 1962; Klaus and Gray, 1962, 1963, 1965, 1967 for a comprehensive treatment of this study (Murfreesboro, Tenn.: Murfreesboro City Schools).

[47] Gray and Klaus, op. cit.

direction of Martin Deutsch. This project is designed to develop and evaluate preschool, kindergarten, and early elementary programs (to third grade) as well as to institute programs for parents of the children included in the study. Bloom et al. in reviewing the Deutsch data, reports that:

> Preliminary data indicated that preschool, kindergarten, or day-care experience, or a combination of these, was associated with higher group intelligence test scores; the scores are higher in the first grade, and the differential tends to be accentuated in a fifth grade population; the differential holds even when social class is controlled.[48]

A third project that involved both children and home visits to parents is the Perry Preschool Project conducted by Weikart.[49] This program has provided "a cognitively oriented preschool curriculum for intellectually subnormal, disadvantaged Negro children during the morning and a home intervention program with their mothers in the afternoon."[50]

The school program was structured around particular skills and concepts thought important for later school success. The program was divided into three emphases:

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[48]Benjamin S. Bloom, Allison Davis, and Robert Hess, Compensatory Education for Cultural Deprivation (New York: Holt, Rinehart and Winston, 1965), p. 103.

[49]Weikart, op. cit.

[50]Hodges and Spicker, op. cit., p. 272.

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(1) structured group teaching which divided the group into two smaller groups with two teachers each to work on pre-academic concepts; (2) organized area teaching which took a large part of each morning with free choice of activity for the children among the various interest centers, i.e., the doll corner, the creative arts area, etc.; and (3) field trips. In the afternoon each mother had a weekly visit (90 minutes) from a teacher to demonstrate teaching procedures and to help the child individually. Most of the "home" work revolved around the cognitive-skill areas with an occasional field trip with the child (and his mother, if possible). Monthly group meetings were held for parents also with the opportunity provided for socializing, viewing appropriate films, creating and repairing toys and equipment for the children, and discussions about child rearing situations. The last type of meeting was found to be the type the mothers liked best. An interesting note to these was that no outside "experts" were invited for any meetings.[51]

There were new groups of children in the project every year from (1962-1966); all were culturally deprived Negro children with initial Stanford Binet I. Q.'s of 50 to 85. These groups were called waves 0 through 5. Each of the five experimental groups has received or

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[51]Weikart, op. cit., p. 38.

will receive, two years of nursery school prior to public school kindergarten (except wave 0 which received one year of preschool training before public school kindergarten). The control groups participated only in the testing program. Each wave has been made up of approximately 12 experimental and 12 control children.

All the children involved in the Perry Project were evaluated through the use of four tests: The Stanford-Binet, the Peabody Picture Vocabulary Test (PPVT), the Leiter International Performance Scale, and the Illinois Test of Psycholinguistic Abilities (ITPA).

At the present time, results are available for waves 0 through 3. In evaluating the testing data for the Stanford Binet, Weikart states that "three patterns emerge."[52] The main pattern is that all groups experience increased I. Q. scores. A second pattern seems to indicate stability of I. Q. scores for control groups who did not attend nursery school "followed by an immediate gain after one year of school attendance."[53] A third pattern is

> . . . a dramatic spurt, as much as 20 points, in I. Q. scores after one year of preschool attendance followed by slight decline during the next year whether in the second year of preschool or in regular (public) kindergarten classes. Third

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[52] Ibid., p. 42.

[53] Ibid., p. 39.

year data, however, show a recovery toward the score obtained in the first year spurt.[54]

Hodges and Spicker observed in their review of the Perry project that the drop in I. Q. at the end of the second grade was consistent with the findings of the Early Training Project. They surmise that the drop may be a function of the "changing content of the Stanford Binet at the seven-year-old level (greater emphasis on verbal content) or . . . teaching strategies used at the second grade level were less appropriate for these children."[55]

A program that has caused sharp controversy among early childhood educators because of its operation is the program focusing on task-oriented methods. This is the program being conducted by Bereiter and Engelmann at the University of Illinois. It is a pilot program enrolling only 15 four-year-old children. Basically, the program is divided into three 20-minute sessions, each one specifically devoted to teaching language, reading, and arithmetic. All three "programs" go simultaneously with the children divided, five to a group. The children then rotate from teacher to teacher to get specific instruction in the three academic areas. There are two separating periods between the 20-minute sessions, one a session

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[54] Ibid.

[55] Hodges and Spicker, op. cit., p. 274.

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(about 15-20 minutes) of free choice play activity, and one 30-minute period for refreshments and a music activity, mostly singing of specially written songs.

The curriculum is based on the premise that the typical nursery school can not provide the kinds of specific learnings necessary (language, arithmetic, and reading) for a culturally deprived child to be successful in the academic demands of first grade. Bereiter expects full participation of all children in the learning tasks, and the parents to accept definite responsibilities as a condition for the child's acceptance into the school.[56]

Results based on tests given at stated intervals indicate that by the end of seven months of schooling, "the children had come up approximately normal on the verbal subtests of the ITPA (Illinois Test of Psycholinguistic Abilities) and were about six months above average in Vocal Encoding--the measure of free descriptive use of language."[57] At the end of nine months of schooling, as a result of data on the Wide Range Achievement Test, the children were ready to enter first grade level for at least two areas--reading and arithmetic. A more detailed exposition of the exact program and methods used in this project are described by Bereiter and Engelmann.[58]

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[56] Bereiter and Engelman, op. cit., p. 73.

[57] Ibid., p. 53. [58] Ibid.

Summary

The examination of studies reported in this chapter indicates that no definitive conclusions can be reached regarding the evaluation of preschool experience on intellectual development either as purely an enriching experience for middle class children or as an "intervention" experience for reversing the "cumulative deficit" (a term used by Martin Deutsch) of culturally deprived children.

One factor that might have contributed to conflicting results was the difficulty of equating specific variables of the nursery school experience. Where attempts were instituted toward a more teacher-directed program of cognitive experiences (Weikart, Bereiter, Deutsch, etc.), the evidence seems generally to support the suggestion that a stimulating preschool experience is a factor of importance in mental development as indicated by test results.

Reports of research on long-range experimental programs at the preschool level, especially for socio-economically disadvantaged children, should be increasingly available in the future. Since a major long-range goal of American democracy has been to educate all children to the maximum of their potential, these research findings can contribute to carrying the American ideal to fruition. Research studies bent on implementing

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and suggesting revisions in preschool curriculums for children from disadvantaged socio-economic levels may encourage elementary educators as well in revising their curriculum approach toward facilitating effective school performance by this segment of the school population.

In the next chapter the problems of curriculum will be explored in addition to describing the methodology pertinent to the collection of data for this study.

CHAPTER III

POPULATION, PROCEDURES, AND DATA COLLECTION

The present study was an outgrowth of many factors relevant to the growing awareness and national interest in the effects of poverty on a large segment of the nation's population. The "anti-poverty bill" (Economic Opportunity Act of 1964) established the Office of Economic Opportunity (OEO) under whose auspices was inaugurated the experimental program for disadvantaged preschool children. This national project labelled "Project Head Start" was implemented with prekindergarten programs on a nation-wide basis in the summer of 1965.

The College of Home Economics at Michigan State University operates two nursery schools as part of an ongoing program in child development and teacher education. As a measure of its concern for the dearth of teaching experiences with a lower class population that was being offered prospective teachers of young children, the College of Home Economics established a pilot project for fourteen children from culturally deprived areas in April, 1965. This group was added to the number of groups of middle class children who were already part of the laboratory

preschools' program for educating prospective teachers of young children. The following academic year (1965-1966) twenty-nine children from lower socio-economic levels were included in the nursery schools. In the fall of 1966, thirty-one disadvantaged children were in attendance. Since these schools all operated without government funds, the children were called "community" children rather than "head start" children. As the pilot project did not have to qualify for OEO approval, parameters were established for the admittance of children to the nursery schools that differed slightly from the OEO criteria. The children were from "disadvantaged, lower socio-economic status families," and family incomes were to be below $5,000.00 annually.[1,2] A complete description of the pilot project of 1965 from its inception can be found in Holt's descriptive study.[3]

The remainder of Chapter III will describe the following aspects relevant to the research design:

1. Description of population
2. Criteria for selection of control and experimental groups

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[1]Carol Lou Holt, "A Description of a Preschool Project for Culturally Deprived Children" (unpublished Master's thesis, Michigan State University, 1966), p. 48.

[2]OEO approval for Head Start Projects required that 85 per cent of the enrollees had to be from families whose annual income did not exceed $3,000.00.

[3]Holt, op. cit., pp. 1-95.

3. Sample groups
4. School personnel
5. Instructional program--overview
6. The preschool program
7. Parent involvement
8. Data collection
   a. Testing instruments used
   b. Administration of tests
9. Data processing

Description of Population

The two nursery schools are located on the large campus of Michigan State University which is located in East Lansing, a community comprised in the main of people in the middle to upper socio-economic class range. It has no industrial manufacturing plants within its city limits. It functions as the seat of a large midwestern university of approximately 38,000 students and as a "bedroom" community for people engaged in professional and business leadership positions in the greater Lansing area. On the periphery of this college community, between Lansing and East Lansing, are several marginal areas where unskilled and semi-skilled workers of lower socio-economic levels live. These areas are composed of racially and ethnically integrated backgrounds such as Caucasian, Negro, and Mexican.

From these areas the original group of disadvantaged children was recruited as well as the children included in this study under the category of "lower class."[4] The children for the middle class groups were recruited from families in Lansing and East Lansing who had children in the nursery schools or who lived in middle class residential areas. The parameters established included socio-economic status as prescribed in the Warner-Meeker-Eells Index of Status Characteristics (I. S. C.).[5] The separate status characteristics rated for socio-economic status in this study were: occupation, source of income, house type, and dwelling area.

The I. S. C. was chosen for computing socio-economic status in this study for two reasons: (1) the families represented in this study as lower socio-economic or middle class fit well within the range described for each class in the I. S. C., and (2) the method is relatively simple and brief to use. Warner et al. supported its ease of use when they stated:

> This method (the I. S. C.) is designed to provide an objective method for establishing the social level of everyone in the community and to do so by simple, inexpensive means. The skills involved are very few; the amount of information needed is small; the length of time necessary brief.[6]

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[4]Holt, op. cit., p. 58.

[5]W. Lloyd Warner, Marchia Meeker and Kenneth Eells, Social Class in America: The Evaluation of Status (New York: Harper and Row, Inc., 1960), pp. 121-159.

[6]Ibid., p. 39.

Criteria for Selection of Control and Experimental Groups

The subjects of this study were all in the four-year-old range from 47 to 57 months as of October 1, 1966, who would be eligible for public school kindergarten in the fall of 1967 because their fifth birthdays would all arrive before December 1, 1967, the prescribed date used as a guide in the greater Lansing area school systems for entrance into kindergarten. No subject was to have had any nursery school experience prior to October 1, 1966.

Subjects from the lower socio-economic group came from homes in the two lowest ranges on the I. S. C. scale of seven.[7] Parents' occupations were unskilled or semi-skilled, with two families receiving additional welfare aid. Their educational level was the tenth grade or below; their housing conditions were poor to fair. Many of the families had television sets; only a few had any books or magazines, toys or games in evidence. The families lived in an ethnically and racially integrated area, and no distinction was made of ethnicity or color for this study. All families were intact groups with a father and mother residing with the children with one exception: the divorced father lived with his four children in his parents' intact home.

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[7] Ibid., p. 123.

Subjects in the middle class groups came from homes in the upper middle range (2 and 3) of the I. S. C. seven-point scale. Parents' educational level ranged from high school graduation to college graduation. Their housing conditions were good; they provided varied learning experiences for their children such as books, games, and travel. They all lived in well kept, residential neighborhoods. There was evidence of ethnic integration.

