EFFECTS OF A PRESCHOOL PROGRAM ON INTELLECTUAL
FUNCTIONING AND SENSORY-MOTOR ABILITIES
OF DISADVANTAGED CHILDREN

THESIS

Presented to the Graduate Council of the
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Fulfillment of the Requirements

For the Degree of

MASTER OF ARTS

By

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Behavioral scientist Nathaniel Pallone (14) says that young children from a home and/or community background which is different from the cultural orientation of America's early childhood education programs in the public schools are at a disadvantage in the educational process. Often, well-intentioned professionals assume that such children are mentally or neurologically deficient. Martin (12), however, states that data indicate that socioeconomic level and cultural deprivation have a significant effect on language development and school performance.

The passage of the Elementary and Secondary Education Act of 1965 was aimed indirectly at improving the opportunities for these educationally and culturally deprived children. It provides for the expansion of education to include preschool programs which recognize the powerful effect of environment on the progress of children in school. The disadvantaged child was and continues to be of primary importance to educators and psychologists in preschool intervention. Because of pressures, demands, and publicity, psychology and education have had to utilize what information they have at their disposal to answer such questions
as "how," "when," and "where" preschool intervention should take place.

Over the years, there have been many varying questions raised about the best method of educating the preschool disadvantaged child. Black (1) comments that the most common type of intervention used has been the emphasis upon the "overall enrichment," in which environmental factors are selected which seem most central for cognition, and he suggests that the value of this approach is questionable since it involves major intervention into many aspects of the child's life and is thus costly. Other approaches rely heavily on the works of Piaget (1952) in which it is hypothesized that "sensory-motor scheme must be fully developed before higher level concepts can be achieved." In all enrichment programs, however, language has emerged as a common denominator of the learning deficiency, since language is at the core of the problems of the disadvantaged child.

Markie (11) observes that large numbers of the culturally deprived are also handicapped; for example, they may be emotionally disturbed, brain injured, economically deprived, and so on. Therefore, one means of determining the effectiveness of preschool programs was the institution of diagnostic services, including psychological services. Markie cites one such service, the Follow-Through Program (to follow Head Start), which made use of diagnostic data
to stress the value of early education among the deprived and the handicapped. In this particular study, it was found that a "substantial number of children who are not truly handicapped are functioning as handicapped children" because of conditions in their environment. Such conditions include the effects of poverty, bilingualism, lack of cultural opportunity, and racial discrimination.

Dusewicz (3) postulates that early childhood intervention is essential to the efforts of reconstructing the environment which hampers the disadvantaged child before he even enters school. This author claims that the impoverished child has early language deprivation which can be dealt with effectively only if programs begin early enough (under three years of age) and have a fundamental and perceptual orientation.

Literature on learning disabilities provides reasonable agreement that perceptual and/or motor deficiencies are rather common in disadvantaged children. There appears to be some evidence to support the assumption that perceptual-motor training is necessary. Otto, Wagner and others (13) refer to a study in which Karen and others hold the position that perceptual and language capabilities are highly interdependent and interactive. They maintain that language enrichment, unaccompanied by perceptual experiences, fails to meet the full requirements for sound intellectual growth and development. In a related study, Rice (17) observes
that perceptual-motor skills as assessed by the **Bender Gestalt** tests, when administered to disadvantaged children, are relatively lower than a group measure of intelligence. The author says that learning disability may be inferred in this lower socioeconomic class because of several factors, including the lack of prenatal care and poor postnatal care for children.

There has been considerable concern among educators that many compensatory educational programs have failed to show expected results from standardized tests used to measure intelligence and achievement. An article by Fishman and others, reprinted by Passow, Goldberg, and Tannebaum (5), points up some of the issues involved in the use of standardized tests with minority-group children. Difficulties include the following:

1. Possible unreliable differentiation in the range of majority group's scores.

2. Possible different predictive validity for groups from that for the standardization or validation groups.

3. The dependence of the validity of interpretation on an adequate understanding of the social and cultural background of the group in question.

The editors comment that

**Standardized tests, including intelligence and aptitude measures, are among "the most important evaluative and prognostic tools that educators have at their disposal."** However, they are too often used "routinely and mechanically" as indicators
of "fixed level of either performance or potential" rather than as diagnostic tools in planning remediation (12, p. 156).

Jonson (7) points out that educators who have been working with the disadvantaged child agree that preschool intervention without adequate follow-up in the first years of elementary school is inadequate for the following reason: the culturally deprived and/or disadvantaged child does not go home after school to an essentially tutorial setting as does the middle-class child. The author urges the public schools to assume more responsibility for child-rearing practices. Vane (21) also postulates that compensatory education has not gone far enough and that, along with preschool programs, special programs throughout the school years may be essential for children from extremely impoverished backgrounds. Vane says that, if this is not done, the home factors which were initially so depriving will continue to retard and influence the effects of compensatory preschool.

Review of Pertinent Literature

Weikart (22) reviews several studies with a disadvantaged population, giving evidence that a structural instead of a traditional nursery school setting was advantageous in increasing intellectual functioning and school achievement. The structure in five studies was derived from each of the programs' clearly-stated goals for specific cognitive and language development. Pre- and post-testing with
such standardized intelligence tests as the *Stanford-Binet*, the *Peabody Picture Vocabulary Test*, and the *Wechsler Intelligence Scale for Children* were used to assess the increase in functioning.

The *Journal of Educational Research* (19) cites several studies which attempt to understand the relationship between cultural deprivation and reading. Evaluation on these various programs was accomplished by pre- and post-testing with these instruments: the *Stanford-Binet Intelligence Scale*, the 1961 experimental edition of the *Illinois Test of Psychology*, and the *Peabody Picture Vocabulary Test*. The experiments concluded that the tying of verbalization to motor-sensory performance was the crucial characteristic for a successful program of improving school readiness abilities.

This same article (19) cites another study by Johnson and Johnson in which a group of kindergarten, first-grade and second-grade disadvantaged Negro children were involved in a five-week summer program designed to promote conceptualization and verbal growth. The results reveal that the program was a success at all of these grade levels; the most striking gains were on conceptualization ability as measured by the *Peabody Picture Vocabulary Test*.

Goldstein and others (6) present a study which perports to evaluate the stability-reliability on three testing
instruments: the Stanford-Binet, the Peabody Picture Vocabulary Test, and the Columbia Mental Maturity Scale. These instruments were used with culturally disadvantaged children from prekindergarten through the third grade. The purpose was to provide an enriched curriculum and to improve the child's intellectual and perceptual abilities. Subsequent to a two-year-treatment period, the enriched curriculum showed some positive effects on the three mentioned instruments. Using the stability coefficients as indices of change, the enriched curriculum was more conducive to receptive language ability, as measured by the PPVT, than to the abilities measured by the Binet or Columbia.

In his paper, Jonson (7) summarizes a number of studies which reveal that, with subjects in a high socioeconomic group, intelligence correlates well with learning ability. However, for subjects in the low socioeconomic status, intelligence quotients are poorly correlated with learning ability. Also, children from low socioeconomic groups with low IQ's show a wider range of learning than do middle-class children who also have low intelligence.

Pytkowitz and Seide (16) cite a study in which children who failed Head Start in Seattle were referred to an intensive summer prekindergarten program. This project was multidisciplinary in nature, with planned tailoring of the curriculum to fit the individual child's needs. A control group differed only in that it attended a "traditional" Head
Start program. Pre- and post-testing with the Slosson Intelligence Test and the Peabody Picture Vocabulary Test, which