Sample Groups

Experimental Groups

These two groups of children attended nursery school sessions three afternoons a week during the academic school year, October 1, 1966 to June 4, 1967. Actual weeks in session provided eighty-one sessions.

Group 1, lower class (Exp-l.c).--In addition to the criteria of social status, age limitations and lack of preschool experience, this group comprised eight girls and six boys recruited through home visits and the informal communication network of families whose child had attended nursery school during the spring of 1965.

Group 2, middle class (Exp-m.c.).--In addition to the criteria of social status, age limitations and lack of preschool experience, this group comprised eight girls and six boys from families who needed no recruiting. The names of their children were on the nursery school waiting

lists. The children were chosen for nursery school attendance in order of date of application. However, once placed in a nursery school group, variables of social status, age, and sex entered in the selection of specific children for the experimental middle class group.

Control Groups

These two groups of children were recruited from the greater Lansing area through lists obtained from the Ingham County Welfare Agency and the district nurse for the lower social status children; and from the nursery school waiting lists for the middle class children. In addition, families at both socio-economic levels supplied names of families with four-year-old children not attending nursery school through the informal communication network existing among friends and neighbors. Many parents were eager to provide names of possible subjects, and the investigator felt a feeling of receptivity upon contacting new families. In many cases, a detailed description of the investigator's approach, testing, and techniques of establishing rapport with the children had preceded her appearance.

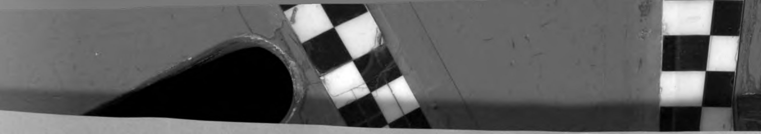
Group 3, lower class (Con-l.c.).--Within the framework described above, eight girls and six boys were chosen who fit the age requirement and who would not be attending nursery school during the academic year 1966-67.

The children all planned to attend public school kindergarten in the fall of 1967.

Group 4, middle class (Con-m.c.).--Within the social status criteria for middle class and age limitations established for this study, this group included eight girls and six boys who would not be attending any nursery school during the academic year 1966-67. They, too, planned to attend public school kindergarten in the fall of 1967.

School Personnel

Each group of children (no group of children numbered more than fifteen of approximately equal sex distribution) was guided by a head teacher. All head teachers were staff members of a university department in home management and child development. All head teachers had master's degrees in child development and variable years of teaching experience in college laboratory preschools. Each group had a graduate student assistant teacher who was a Master of Arts degree candidate in child development. Other assistants included Bachelor of Science degree candidates in child development and teaching who were enrolled in their practicum student teaching experience in the preschools. Additional aid was available for "community" children from enrollees of a Head Start Training Project for nursery school aides carried on by the department under OEO auspices. In all groups the minimum ratio of adults to



children was one to four. Of these adults most were women. The only "permanent" male teaching member of the staff was a graduate degree candidate in child development.

Each nursery school had a director who functioned in the role of adviser to the teachers as well as administrator of the school. Both had master of arts degrees in child development and were academic staff members at the university. They were also involved in teaching college courses in child development and nursery school education.

A cook, employed part-time, planned and cooked hot meals for the disadvantaged children as well as for the middle class children enrolled in one of the nursery schools.

Instructional Program--Overview

As indicated in Chapter II, the current revitalized interest in nursery school education as a means of "compensatory," or "intervention" education relative to socio-economically disadvantaged children is causing a ferment in advocating changes in the traditional or conventional nursery school curriculum. Nursery school teachers have been well-known to be better at interacting sensitively with young children than in dealing with explanations of

theoretical rationale underlying their guidance modus operandi[8]

As yet, no universal philosophy of nursery education has emerged. Sears and Dowley summarized what they think are the specific aims of most nursery schools at the present time.[9]

The nursery school teachers who taught the groups of nursery age children at Michigan State University, and who were the teachers of the children included in the experimental groups in this study, were of a "developmental" orientation. The curriculum was geared to the needs of the child as an individual, but did not negate the learnings of nursery school children as a group. Both types of learnings are found in some combination in every nursery school curriculum.[10]

It has been, therefore, difficult to set down an exact curriculum for the nursery school experience of the children of both experimental groups. No great change was made in the traditional curriculum for the culturally deprived children with the exception that more specific language experiences were incorporated in the

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[8]Evangeline Burgess, Values in Early Childhood Education (Washington, D. C.: National Education Association, Department of Elementary-Kindergarten-Nursery Education, 1960), p. 10.

[9]Sears and Dowley, op. cit., p. 821.

[10]Ibid., p. 816.

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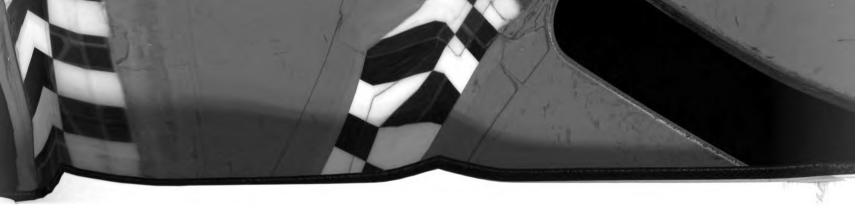
program such as labelling, categorizing, speaking, and listening to stories. These were conducted on an informal basis as each teacher saw the need to facilitate a meaningful experience for each child. Since each group had a high ratio of one adult to each three or four children, there were always opportunities for individual or small group activities with adult support: story-telling, woodworking, art, or listening to individual children and talking. Otherwise, the "traditional" program of promoting the growth of the whole child--physically, emotionally, socially, and intellectually--was followed.

The Preschool Program

The curriculum was considered by the teachers to be "balanced" between active and quiet activities, and made provision for inclusion of the following types of activities:

1. Social learning experiences: dramatic play with puppets, dolls and/or "props"; efforts made to foster a healthy self-image involving large and small blocks, "theme" play such as firemen, policemen, mothers, fathers.
2. Language experiences: opportunities for conversation with adults and/or children; labelling objects by name.



3. Story and music experiences: enjoyment of stories and songs; sharpening of memory and listening skills by hearing and learning songs and fingerplays, rhythm experiences accompanied by records, piano or musical "instruments" played by children.
4. Health and safety needs: discussions with children about hand-washing before meals and snacks, necessity for limits in free indoor and outdoor play.
5. Large and small muscle experiences: indoor and outdoor experiences with wheel toys, ladders, swings and slides; large and small blocks; scissors and other small implements. These were designed to foster development of motor skills and neuromuscular coordination.
6. Field trips: educational trips to provide concrete first-hand experiences as a basis for more abstract learnings about stores, parks, farms and farm animals, and others. Trips were also used to foster the use of language in planning, explanation and follow-up of the trip. In follow-up experiences, story books and picture books were used to represent the "real" experiences of the field trips. A trip to the college apple farm was followed by an experience in cooking (and eating) applesauce.

7. Art experiences: many opportunities to play with, manipulate, and feel various art media: paint, clay, crayons, water, dough, easel brushes, collage materials, finger painting.
8. Group experiences with peers under supervision of a teacher to facilitate learnings of group participation and cooperation.

Special efforts were made to enhance the self-image of the disadvantaged children by providing a full-length mirror in the nursery school room, by calling children by their names, and by having pictures of the children on the wall for them to see.

Throughout the program, whenever feasible, children were taught concepts of relationship such as classification by size (big and little), by space (prepositions: over, under, beside, to, with); and by kind (frying pan goes with the stove).

Activities of the type described are part of typical nursery school curriculums. What differentiates the different types of programs are the emphases put on structure and direct teaching methods. The nursery schools in this study used an unstructured curriculum with a variety of experiences and equipment which children were free to choose or not. The nearest approach to a direct group "teaching" experience occurred at story time when the children gathered together to learn songs

and fingerplays and to listen to stories. Occasionally, the teacher would show large pictures and encouraged the children to tell stories about or describe what they saw.

This brief description of a conventional program is not to imply that no planning of program was evidenced. The program was planned to include not only play activities but also routines of clean-up, washing hands, toileting and eating. Obviously, through the whole period at school, teaching and learning of many concepts were joined at the same time.

The children attended the program from 1:15 to 3:45 p.m. three afternoons a week for a nine-week period, the termination of which coincided with the termination of the university quarter. The children experienced three such quarters from October 1, 1966 to June 4, 1967, a total of approximately 81 sessions.

The following was a sample schedule of the daily pattern, subject to adjustment to fit the individual teacher, the time of year, and the inclinations of the children.

1:15-1:30	Children arrived, were greeted by teacher and checked for health.
1:30	A hot lunch type meal was served.
1:45-2:30	Free play indoors.
	Several "areas" set up to encourage play.
	Doll area--dolls and domestic play.

Block area--cars, street signs, (or fences, farm animals) to encourage building.

Art area--tables for painting, crayons, collages.

--easels and paints set up.

--table for clay.

Music area--record player and records.

Sand box--containers for pouring, measuring, packing.

2:30-2:45 Clean-up and "transition" period. Toys put away.

2:45-3:00 Story telling, finger plays, and/or music-rhythms, singing songs.

3:00-3:15 Juice and snack time.

3:15-3:45 Outdoor free play with opportunities for tricycling, pushing wagons, swinging, climbing, jumping, playing in large sand box, and running in large field.

Parent Involvement

A stated objective of Project Head Start was the effort to reach out to parents by "making serious efforts to bring parents into a meaningful relationship."[11]

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[11]Quoted in Jean Tansey Porter, "An Evaluation of the Head Start Program in Calhoun County, Michigan, Summer, 1965, with Particular Attention to School Readiness" (unpublished Doctoral dissertation, Michigan State University, 1967). p. 92.

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Although the program described in this study was not an official version of Head Start, an anchor of its pre-school philosophy was the involvement of parents.

There was no coercion nor requirement regarding the kind or amount of parent involvement; it, therefore, took many forms. Both middle class and lower class parents attended meetings at which films and slides showing nursery school scenes were shown and interpreted. Teachers of lower class children made at least one home visit to each family per nine-week term. Although most of the disadvantaged children were transported by bus, two or three parents took turns driving a few children to the nursery school and seemed to enjoy the informal contacts with the teacher and the children's play environment. Several mothers of the disadvantaged accompanied the groups on field trips in the community. At Christmas time, the children invited their parents to come to a Christmas party. The mothers of the disadvantaged children were encouraged to ride to the nursery schools on the bus with their children, and many did attend the parties.

No formal parent education program was contemplated at that time, but teachers and other nursery school staff were receptive to any interaction with parents that could be managed.

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Data Collection

Testing Instruments Used

The investigation of the effects of an enrichment experience in the nursery school on intellectual performance as described in this study involved the use of the following testing instruments:

The Stanford-Binet Intelligence Scale, Form L-M.--This is the revised scale published in 1960 which incorporates in a single form (L-M) the best subtests from the separate 1937 L and M scales.[12] Although standardized intelligence tests are often criticized, especially in use with disadvantaged children,[13] the Stanford-Binet was chosen because, traditionally, large scale validation has accompanied its use in predicting academic success in school. It is designed "to measure intelligence regarded as general mental adaptability."[14]

The Standard Revision in 1960 corrected some inadequacies of the 1937 scale by: (1) making some adjustments so that "average M. A. (mental age) derived by

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[12]Lewis M. Terman and Maud A. Merrill, Stanford-Binet Intelligence Scale, Manual for the Third Revision, Form L-M (Boston: Houghton-Mifflin, Copyright 1960), p. 39.

[13]Kenneth B. Clark, "Educational Stimulation of Racially Disadvantaged Children," in Education in Depressed Areas, A. Harry Passow, (ed.) (New York: Teachers College, Columbia University, 1963), pp. 149-151.

[14]Terman and Merrill, op. cit., p. 39.

use of the L-M form of the scale more nearly corresponds to the average chronological age at each age level,"[15] and (2) providing revised I. Q. tables that include built-in adjustment for "atypical variability of I. Q.'s at certain age levels so that the standard score I. Q.'s are comparable at all age levels."[16] The revised I. Q. is a standard score with a mean of 100 and a standard deviation of 16.

Evidence for the validity of the 1960 scale was based on three main sources. First, the selection of test items in the 1960 scale was based on the results of more than 5,000 tests administered from 1950 to 1954 to subjects aged two and one-half to eighteen years. By comparing the per cent of subjects passing the individual tests in the fifties with the per cent of subjects passing in the thirties, changes were made in the subtest items. Secondly, changes were made in the test based on the selection of items that yielded an increase in per cent passing at successive chronological age levels. Thirdly, the choice of items was determined by their biserial correlation with the total score.

The L-M Form maintained its high reliability as indicated by the high level of biserial correlations between individual subtests and the total.

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[15]Max L. Hutt and Robert G. Gibby, The Mentally Retarded Child (2nd ed.; Boston: Allyn and Bacon, Inc., 1966), p. 257.

[16]Terman and Merrill, op. cit., p. 40.

At the preschool level, subjects were included in the assessment group from Minnesota, California, Iowa, and New York. An additional group of 850 two-and-a-half year olds was included because it represented the entire population of that age in a small middle-western city.[17] Biserial correlations were computed for the tests included in the 1960 form at the preschool levels, ages two-and-a-half through five. The 1960 mean correlation at this age level was .61, the 1937 mean correlation .62. This compared favorably with the 1960 mean correlation of .67 for the year levels 6.0 through 14.0.[18]

The Stanford-Binet Intelligence Scale, Form L-M was considered usable for measuring preschool children by the examiner because it was one of the few tests that could provide an I. Q. measure for children as young as two-and-a-half years of age. With subtests validated at this young level, it was possible to test all the preschool children in this study as no subject's basal mental-age level was below two-and-a-half.

The Peabody Picture Vocabulary Test--Form B (PPVT).--This test was developed by Lloyd M. Dunn in order "to provide a well-standardized estimate of a subject's verbal intelligence through measuring his hearing vocabulary."[19] It is a modified picture vocabulary test in

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[17] Ibid., p. 18.

[18] Ibid., p. 33.

[19] Lloyd M. Dunn, Manual for the Peabody Picture Vocabulary Test (Minneapolis: American Guidance Service, Inc., 1959), p. 25.

which the subject is required to point to the best picture in a choice of four possible responses to the stimulus word.

The PPVT was standardized on 4,012 cases ranging from ages two-and-a-half to eighteen, with relatively fewer cases at the younger age levels (92 cases at ages 2.6 and 3.0 and 305 and 227 at ages 17 and 18 respectively). All subjects were administered both Forms A and B during the period of April-June in 1958. Only white children and youth living in and around Nashville, Tennessee were tested in the final standardization group. However, Dunn indicated that certain precautions of subject selection and test administration were taken to provide norms useful throughout the United States.

Reliability coefficients for the PPVT (the degree to which scores remain stable or constant) were calculated with the Pearson product-moment correlations on the raw scores earned in both A and B forms at each age level by the standardization subjects. Further studies in which both forms A and B were administered to a wide range of subjects, such as "trainable" mentally retarded, cerebral palsied children, and "normal" seventh grade pupils resulted in reliability coefficients ranging from 0.75 to 0.97. Dunn, therefore, suggested the PPVT was a "reasonably stable instrument" for average and mentally retarded subjects.[20] Since the PPVT was a relatively new test (1959)

[20] Ibid.

cumulative evidence on test-retest or long-term reliability of PPVT scores was not available.

Data for the validity of the PPVT (or the extent to which it measures what it professes to measure) "were obtained both for individual items and for the total test."[21] Dunn states that the major case for the PPVT rests on "content" and "construct" validity as forms of rational validity and "item" validity as a form of statistical validity.[22]

"Content" validity was obtained for the test by conducting a complete search in the Merriam Webster New College Dictionary for all words that could be illustrated. Since a "good cross section" was obtained of words in common usage in the United States, Dunn claims that the final product is assumed to meet adequate standards for a picture vocabulary test.[23]

"Construct" validity was claimed for the PPVT because the items used were found to predict well the concept the test is supposed to measure. The test correlated highly with measures of academic performance, and many studies had shown that vocabulary was the best single item for predicting success in school.[24]

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[21] Ibid. [22] Ibid. [23] Ibid.

[24] Hutt and Gibby, op. cit., p. 262.

"Item" validity was established by "selecting individual words where the percent of subjects passing increased from one age group to the next.[25]

In summary, validity evidence was limited and preliminary. The test was still too new to have been the object of detailed statistical analysis.

The PPVT was chosen for this study because: (1) it was not a timed test, (2) it only required 10-15 minutes to administer to the usual preschool age subject, (3) it was based on auditory comprehension and required no oral response, and (4) it correlated highly with measures of academic performance, if continued follow-up were desirable for the subjects in the study.

The Bender Gestalt Test for Young Children.--This test consists of nine relatively simple geometrical designs composed of dot, lines, angles and curves combined in a variety of relationships (see Appendix, p. 143). It has had a long and varied history since Lauretta Bender introduced this test in her monograph in 1938.[26] Since that introduction, more than 130 books, studies and papers have been published which deal with the Bender Gestalt Test. Only one-fifth of these studies dealt with children, largely published since 1955. A persisting

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[25]Dunn, op. cit., p. 31.

[26]Lauretta Bender, A Visual Motor Gestalt Test and Its Clinical Use, Research Monograph No. 3 (New York: The American Orthopsychiatric Association, Inc., 1938).

problem in using the Bender Gestalt Test was that most established scoring systems were not suitable for use with tests of young children.[27] Koppitz described in her recent book, The Bender Gestalt Test for Young Children the systematic study leading to the construction of a developmental scoring system for the Bender Test.[28] The Developmental Bender Scoring System consisted of 30 mutually exclusive scoring items which were either scored as present or absent. A child could theoretically have earned a composite score of 30. Since the Bender Test was scored for errors, a high score indicated a poor performance while a low score suggested a good performance.

Normative data for the Developmental Scoring System for Children were collected from the Bender Gestalt records of over 1,100 school children, age five to ten years. Each scoring item was validated against first and second grade achievement as measured on the Metropolitan Achievement Test.[29] The subjects were 165 school children from six different schools in urban, suburban and rural

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[27]Elizabeth M. Koppitz, The Bender Gestalt Test for Young Children (New York: Greene and Stratton, Inc., 1964), p. 4.

[28]Ibid., p. 5.

[29]G. Hildreth and N. L. Griffith, Metropolitan Readiness Test (Yonkers-on-Hudson: World Book Company, 1949).

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settings and represent a socio-economic cross section in those areas.[30]

To establish the reliability of the Developmental Bender Scoring system, two kindergarten classes and two first grade classes served as subjects. One kindergarten class and one first grade came from a school in a lower socio-economic area and the other two classes were from a middle class area. The Bender Test was used in a test-retest administration four months apart. Kendall's Rank Correlation Coefficient was used by Koppitz to compute the reliability coefficient between pre- and re-test scores. All correlations were statistically significant at the .001 level. Koppitz summarized this study by stating: "Thus it appears that the Developmental Scoring System is reliable and can be used with considerable confidence."[31] Research findings based on other studies which used the Developmental Bender Scoring System for Young Children were also described and evaluated by Koppitz in her aim to:

> . . . provide different ways of analyzing the Bender records of young children so that the examiner can evaluate their perceptual maturity, possible neurological impairment, and emotional adjustment from a single Bender protocol.[32]

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[30] Koppitz, op. cit., p. 12.

[31] Ibid., p. 14.

[32] Ibid., p. 6.

It must be mentioned here that to this writer's knowledge, there have not been any definitive findings to enhance the use of The Bender Gestalt Test as a tool to indicate school readiness. However, Koppitz summarized the results of several research studies relating the Bender Test to other measures of standardized readiness tests by stating:

> Especially when the status of a child is not clear, the Bender can offer valuable information to supplement the regular group screening tests that are often routinely administered in schools. The agreement between the Bender and another screening test can often determine whether a child is still too immature in his perceptual development for school and formal learning or whether his behavior is primarily the result of social and emotional factors.[33]

Increasing use has been made of the Bender Test with children in studies which cover more areas of investigation than the studies using adults as subjects. Some of the areas considered in studies of children were: (1) screening for school readiness, (2) predicting school achievement, (3) diagnosing reading and learning problems, (4) evaluating emotional difficulties, and (5) studying mental retardation.[34]

Although the Bender Gestalt Test for Young Children has not had nearly the extensive validation studies as those undergirding the Stanford-Binet and other

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[33] Ibid., p. 57.

[34] Ibid., p. 3.

standardized tests, it was chosen for this study for the following reasons:

1. It was largely independent of cultural deprivation, especially when scored according to the Developmental Bender Scoring System for Children.[35] It was also relatively independent of linguistic skills or hearing ability, and measures visual-motor perception in young children regardless of the child's environment.[36]
2. The Bender Gestalt tends to assess "fairly accurately" the school readiness of children in middle and lower class communities.[37]
3. Administration of it is very simple. The nine figures are printed on nine cards, which are presented one at a time and which the subject is asked to copy on a blank sheet of paper. There is no time limit, and a child is free to erase or change any design.
4. The Bender Gestalt was found to be related to school achievement and to other measures

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[35] Ibid., p. 51.

[36] Hutt and Gibby, op. cit., p. 282.

[37] Koppitz, op. cit., p. 56.

of general mental development.[38] If a follow-up study were to be made of the subjects of this study, it might be useful to have the Bender Gestalt Test as part of their test history.

Administration of Tests

The Stanford-Binet was the only test that was used as a pre- and post-test instrument in this study. In order to shorten the testing time for the young subjects of this study, it was decided to use Wright's method in obtaining an abbreviated test score. His method shortens testing time about 20 per cent without significantly affecting the test rating. In his method, he used the four starred tests at each level instead of six but, in addition, he determined the basal and ceiling levels by using all six tests at these two levels. Studies reporting the use of abbreviated scales indicated no significant differences between means of full-scale I. Q.'s as compared with the abbreviated scale I. Q.'s.[39] The other two testing instruments used, the PPVT and the Bender Gestalt, were administered at the same time as the post-test of the Stanford-Binet.

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[38]Fred W. Billingslea, "The Bender Gestalt: A Review and a Perspective," in Handbook of Projective Techniques, Bernard I. Murstein (ed.) (New York: Basic Book, Inc., 1965), p. 770.

[39]Terman and Merrill, op. cit., p. 62.

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As a pre-test, the Stanford-Binet was administered by the investigator to all 56 subjects included in this study during the first month of October, 1966. It was administered individually first to the children enrolled in the nursery schools (experimental groups) and then to the non-nursery school children in their homes (control groups). The children enrolled in the Michigan State Nursery Schools were tested individually in a separate, quiet room in the nursery school. The children in the control group were tested individually in their own homes.

In accordance with "good" nursery school procedure, this investigator spent several hours getting acquainted with the subjects attending nursery school. During free play time she would talk casually with the children in groups of two or three, play manipulative games with them, or just sit close by and observe. She would inform them as a group and individually that she would return to "do" some puzzles, play some games, and talk especially with them. Since the experimenter's office was in the same building, the opportunity presented itself often to walk through the play yard and greet the children individually. She also took the children on a "field trip" with their teacher to see the special room where the testing would take place. (This was for administration of the Stanford-Binet pretest.) Teachers had been informed about the study in advance, and were kept au courant as the testing

progressed. They often helped to "prepare" the children for the investigator's visit by encouragement and casual conversation regarding the testing procedure. Because of this slow approach at establishing rapport, only one child insisted on having her teacher accompany her and remain in the testing room.

As for the control group children, after contact and explanations had been accomplished by telephone calls to the mothers, the investigator would ask that they prepare the children for her visit by suggesting she would have puzzles and games to play with them. Upon appointed arrival at their homes, some time was spent to establish rapport with the child before tests were administered. It was a note of interest to observe how many children remembered the "lady with the games and the red Volkswagen" on her return some eight months later.

Every attempt was made to administer the Stanford-Binet to the child at home in a room alone with the investigator. Most middle class families, mothers usually, accepted the request to remain in the background, but lower class families were often more reluctant. Mothers would periodically "check" to see if all were going well, or would look over the investigator's shoulder to observe her in the process of administering a test. In one Mexican-American lower class home, the father made all the arrangements in a friendly fashion, but then

remained in the room close by, but silent, during the whole procedure. It is of interest to note than on return eight months later for the post-test, the investigator was greeted as a long-time acquaintance. Contact had, however, been maintained by a brief visit and by telephone during the interim period.

Approximately eight months later, in June 1967, at the end of the experimental nursery school experience for two of the groups of children in this study, the Stanford-Binet was readministered to all 56 subjects. Most of the experimental subjects were retested during the last two weeks of the academic school year. Two of the children from the experimental group were tested at home shortly after the close of the school year. The control subjects were again tested in their homes after arrangements had been made by phone (and by home visits if no phone was available).

At the same sitting at which the Stanford-Binet post-test was administered, the PPVT and the Bender Gestalt were also administered. The Bender Gestalt was presented at the beginning of the testing session, since it was a consideration that a fatigued child would not perform optimally on this paper and pencil test which requires relatively fine motor control.[40] Because young children

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[40] Ibid., p. 15.

often exhibited immature fine motor control, minor deviations were ignored in the Developmental Bender Scoring System devised for this test.

In order not to tire the children, the investigator took short candy or drink "breaks" at the completion of each test in order: (1) the Bender Gestalt Test, (2) the Stanford Binet, and (3) the PPVT. Both the Bender taking approximately five to ten minutes to complete and the PPVT about ten to fifteen minutes for "completion."

Data Processing

Scores obtained from all subjects on all three instruments were transferred to IBM cards. These IBM-tabulated decks were programmed for statistical treatment through Michigan State University's CDC-3600 tabulator system. Analysis of the data will be presented in Chapter IV of this study.

CHAPTER IV

ANALYSIS OF THE DATA

The chapter will be divided into two sections: the first section will present analysis of the data in terms of statistical support for each hypothesis, and the second section presents a discussion of the findings derived from the statistical analysis.

Data on the Stanford-Binet, Form L-M

At the inception of this study, the experimental lower class children had already been selected for enrollment in the Michigan State University nursery schools. The investigator, therefore, was not able to use the Stanford-Binet test as a selection variable in equating the experimental and control groups. The group samples were selected by social class, sex, age, and nursery school experience.

After the sample groups were determined on the basis of these variables, the Stanford-Binet was administered as a pretest in order to determine if there were any intellectual differences between groups at the beginning of the study. As indicated in Table 1, there was a significant difference between groups in this

study as measured by the Stanford-Binet (Form L-M). Using the error term to find the pooled error variance of the four groups rendered a more accurate measure of the error (variance) that existed between groups. This variance was significant at the 1 per cent level (F=5.08).

TABLE 1.--Analysis of variance of groups on pre Stanford-Binet scores.

Source	SS	df	Mean Square	F
Between	4549.91	3	1516.64	5.08*
Within	15526.64	52	298.59	
Total	20076.55	55		

*Significant at .01 per cent level (F=4.13 needed for significance).

Table 2 shows this difference in detail. The significant mean differences in the I. Q. scores as measured by the Stanford-Binet generally favored the middle class subjects, whether attending nursery school or not. The most significant was the mean difference between lower class experimental subjects and middle class subjects, whether the latter were in experimental or control groups (22.71 and 19.00, respectively). There was no significant difference between the mean of the control lower class group and the control middle class group (both non-nursery school) although that difference

TABLE 2.--Pre Stanford-Binet mean differences by treatment group.

	Mean	Control Lower Class (Non-Nursery School)	Experimental Middle Class (Nursery School)	Control Middle Class (Non-Nursery School)
		(N=14)	(N=14)	(N=14)
Mean		96.07	111.00	107.29
Group				
Experimental lower class (N=14)	88.29	-7.78	-22.71*	-19.00*
Control lower class (N=14)	96.07		-14.93*	-11.22
Experimental middle class (N=14)	111.00			+3.71

*Significant at .05 level (mean difference needed 13.51).

(11.22) came closest to the critical mean difference needed for significance (13.51). Although there were some significant mean differences between social class groups, there were no significant mean differences within class groups. These figures tended to support the well documented differences in I. Q. scores attributed to social class. The fact that the middle class children generally scored higher could also support accusations made against the "culture fairness" of the Stanford-Binet Scale (or any intelligence-achievement test when used with a disadvantaged population). Resolution of this issue is beyond the scope of this discussion. The authors of the 1960 revision of the Stanford-Binet Intelligence Scale maintain it is an age scale that undertakes to "measure intelligence regarded as general mental adaptability."[1]

The I. Q. score for the 1960 revision of the Stanford-Binet is a standard score with a mean of 100 and a standard deviation of 16.[2] It is worthy to note that the means of all four groups prior to any experimental manipulations fell within the "average" range of plus or minus one sigma.

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[1]Lewis M. Terman and Maud A. Merrill, Stanford-Binet Intelligence Scale, Manual for the Third Revision Form L-M (Boston: Houghton Mifflin Company, 1960), p. 39.

[2]Ibid., p. 28.

One might have posed the question of whether a nursery school experience would act as a means of raising intellectual potential of a group of children whose mean I. Q. was in the average range. However, the middle class means were both at the upper range of "average" scores (107 and 111) while the lower class means were at the lower (88 and 96). These differences were significant and might be affected by the independent variable of nursery school experience. A major question relevant to the problem of this study was: Is there a difference in the effect of nursery school education on intellectual performance of children before enrollment in public school kindergarten at two socio-economic levels--the lower class and the middle class?

From this question a number of hypotheses emerged, four of which dealt with one of the dependent variables, the Stanford-Binet. The hypotheses relevant to the use of the Stanford-Binet were as follows (numbered five through eight in this study):

Hypothesis 5. Children in the lower socio-economic group who have attended nursery school will show a greater pre- to post-test gain on the Stanford-Binet than those lower class children who have not attended nursery school.

Hypothesis 6. There will be no significant differences between pretest and post-test scores on the Stanford-Binet of middle class children who have attended nursery

school and children of the same socio-economic background who have not attended nursery school.

Hypothesis 7. Children in the lower socio-economic group who have attended nursery school will have a greater pre- to post-test gain in the Stanford-Binet than the group of middle class children who have attended nursery school.

Hypothesis 8. There will be no significant differences between pretest and post-test scores on the Stanford-Binet of the lower class children who have not attended nursery school and the middle class children who have not attended nursery school.

Tables 3, 4 and 5 present the statistical data obtained from the scores derived from the administration of the Stanford-Binet test as a pretest in the fall of 1966 and as a post-test in the summer of 1967 to all four sample groups.

TABLE 3.--Analysis of variance of groups on the Stanford-Binet pre-post gain scores.

Source	SS	df	Mean Square	F[1]	Sig.
Between	222.14	3	74.05	0.91	n.s.
Within	4248.71	52	81.71		
Total	4470.85	55			

[1]F needed for significance at the 0.01 level = 4.13.

TABLE 4.--Comparison of mean differences on Stanford-Binet pre-post gain scores by sample groups.

Group* (Each group, N=14)	Mean Gain or Loss in Pre-Post Scores	Group*	Mean Gain or Loss in Pre-Post Scores	Mean Differences Between Groups	Difference Needed for Significance at .05 Level
Experimental lower class	1.07	Control lower class	-2.71	+3.78 n.s.	+5.86 (one tailed test)
Experimental middle class	2.36	Control middle class	1.85	+0.51 n.s.	+7.05 (two-tailed test)
Experimental lower class	1.07	Experimental middle class	2.36	-1.29 n.s.	+5.86 (one tailed test)
Control middle class	1.85	Control lower class	-2.71	+4.56 n.s.	+7.05 (two-tailed test)

*Experimental lower class = lower class nursery school group; Experimental middle class = middle class nursery school group; Control lower class = lower class non-nursery school group; Control middle class = middle class non-nursery school group.

TABLE 5.--Pre-post mean differences of I. Q. scores on the Stanford-Binet within sample groups.

Group (Each group, N=14)	Post-Test	Pre-Test	Mean Difference	t
Experimental lower class	89.36	88.29	+1.07	.40 n.s.*
Control lower class	93.36	96.07	-2.71	-1.54 n.s.
Experimental middle class	113.36	111.00	+2.36	.71 n.s.
Control middle class	109.14	107.29	+1.85	.94 n.s.

*n.s. = not significant at 0.05 level.

Table 3 is a descriptive table illustrating that there were no significant differences in the mean gain in the Stanford-Binet I. Q. scores between pre- and post-test for any of the groups involved in this study. Evidently the experimental manipulations of the independent variable (the nursery school experience) were not effective in significantly raising the I. Q.

Table 4 shows more detailed statistical data on each group. Generally, no significant mean differences in gain (or loss) on the dependent variable, Stanford-Binet scores, were evident. However, though not statistically significant, the data on the gains and losses tended to add some support to the hypotheses relevant to the Stanford-Binet.

Hypothesis 5. The weight of evidence, though not statistically significant, lent some support to this hypothesis. The experimental lower class group scored a mean gain of +1.09 as compared to the mean loss (-2.71) suffered by the control lower class group. The mean difference of the two groups (+3.78), however, was not statistically significant.

The data in Table 5 indicate that only one group of children among the four groups in this study scored a mean loss in I. Q. between pre- and post-test scores. This group was the control lower class group who did not attend nursery school. Although this mean loss (-2.71) was not significant at the 0.05 level, it did suggest that lack of a nursery school experience had a negative effect for lower class children only. This data yielded some support, therefore, that social class played a role in the difference the effects of nursery school experience (or lack of it) had on intellectual performance.

A study of the gains or losses for individual children in the lower class groups revealed an unanticipated sex difference shown in Table 6. In both the experimental and control lower class groups male subjects generally showed a loss between pre- and post-test scores on the Stanford-Binet. In the experimental group only one male subject out of six posted a gain between pre- and post-test scores on the Stanford-Binet. The remaining five

TABLE 6.--Stanford-Binet pre-post test scores in lower class groups according to sex.

Experimental Lower Class (Nursery School)			Control Lower Class (Non-Nursery School)		
Pre-Test	Post-Test	Gain or Loss Difference	Pre-Test	Post-Test	Gain or Loss Difference
		Girls (8 Subjects)			
112	114	+2	129	122	-7
107	96	-11	111	110	-1
96	107	+11	105	110	+5
93	85	-8	90	102	+12
92	85	-7	89	87	-2
89	105	+16	88	84	-4
81	92	+11	84	88	+4
69	86	+17	83	81	-2
		Boys (6 Subjects)			
95	85	-10	105	103	-2
86	85	-1	100	92	-8
82	77	-5	97	87	-10
80	75	-5	92	86	-6
80	86	+6	87	77	-10
74	73	-1	85	77	-8

males showed a mean loss of four points; the range was from -1 to -10. In the control group all of the male subjects (six) posted a mean loss between pre- and post-test scores on the Stanford-Binet; the mean loss was seven points, the range from -2 to -10.

Data on the female subjects as indicated in Table 6 showed about an equal number of subjects as losers or gainers between pre- and post-test scores in the Stanford-Binet. In the experimental lower class group, five out of eight girls posted a mean gain of eleven points; the range was from two to seventeen points. In the lower class control group, five out of eight girls posted a mean loss of three points with the range of loss from -1 to -7.

These results may be interpreted as indicating: (1) girls appeared to cope better with their environment, and apparently especially profited from a nursery school experience, (2) boys appeared less able to cope with their environment whether they attended nursery school or not, and (3) the control lower class groups (non-nursery school) had the higher mean I. Q. (96.07) of the lower class groups in the pre-test, but had the lowest mean score in the post-test.

It may be that in the American lower class culture boys are treated differently from girls, thus stifling their assertiveness and making them less amenable to academically oriented experiences.

There have been extensive research findings in the literature which consistently show that boys tend to be more aggressive and generally more "unmanageable" than girls. For example, Radke did a study dealing with the relationships of parental authority to child behavior. She reported that the fathers in her sample favored or condoned aggressive behavior in girls but found aggressive assertive behavior less desired among boys.[3]

Arthur Jensen, in a recent article, also hypothesized that I. Q. differences among Negroes, with females scoring significantly higher, is "almost certainly a cultural phenomenon."[4]

In a study comparing lower class families of different within class levels, Pavenstedt found that many parents in stable lower class families were assuming the parental role, but that some mothers, fearful of delinquent behavior, were determined to control their children "particularly a son" from very "early in life."[5]

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[3] M. J. Radke, "The Relation of Parental Authority to Children's Behavior and Attitudes," Child Welfare Monograph No. 22 (Minneapolis: University of Minnesota Press, 1946).

[4] Arthur R. Jensen, "Social Class, Race, and Genetics: Implications for Education," American Educational Research Journal, V, No. 1 (January, 1968), p. 20.

[5] Eleanor Pavenstedt, "The Comparison of the Child-Rearing Environment of Upper-lower and Very Low-lower Class Families," American Journal of Orthopsychiatry, XXXVI, No. 89 (1965), p. 92.

In another study specifically related to differences in child rearing in two social classes, Sears et al., found that, in general, upper lower class mothers were less tolerant of aggression in their children than middle class mothers.[6] One can only speculate as to the results this orientation toward boys had on intellectual performance.

Bayley and Schaefer, in studying the subjects of the Berkeley Growth Study, indicated in a recent monograph, a persistent relationship between early maternal behaviors and sons' intellectual functioning. They concluded that:

> . . . their (sons') behaviors and their intellectual functioning tend to become fixed by the third year and to persist, at least through 18 years. The girls' intellectual functioning, on the other hand, appears to be more genetically determined. It is as though the girls continually readjust their behavior to the concurrent environmental conditions. However, their intelligence is relatively independent of those maternal and child behaviors which are evidently important for the boys.[7]

Hypothesis 6. The mean difference in scores between pre- and post-test scores on the Stanford-Binet I. Q. test for middle class subjects both in the experimental nursery

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[6]Robert R. Sears, Eleanor E. Maccoby, and Harry Levin, Patterns of Child Rearing (Evanston, Illinois: Row, Peterson, 1957).

[7]Nancy Bayley and Earl S. Schaefer, "Correlations of Maternal and Child Behaviors with the Development of Mental Abilities: Data from the Berkeley Growth Study," Monographs of the Society for Research in Child Development, XXIX, No. 6 (Chicago: Child Development Publications, University of Chicago Press, 1964), p. 71.

school group and the control non-nursery school group were both positive gains with the experimental subjects posting a slightly higher but not significant gain (2.36 as compared to 1.85). Therefore, the null hypothesis of no significant difference between means in middle class groups was accepted. The data are shown in Table 4.

The findings regarding sex differences in the middle class group in gains or losses between pre- and post-test I. Q.'s portrayed a very different picture than those findings relevant to the lower class. As indicated in Table 7, no special direction in gain or loss appeared for the girls, but the boys generally posted gains in I. Q. scores. Of six boys in the middle class experimental group, five gained from 1 to 26 points between pre- and post-test on the Stanford-Binet; of six boys in the middle class control group, five gained from 2 to 10 points in I. Q. These findings of the middle class subjects contrasted sharply with those of the lower class male subjects (Table 6).

There are several alternative interpretations that can be posited for these differences; some are indicated on page 88. Another reasonable explanation is that middle class children are more highly motivated toward achievement and competitive striving, a value

TABLE 7.--Stanford-Binet pre-post test scores in middle class groups according to sex.

Experimental Middle Class (Nursery School)			Control Middle Class (Non-Nursery School)		
Pre-Test	Post-Test	Gain or Loss Difference	Pre-Test	Post-Test	Gain or Loss Difference
		Girls (8 Subjects)			
146	121	-25	134	144	+10
119	116	-3	129	116	-13
113	116	+3	122	118	-4
113	110	-3	120	130	+10
109	116	+7	118	112	-6
107	114	+7	117	112	-5
101	90	-11	107	112	+5
93	94	+1	100	102	+2
		Boys (6 Subjects)			
123	124	+1	123	125	+2
116	133	+17	116	118	+2
109	117	+8	107	117	+10
107	114	+7	105	112	+7
100	98	-2	103	101	-2
98	124	+26	101	109	+8

often stressed by their parents.[8] There are also indications that a school environment emphasizes intellectual activity, and children who show marked increases in I. Q. are most likely to "display self-initiated behavior . . ." and be "less passive than those who showed decreases in I. Q."[9]

Hypothesis 7. The data in Table 5 indicated that neither of the experimental groups (lower class and middle class nursery school groups) posted a significant increase in mean gain between pre- and post-test Stanford-Binet I. Q. scores. The lower class mean gain was +1.07; the middle class mean gain was +2.36. These mean gains (t=0.40 and 0.71, respectively) were not significant at the 5 per cent level. Therefore, hypothesis seven which postulated a greater mean gain for the lower class (experimental nursery school) group as compared to the middle class group was not supported.

Hypothesis 8. The findings reported in Table 4 illustrated that the control middle class group (non-nursery school) had a mean gain of +1.85 between pre- and post-test I. Q. scores on the Stanford-Binet while the control lower class group posted a mean loss of -2.71

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[8]Jerome Kagan et al., "Personality and I. Q. Change," in Raymond G. Kuhlen and George G. Thompson, (eds.), Psychological Studies of Human Development (New York: Appleton-Century-Crofts, 1963), p. 330.

[9]Ibid., p. 332.

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between pre- and post-test scores. (A two-tailed test for significance indicated difference needed for significance at the 5 per cent level was ± 7.05.) The mean difference between the two groups of +4.56 was not significant. Therefore, the null hypothesis of no significant difference between the means of the control groups (lower class and middle class) could not be rejected.

Data showed, however, that the control lower class children posted a mean loss while control middle class children posted a mean gain. To extrapolate in the indicated direction could possibly lead to the hypothesis that social class variables in the environment make a cumulative difference in the long term trend of adequate intellectual performance on an intelligence test. Bayley and Schaefer found the social class difference a persisting variable in "intellectual functioning."[10]

In summary, the data relevant to the use of the Stanford-Binet in the study indicated that there were no significant differences in mean gain or loss between pre- and post-test I. Q. scores between or within any of the four sample groups.

Null hypotheses six and eight that there would be respectively: (1) no significant difference between

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[10] Ibid.

means of the middle class groups, and (2) no significant difference between means of control groups could not be rejected.

Hypothesis five was not supported by statistically significant data; however, the findings indicated some support for a positive effect of a nursery school experience on intellectual performance, especially for subjects of lower socio-economic levels.

Hypothesis seven which predicted a greater mean gain between pre- and post-test ratings on the I. Q. for the experimental lower class over the experimental middle class groups was not supported by statistically significant evidence. Apparently the nursery school experience was not effective in producing significant gains for the lower class subjects above gains by chance of the middle class subjects.

Analysis of the Peabody Picture Vocabulary Test (PPVT)

From the major question posed in this study (p.8) four testable hypotheses were formulated that dealt with the dependent test variables of the PPVT and the Bender Gestalt Test. This section will discuss the findings of the PPVT, and the next will discuss the Bender Gestalt Test. The hypotheses relevant to both dependent variables were as follows:

1. Children from the lower socio-economic group who have attended nursery school will perform at a significantly higher level than those children of the same socio-economic background who have not attended nursery school on the following:
   a. The Peabody Picture Vocabulary Test (PPVT)
   b. The Bender Gestalt for Young Children
2. There will be no significant difference between scores of middle class children who attended nursery school and children of the same socio-economic background who did not attend nursery school on the following:
   a. The Peabody Picture Vocabulary Test (PPVT)
   b. The Bender Gestalt for Young Children
3. There will be no significant difference between scores of children from the lower socio-economic group who have attended nursery school and children in the middle class group who have attended nursery school on the following:
   a. The Peabody Picture Vocabulary Test (PPVT)
   b. The Bender Gestalt for Young Children
4. Middle class children who have not attended nursery school will perform at a significantly higher level than lower class children who have not attended nursery school on the following:

a. The Peabody Picture Vocabulary Test (PPVT)

b. The Bender Gestalt for Young Children

Tables 8 and 9 show the data from the PPVT administered to all four sample groups of subjects at the conclusion of approximately eighty-one sessions of a nursery school experience spaced over an eight-month period.

It was apparent from data obtained from the PPVT scores of all fifty-six subjects that there were differences in performance between social classes. Vocabulary recognition apparently favored the middle class. Both the middle class experimental and control groups scored significantly higher than the lower class control and experimental groups. (A more detailed description follows on the next page.) These generalizations are drawn from the figures presented in Tables 8 and 9. Table 8 shows that there were significant differences at the 1 per cent level (F=4.23) in the test performance between social classes.

TABLE 8.--Analysis of variance of groups on the Peabody Test.

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
Between groups	1721.63	3	573.88	4.23*
Within groups	7046.35	52	135.51	
Total	8767.98	55		

*Significant at the .01 level ($F_{01}(3.52) = 4.13$)

The statistical breakdown between groups as indicated in Table 9 shows that the middle class subjects, both nursery and non-nursery school, scored significantly higher than the lower class subjects at the 0.05 per cent level. The mean difference between the experimental middle class group and the experimental lower class group was 14.07; the mean difference between the control middle class group and the control lower class group was 7.86. The mean differences needed for significance at the 0.05 per cent level were 9.09 and 7.54, respectively. At that point in time, nursery school attendance apparently made no definitive difference.

These findings tended to contradict the premise underlying hypothesis one, that the experimental lower class group would perform at a significantly higher level than the control lower class group on the PPVT. Table 9 shows, in fact, that the nursery school group (experimental) had a lower mean score than the non-nursery school group (control). One reason which might have accounted for this difference was that the control lower class group had slightly higher (not significant) I. Q.'s on both the pre- and post-test Standford-Binet scale. Another possible reason might have been the apparent lack of effect of the nursery school experience as described in this study.

TABLE 9.--Comparison of mean differences on the PPVT by treatment group.

Group (N=14 Each Group)	Mean	Group (N=14 Each Group)	Mean	Mean Difference	Mean Difference Needed for Significance at 0.05 Level
Experimental lower class	42.14	Control lower class	46.43	-4.29	+7.54[a]
Experimental middle class	56.21	Control middle class	53.29	+2.92	±9.09[b]
Experimental lower class	42.14	Experimental middle class	56.21	-14.07*	±9.09
Control middle class	53.29	Control lower class	46.43	+7.86*	+7.54

*Significant at .05 level.

[a]One-tailed test. [b]Two-tailed test.

Null hypotheses two and three were accepted by the findings that there were no significant differences in performance (indicated by mean scores) on the PPVT respectively between: (1) the middle class experimental and control groups, and (2) the experimental middle and lower class groups.

Hypothesis four which postulated that the middle class control group would perform significantly higher on the PPVT than the lower class control group was supported by the findings as tabulated in Table 9.

In summary, the findings concerning the PPVT generally indicated the favored position of the middle class groups over the lower class groups whether they were experimental groups or control groups. The two findings that were found to be significant supported this generalization. Both middle class groups performed significantly better than the lower class groups. Mean difference between experimental groups (lower class and middle class) was 14.07; and mean difference between control groups (lower and middle class) was 7.86, both significant at the 0.05 level. These significant differences parallel the findings based on the post Stanford-Binet scores in which the incidence of a nursery school experience had no effect on scores but that apparently social class did. Caution needs to be exercised, however, in deriving any generalizations regarding the

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correlation of the PPVT and other intelligence tests except on the vocabulary item. Both Terman and Merrill and Wechsler found that vocabulary scores correlate more highly with full scale I. Q. scores than any other subtest.[11] As the PPVT is a vocabulary test, it could be predicted that it would have a high correlation with the Stanford-Binet Scale. The extent of its correlation to the testing instruments used in this study are indicated in Table 12 and Table 13 (pp. 105 and 106).

Analysis of the Bender Gestalt Test Scores

Analysis of variance data shown in Table 10 indicate clearly that there was variability within each group as well as differences (in means) between groups. The F=3.87 was statistically significant at the 0.05 level. Apparently subjects responded differently to the Bender-Gestalt test as the F ratio was significant only at the 0.05 level whereas the results of the PPVT and the Stanford-Binet pretest indicated F ratios to be significant at the 0.01 per cent level.

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[11] Dunn, op. cit., p. 31.

TABLE 10.--Analysis of variance of groups on the Bender-Gestalt test (N=56).

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Between groups	194.29	3	64.76	3.87*
Within groups	869.43	52	16.72	
Total	1063.72	55		

*Significant at 0.05 level.

From the data in Table 11 the only clear picture that emerged was that significant differences were obtained only between social classes rather than within social classes. Null hypothesis one of no significant mean difference between scores of children from the lower class experimental group and the lower class control group could not be refuted. The mean difference of 2.29 was not statistically significant at the 0.05 per cent level. Contrary to predictions in the research hypothesis, the control (non-nursery school) children at both the middle and lower class levels had a better mean performance score than the experimental (nursery school) children in both social class groups. This might be attributed to the fact that the lower class control children had higher mean I. Q.'s on the Stanford-Binet on both the pre- and post-test scores (neither mean was statistically significant, however).

TABLE 11.--Comparison of mean differences on the Bender Gestalt by treatment group.

Group (All groups, N=14)	Mean[a]	s.d.	Group (All groups, N=14)	Mean	s.d.	Mean Difference	Mean Difference Needed for Significance at 0.05 Level
Experimental lower class	17.00	4.2	Control lower class	15.29	4.9	+2.29	-2.64
Experimental middle class	13.29	3.7	Control middle class	12.14	3.3	+1.15	±3.18
Experimental lower class	17.00	4.2	Experimental middle class	13.29	3.7	+3.71*	±3.18
Control middle class	12.14	3.3	Control lower class	15.29	4.9	-3.15*	-2.64

[a]Since the Bender Gestalt is scored for errors, a high score indicates a "poor" performance while a low score reflects a "good" performance.

*Significant at 0.05 level.

Null hypothesis two could not be rejected since the data showed that there were no significant differences in performance between middle class experimental and control groups. The mean 1.15 was not significant at the 0.05 per cent level; it was also the smallest mean difference recorded between groups (Table 11). Apparently, the fact that one group had had a nursery school experience made no difference in scores obtained on the Bender Gestalt Test.

Null hypothesis three, that there would be no significant differences in Bender Gestalt Test scores between experimental lower class and middle class groups was rejected. The mean difference of 3.71 was significant at the 0.05 per cent level. The middle class experimental group performed significantly better than the lower class group. The generalization could be made that the social class variable introduced the significant difference. This question will be more fully explored later in the chapter under the discussion.

Null hypothesis four of no significant differences between scores of the middle class control group (non-nursery school) and the lower class control group was rejected. The mean difference of 3.15 was significant at the .05 per cent level. Again the social class

variable seemed to introduce the difference. The middle class group performed significantly better than the lower class group on the Bender Test.

In summary, there was no appreciable difference between scores on the Bender Gestalt between experimental and control groups within class levels. Between class levels, however, significant differences emerged between lower and middle class both in the experimental and in the control groups.

Correlation of Dependent Variables: Testing Instruments

Table 12 and Table 13 indicate how the dependent variables, the testing instruments used in this study, correlated with each other when used with subjects within the social classes set for this investigation. Raw scores on the PPVT and the Bender Gestalt Test were correlated with the Stanford-Binet I. Q. scores. Comparison between the two tables suggests sufficient class differences to indicate that the type of test used affected children from the lower class disadvantaged groups differently from the middle class children. Some of the differences by social class as illustrated in Tables 12 and 13 were as follows:

1. The correlation between the Stanford-Binet pre- and post-test ratings was .80 for the lower class group, and .90 for middle class.

The reliability of the Stanford-Binet on test-retest consistency is well documented, but speculations can be made regarding the correlation difference of 10 points. One interpretation that seems quite reasonable regarding this difference is that the children of the lower class disadvantaged groups are not subject to the same life experiences that lead to test taking skills and, therefore, their performance tends to be more erratic. Previous discussion considered the loss in I. Q. ratings between pre- and post-test scores of lower class male subjects in particular (Table 6) which may have affected the correlation coefficient.

2. The correlation coefficients relevant to the use of the Peabody PVT presented sufficient differences between classes which may raise questions as to the validity of this test for lower class disadvantaged children. It was mentioned previously that Terman and Merrill considered the vocabulary test to be the most valuable in the intelligence scale. Wechsler also states that the vocabulary subtests tend to correlate more highly with the Full Scale I. Q. scores than any other subtest score in the Wechsler Intelligence scale for children.[12]

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[12]David Wechsler, Weshsler Intelligence Scale for Children Manual (New York: Psychological Corporation, 1949), p. 10.

TABLE 12.--Correlation of test scores for lower class sample groups (control and experimental groups combined; N=28).

Test	Binet Pre-Test	Binet Post-Test	Peabody	Bender Gestalt
Binet pre-test	1.00			
Binet post-test	0.80	1.00		
Peabody PVT	0.22	0.24	1.00	
Bender Gestalt*	-0.35	-0.45	-0.23	1.00

*Since the Bender Gestalt Test is scored for errors, correlation coefficients are negative.

The correlations of the Peabody PVT with the Stanford-Binet pre- and post-test for the lower class as contrasted to the middle class show a wide difference: lower class, r=.22 on the Binet pretest and r=.24 on Binet post-test; middle class, r=.87 on the Binet pre-test and r=.85 on Binet post-test (Tables 12 and 13).

Research on the Stanford-Binet has long indicated its high correlation with academic achievement in the schools. Dunn, as described in Chapter III, developed the PPVT to assess the intellectual capacities of handicapped persons because it supposedly correlated highly with measures of academic performance. As indicated by the findings of this study shown in Tables 12 and 13, however, the PPVT may not be as good a predictor for school success for lower class children as a more

general intelligence test like the Stanford-Binet. Deficiency in vocabulary and language skills are well documented as characteristics of disadvantaged children. Although the PPVT tests hearing vocabulary, and no verbal labelling is needed, it may be that the objects illustrated in the test plates have no meaning and hence no labels for the disadvantaged child. Results, therefore, may be a measure of discrimination for the disadvantaged child rather than a measure of intelligence.

According to Table 13, however, the PPVT's high correlation with the Stanford-Binet scores of middle class children may make it a reasonably valid predictor of school performance for that social class group.

TABLE 13.--Correlation of test scores for middle class sample groups (control and experimental groups combined; N=28).

Test	Binet Pre-Test	Binet Post-Test	Peabody	Bender Gestalt
Binet pre-test	1.00			
Binet post-test	0.90	1.00		
Peabody PVT	0.87	0.85	1.00	
Bender Gestalt*	0.11	0.20	0.21	1.00

*Since the Bender Gestalt Test is scored for errors, correlation coefficients are negative.

3. Correlations between the Bender Gestalt Test and the other tests are negative since the Bender is scored for errors, and a high test score indicates poor performance on the Bender Gestalt. Data from Table 12 indicate that the Bender Gestalt Test though not high, correlated positively with the Stanford-Binet pre- and post-test (r=-.35 and -.45, respectively), for the lower class group. This was contrasted with the Bender-Stanford-Binet pre- and post-test, a "positive" correlation of .12 and .20, respectively for the middle class group. This indicated relatively poorer performance on the Bender Test than on the Stanford-Binet. The Bender Gestalt Test also showed a "positive" correlation coefficient when it was compared to the PPVT at the middle class level, but a "negative" correlation at the lower class level (r=+.21 and r=-.23, respectively). One interpretation of these differences between middle and lower class children might be that the Bender is a better instrument for measuring basic intellectual potential of lower class children than those of more affluent homes in which more verbally laden interaction is prevalent. Koppitz

suggests that for young children "maturity in visual motor perception seems to be an indication of intelligence unless . . . (child) is highly verbal and developed somewhat slower in the visual perceptual area."[13] This quote might be applicable to the middle class subjects in this study since they scored significantly higher on the PPVT and the Stanford-Binet tests than the lower class subjects (Tables 9 and 2). Koppitz went on to say:

> Thus it was found that some socially deprived children who scored poorly on the WISC or the Stanford-Binet did well on the Bender test* and also did well in school. It appears that these children had good intellectual potential which had not been stimulated and developed at home.[14]

When the normative data that Koppitz provided for the Developmental Bender Scoring System for children were studied, it was possible to note that many of the lower class children scored within the average range plus or minus one sigma on the Bender Test.[15] The range for the age sample 5.0 to 5.5 years in the normative data was a mean score of 13.6 with a standard deviation of 3.61. The lower class groups in this study both had higher

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[13] Koppitz, op. cit., p. 50.

[14] Ibid., p. 51. [15] Ibid., p. 188.

*They obtained low scores (low number of errors).

mean scores, but the wider variability indicated that many of the disadvantaged children performed within the average range.

There were also some children who performed poorly (higher scores indicate poorer performance). Both middle class groups performed well within the average range of the mean of 13.6 with a standard deviation of 3.61.

Since the Bender Gestalt Test has been used as a test for kindergarten readiness,[16,17] additional data were provided by Koppitz in grade placement at the beginning of a school year.[18] At the kindergarten level, with a mean age of 5.4 years, the mean of Koppitz' sample (N=38) was 13.5 with a standard deviation of 3.61, almost exactly that of the normative sample. A comparison of these norms with the scores obtained by the subjects in this study is shown in Table 14.

According to the data in Table 14, the middle class subjects should perform well in kindergarten as they are

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[16]M. V. Baldwin, "A Note Regarding the Suggested Use of the Bender Gestalt Test as a Measure of School Readiness," Journal Clinical Psychology, VI (1950), 412.

[17]E. M. Koppitz, V. Mardis, and T. Stephans, "A Note on Screening School Beginners with the Bender Gestalt Test," Journal of Educational Psychology, LII (1961), 80-81.

[18]Koppitz, op. cit., p. 188.

TABLE 14.--Comparison of Bender Gestalt scores between research sample groups and normative sample groups.

Sample Groups	N	Mean Age	Mean Score	Standard Deviation	Plus/Minus Standard Deviation
		Age Group			
Normative Sample	81	5.0-5.5	13.6	3.61	10.0 to 17.2
School Grade Sample	38	5.4	13.5	4.41	9.9 to 17.1
Sample Groups in Study					
Experimental lower class	14	4.11	17.0	4.2	12.8 to 21.2
Control lower class	14	5.2	15.29	4.9	10.39 to 20.19
Experimental middle class	14	4.11	13.29	3.7	9.59 to 16.99
Control middle class	14	5.2	12.14	3.3	8.84 to 15.44

well within the average range. The variability range indicated that a few middle class subjects performed even better on the Bender Gestalt Test than the normative sample even though their ages are somewhat below the mean age of the norm. It must be remembered, however, that the normative sample included subjects across the social class range.

Because of the wider variability in the scores of the lower class children, the accuracy of prediction for kindergarten success may be less reliable. Koppitz discussed this problem in the study she conducted dealing with the relationship of Bender Test scores with teachers' judgment of pupils' achievement.[19] She wrote:

> It appears, therefore, that a single good Bender score at the beginning of kindergarten can predict good achievement as rated by the teacher at the end of the school year. But a below average Bender score at the beginning of kindergarten will require a second test administration three or four months later to assess the child's rate of maturation before school achievement can be predicted with any degree of confidence.[20]

Discussion

It may be possible that current investigators in the problem of intervention or compensatory educational experiences for the culturally deprived child have too much naive faith in the effect of a group socialization experience on intellectual performance. An I. Q.

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[19] Ibid., p. 59.

[20] Ibid., p. 60.

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score is not the total answer to learning and placement in school; however, it can be used to indicate capacity for learning in a school situation. Efforts to raise I. Q.'s among the disadvantaged population obviously have some merit, for the trend of theoretical conceptions of intelligence in the last fifty years have shifted from the assumption of inherited potential alone to the increasingly observable complexities of the effects of environment on intellectual performance in American society.

The findings in this study have been largely negative when considering the effects of the nursery school on intellectual performance as measured by testing instruments. However, trends were observable, and implications may be inferred. Of the two lower class groups set up at the beginning of this study, the control group had the higher mean I. Q. but then posted the largest mean loss at the termination of the study eight months later. One could extrapolate from these figures and speculate on the downward slide of the I. Q. as these children get older. Questions could be posed: Did the nursery school experience slow the loss of mental capacity in the lower class experimental group by the application of the independent variable? Will there be a point at which intervention might be incapable in effectively stopping the cumulative downward trend as postulated by current research?

Another aspect that needs consideration is that of curriculum. The curriculum followed in this study was of the semi-structured, child oriented, semi-directed type of the conventional nursery school. Since the findings indicated that this curriculum had no appreciable effect on intellectual performance, one could speculate whether a more cognitively-oriented curriculum would have produced significant results. Perhaps curriculum at the prekindergarten level needs to be evaluated in terms of social class, in terms of special needs of disadvantaged children, and in terms of sex differences. The findings of significant differences in performance between social classes suggest that the traditional relatively unstructured nursery school curriculum is not as productive for change in the lower class children as it is reinforcing for the middle class children whose homes provide a wider range of experiences. However, careful controls need to be instituted in any research design of evaluating nursery school programs before generalizations can be made of the efficacy of any "enrichment" program.

Sex differences were obvious in pre- and post-testing in this study. Many complex factors enter into this differential, but there is increasing research evidence that parents (and teachers) treat boys differently in American society. Educators, however, are

only beginning to take cognizance of fitting curriculum expectations to the needs of children in terms of social class and sex.

Studies reviewed in Chapter II indicated that research is currently being conducted to evaluate differences in curriculum. David Weikart of the Perry Preschool Project in Ypsilanti, Michigan received in the spring of 1968 a federal government grant to set up nursery programs with three different curricula approaches: the semi-structured conventional nursery school, the "Piaget-oriented" nursery school, and the Bereiter "task-oriented approach."[21]

The results in this research lead to the conclusion that if an intervention nursery school experience is going to possess significantly lasting values to the growing child, it will need to be geared at the beginning of the school experience to compensate for the experiential lacks of the child's home-community environment. Only after those basic learnings commonly known to be a part of the middle class "home curriculum" are available to disadvantaged children can they then tackle the academic learnings valued in the public school society.

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[21]Personal discussion with Dr. Bernice Borgman, member of the Advisory Committee to the Perry Preschool Project, February 22, 1968.

CHAPTER V

SUMMARY, CONCLUSIONS AND IMPLICATIONS FOR RESEARCH

Summary

The purpose of this study was to investigate and evaluate the effects of eight months of nursery school attendance on intellectual performance (as measured by testing instruments) of prekindergarten children at two socio-economic levels. The study sought to answer the following questions: Are there any intellectual differences in performance between:

1. Children of lower socio-economic status who have had or have not had a nursery school experience?
2. Children of middle class backgrounds who have or have not had a nursery school experience?
3. Children of lower socio-economic status and those of middle class status who have had a nursery school experience?

The method of placing and recruiting subjects for the four group experimental design was described. All

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subjects had had no nursery school experience before being placed in the sample groups according to variables of social class, sex, and age. The four sample groups were two experimental groups (one lower class, one middle class) and two control groups (one lower class, one middle class). The independent variable applied to the two experimental groups was a nursery school experience spanning an eight-month academic year, 1966-1967, for a total of eighty-one sessions.

Three testing instruments were used to test the intellectual performance of the children in all four sample groups at the termination of the nursery school experience. They were: (1) the Stanford-Binet Intelligence Scale, Form L-M, 1960, (2) the Peabody Picture Vocabulary Test, and (3) the Bender Gestalt Test for Young Children. The Stanford-Binet was administered twice: at the beginning of the school year and at the end.

Data were collected by administering the tests listed above to test the following research hypotheses: (1) there would be no significant differences between lower and middle class subjects who attended nursery school, (2) there would be no significant differences between middle class subjects who attended or did not attend nursery school, (3) children from the lower class who have attended nursery school will perform at a

significantly higher level than those children of the same socio-economic background who have not attended nursery school, and (4) middle class children who have not attended nursery school will perform at a significantly higher level than lower class children who have not attended nursery school.

An analysis of variance was computed of the scores for each test administered. The mean scores and mean gains were compared by treatment groups between pre- and post-test results on the Stanford-Binet Intelligence Scale. Mean differences in scores of the PPVT and the Bender Test were also compared by treatment groups. Simple correlations of test scores from the instruments used in this study were also calculated separately for the lower class subjects (both experimental and control) and for the middle class subjects (both experimental and control).

Comparisons were also made between male and female subjects on pre- and post-gain scores on the Stanford-Binet Scale. Sex differences in performance were discussed.

Conclusions

The major conclusions resulting from the analysis of data in this study relevant to the use of the Stanford-Binet Intelligence Scale (Form L-M, 1960) were as follows:

1. Prior to applying the experimental variable of a nursery school experience, test results showed that there were over-all social class differences, significant at both the pre- and post-test level. The data tended to support the well documented differences in I. Q. test scores between social classes, with the middle class groups scoring significantly higher than the lower class disadvantaged groups in this study.
2. At the termination of the nursery school experience none of the four groups in this research had made a significant mean gain between pre- and post-test scores on the Stanford-Binet. The experimental treatment of a nursery school experience generally had no specific effect in significantly raising the I. Q.
3. There was some evidence in support of hypothesis five, though not statistically significant, that lower class children who attended nursery school would show an increase in I. Q. scores between pre- and post-test on the Stanford-Binet while lower class children who did not attend nursery school would not show an increase. Data in support indicated a mean gain (+1.09) for the lower class experimental

children while the lower class control children (non-nursery school) posted a mean loss (-2.71).

4. Further study of the data showed an unanticipated sex difference in both the experimental and control lower class groups: male subjects generally posted a loss between pre- and post-test scores on the Stanford-Binet. Of the six boys in each group, only one (from the experimental nursery school group) posted a gain of six points between pre- and post-test.

Study of the data from the middle class children indicated opposite results: boys generally had gain scores between the pre- and post-test Stanford-Binet, with only two exceptions. Data from girls' scores showed no observable direction in gain or loss. These may have been specious results, but research findings consistently have shown that boys are treated differently in the American family with class and racial differences playing a role.

Major conclusions relevant to the analysis of data of the PPVT were as follows:

1. Both the experimental and the control middle class groups performed significantly better on the PPVT than the lower class groups. These findings paralleled the findings based on the Stanford-Binet scores. However, the

predictable high correlation between a test of verbal intelligence through "hearing vocabulary" held for the middle class subjects (r=.85, Stanford-Binet post-test), but was considerably lower for the lower class subjects (r=.24, Stanford-Binet post-test). It was suggested that the PPVT may not be as good a predictor for school success for lower class children as a more general intelligence test such as the Stanford-Binet.

2. There were no significant differences within social class groups either at the middle or at the lower class level. Between social classes, however, the middle class scored significantly higher on the PPVT than the lower class.

Major conclusions drawn from analysis of the data resulting from the scoring of the Bender Gestalt Test for Young Children were the following:

1. Significant differences on the Bender Gestalt Test paralleled the social class oriented findings of the Stanford-Binet and the PPVT: significant differences were apparent only between social classes rather than between the experimental and control group of the same social class level. Apparently, the nursery school experience gave no advantage on Bender Gestalt Test performance.

2. Although correlations were low, the Bender Gestalt Test had a higher positive correlation with the Stanford-Binet scores of lower class children than with those of middle class children. It was suggested that the Bender Test is a better instrument for measuring basic intellectual potential of lower class children than for middle class children, since the middle class advantage of verbal facility is not of consequence in this test.
3. Comparison of Bender Gestalt scores with normative data groups indicated the probability of successful achievement in kindergarten and beyond for the middle class subjects. Predictions for school success for the lower class subjects were more tentative and conditional because of the wider variability of scores. A more comprehensive evaluation by using several tests in assessment of potential was indicated for the lower class children.

Implications for Research

Like love, the path of learning theory and applications from philosopher to psychologist, to practitioner (usually the teacher) has not always run smoothly. Research in the last thirty years has had a persistent,

if not entirely pervasive, influence on the underlying thought that children are more than their biological heritage.

The renewed interest in the problems of a non-achieving segment of our population, generally from socio-economically deprived groups, has extended down into the preschool years. The effects of a culturally deprived environment on intellectual development have begun to attract the attention of educational planners.

It is necessary to provide empirical and/or experimental data to justify, evaluate, and renovate educational programming as an instrument of closing the achievement gap between culturally disadvantaged children and the more successful middle class children in the school environment. At the preschool level, this is being accomplished by studies evaluating the effects of a nursery school experience on future academic performance.

Many "intervention" preschool programs report significant gains in I. Q. scores for culturally deprived pupils after an enrichment experience in the nursery school only to observe a disappointing drop after a year or two or three in the standard public elementary school. Bloom suggests that a ten-point change is all that is possible during early childhood since that appears to be the approximate level of change observed in most programs.[1]

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[1]Bloom, op. cit.

Most of the current studies have evaluated the effects of a nursery school experience by gains made on intelligence tests. The standard I. Q. tests have a long history of adequate prediction for school success, but are less than satisfactory in terms of assessment of a child's current potential or capacity to maintain learning in the future.

The implications for the schools are pressing. Only five children from the disadvantaged population in this study increased their I. Q. score by more than ten points. The results on the Bender Gestalt, however, indicate that many of the lower class children in this study have adequate visual-motor perception and, therefore, can be predicted to perform adequately at least in kindergarten.

The findings of this study emphasize that new research is needed that provides not only quantified evaluations of children's intellectual functioning, but a more total assessment taking into account emotional, social, and psychological development before planning educational experiences. Intelligence test scores merely reflect ability, or intellectual functioning at a point in time, and do not determine what well-planned intervention educational experiences can do to elevate mental capacity of culturally disadvantaged children.

Individual differences exist among all children; therefore, research is needed in methods of approaching children who show various weaknesses in cognitive skills. These studies should seek to determine what the needs of individual children are and what are optimum age levels for the role of intervention. Valid tests that can differentiate between the functioning of a child at a given point in time and the possible ultimate potential of which he may be capable would indeed be a boon to school planners.

Preschool education is expensive, partly because the ratio of children to one teacher is a great deal smaller than at other educational levels.

The results of this study provide further support of the intellectual advantage that middle class children have over the disadvantaged as indicated by their performance on testing instruments.

If all preschool children can not be educated under public auspices, research is needed to identify children most in need of preschool enrichment as a means of providing the "hidden curriculum" of the middle class home.

The question of curriculum, therefore, is germane to the problem of preparing the culturally disadvantaged child for optimum public school performance at his intellectual level. Would, for example, a more

structured curriculum of sequential learning units of knowledge and skills designed to strengthen and alleviate cognitive weaknesses help more children to increase their capacity to learn? What contingencies in a child's school life would predispose a child to learning? Educators are becoming aware of the tremendous importance of the quality of experiences made available to children in the preschool years. Research is needed on the type of programming and the type of instructional situations provided that are essential to the learning process.

Research is needed on the role that educational experiences play vis-a-vis sex differences. The findings of this study imply that sex differences influence the utilization of the preschool experience as a means of increasing intellectual performance. Questions can be asked: Should there be a differential in age for acceptance to kindergarten? Should preschool experience begin earlier or later for boys? Should more active earlier intervention in the form of home experiences and parent support be provided for male children?

Research is needed on the cooperating roles that parents and schools must play in providing stimulating experiences for children from birth in a supportive setting in order to enhance intellectual development. Parent education programs, especially for the

disadvantaged population, means of securing more active parent participation in their children's learning, and means of fostering positive attitudes toward learning and school--all need to be studied.

Finally, educators should provide the leadership in innovation and experimentation of meaningful pre-school programs relevant to the special needs of the culturally disadvantaged children. Too often in the past, nursery school education was a province for middle and upper class children who apparently needed it least for school achievement. Research is also needed to determine the type of elementary school program that would build on the strengths of disadvantaged children and serve as an effective follow-up of a pre-school experience.

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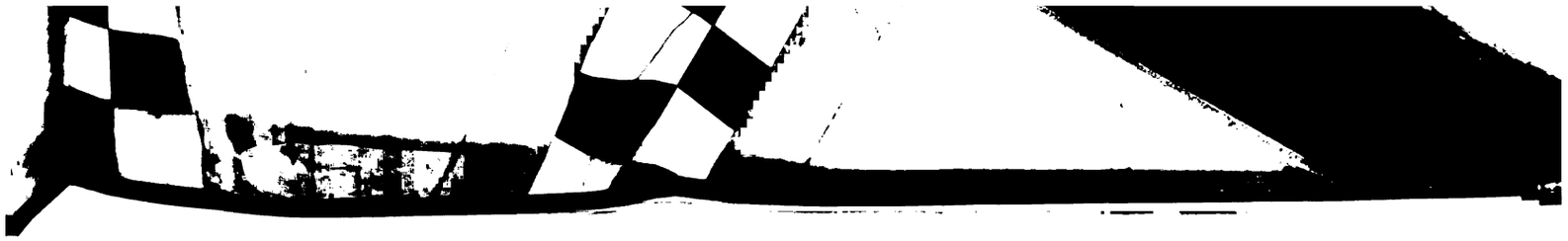

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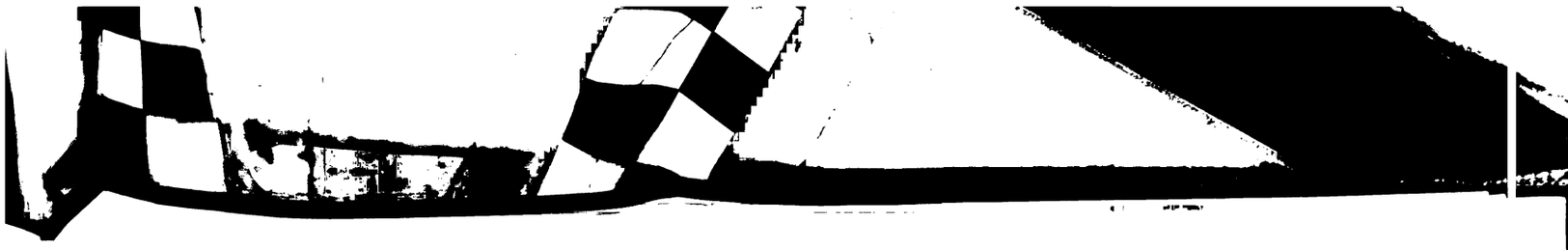

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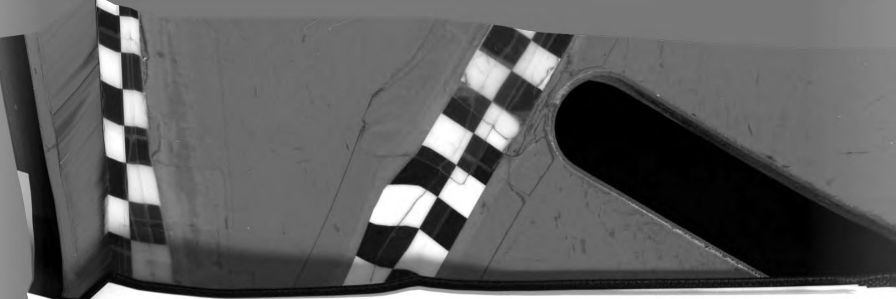

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APPENDICES

APPENDIX A

PEABODY PICTURE VOCABULARY TEST

PEABODY PICTURE VOCABULARY TEST

Individual Test Record

Form B

Name _____ Sex: M F Grade _____
(Last) (First) (Initial) (circle)

School _____ Teacher _____
(or address) (or parent or phone)

	Calculation
Ceiling item	
Errors	
Raw score	

DERIVED SCORES

Mental Age (M. A.)_____
Intelligence quotient (I. Q.)_____
Percentile (%ile)_____

	Year	Month	Day
Date			
Born			
Age			

Examiner_____ Time_____ Code_____

• • • J-1 • • • F-2 • • • M-3 • • • A-4 • • • M-5 • • • J-6 • • • J-7 • • • A-8 • • • S-9 • • • O-10 • • • N-11 • • • D-12 • • •

TEST BEHAVIOR

Examples needed:	____only 1	____2 or 3	____over 3
Type of response:	____Subject pointed	____S. called numbers	____Examiner pointed
Rapport:	____easily attained	____slowly attained	____poor rapport
Guessing:	____prone to guess	____guessed when asked	____resisted guessing
Speed of response:	____fast	____average	____slow
Verbalization:	____talkative	____average	____taciturn
Attention span:	____distractible	____average	____very attentive
Perseveration:	____none noted	____some	____frequent
Need for praise:	____little needed	____some needed	____much needed

Other test behavior:

PHYSICAL CHARACTERISTICS

Motor activity:	____hyperactive	____average	____hypoactive
Sedation:	____none	____slight	____heavy
Ambulation:	____normal	____walks with support	____none
Speech:	____intelligible	____fairly intelligible	____unintelligible
Hearing: necessity to repeat stimulus words	____never	____seldom	____often
	____S. wore hearing aid	____S. watched examiner's lips and face closely.	
Vision: distance of eyes from page	____under 8"	____average (8"-20")	____over 20"
	____S. wore glasses	____S. owned but did not wear glasses during test.	

Other physical characteristics:

OTHER INFORMATION (previous tests, dates, scores etc.; teacher estimates of vocabulary, intelligence, achievement; school or work record)

AMERICAN GUIDANCE SERVICE, INC.
720 Washington Ave. S. E. • Minneapolis 14, Minn.
Litho in U.S.A.

Name _____ **Form B**

Item	Resp.	Key Word
1	(2)	table
2	(4)	bus
3	(2)	horse
4	(3)	dog
5	(4)	shoe
6	(4)	finger
7	(3)	boat
8	(2)	children
9	(1)	bell
10	(4)	turtle
11	(2)	climbing
12	(1)	lamp
13	(3)	sitting
14	(2)	jacket
15	(1)	pulling
16	(2)	ring
17	(1)	nail
18	(2)	hitting
19	(3)	tire
20	(3)	ladder
21	(1)	snake
22	(1)	river
23	(4)	ringing
24	(4)	baking
25	(2)	cone
26	(3)	engineer
27	(4)	peeking
28	(1)	kite
29	(1)	rat
30	(1)	time
31	(4)	sail
32	(2)	ambulance
33	(2)	trunk
34	(4)	skiing
35	(2)	hook
36	(1)	tweezers
37	(3)	wasp
38	(2)	barber
39	(3)	parachute
40	(4)	saddle
41	(3)	temperature
42	(1)	captain
43	(2)	whale
44	(4)	cash
45	(1)	balancing
46	(3)	cobweb
47	(3)	pledging
48	(1)	argument
49	(3)	hydrant
50	(4)	binocular

Item	Resp.	Key Word
51	(1)	locomotive
52	(2)	hive
53	(4)	reel
54	(1)	insect
55	(1)	gnawing
56	(2)	weapon
57	(3)	bannister
58	(1)	idol
59	(1)	globe
60	(3)	walrus
61	(1)	filing
62	(3)	shears
63	(1)	horror
64	(4)	chef
65	(4)	harvesting
66	(3)	construction
67	(4)	observatory
68	(4)	assistance
69	(2)	erecting
70	(3)	thoroughbred
71	(2)	casserole
72	(4)	ornament
73	(3)	cobbler
74	(2)	autumn
75	(3)	dissatisfaction
76	(4)	scholar
77	(1)	oasis
78	(3)	soldering
79	(3)	astonishment
80	(1)	tread
81	(2)	thatched
82	(1)	jurisprudence
83	(2)	sapling
84	(3)	arch
85	(4)	dwelling
86	(1)	lubricating
87	(2)	pedestrian
88	(3)	vale
89	(3)	jubilant
90	(2)	laden
91	(2)	pursuit
92	(4)	goblet
93	(2)	rodent
94	(3)	confiding
95	(4)	reclining
96	(1)	frisking
97	(2)	moat
98	(3)	salutation
99	(2)	barrier
100	(3)	foal

Item	Resp.	Key Word
101	(4)	incandescent
102	(3)	cornucopia
103	(2)	ascending
104	(1)	summit
105	(3)	caster
106	(2)	lobe
107	(3)	patriarch
108	(3)	sampler
109	(3)	ingenious
110	(1)	repose
111	(3)	constrain
112	(1)	tangent
113	(4)	sconce
114	(4)	hoary
115	(1)	pendant
116	(1)	prodigy
117	(2)	casement
118	(1)	quiescent
119	(4)	talon
120	(1)	chevron
121	(4)	feline
122	(2)	cairn
123	(4)	convergence
124	(3)	apothecary
125	(2)	indigent
126	(4)	edifice
127	(3)	scallion
128	(1)	infirm
129	(1)	emaciate
130	(2)	catapult
131	(2)	arable
132	(4)	orifice
133	(3)	renovate
134	(1)	precarious
135	(2)	dromedary
136	(1)	pedagogue
137	(1)	sepal
138	(3)	lethargic
139	(4)	delectation
140	(3)	embellish
141	(1)	osculation
142	(2)	cincture
143	(3)	barrister
144	(3)	carrion
145	(2)	lanate
146	(4)	chirography
147	(1)	mendicant
148	(1)	saltation
149	(2)	florescence
150	(4)	culver

APPENDIX B

THE BENDER GESTALT TEST

FOR YOUNG CHILDREN

(Nine figures)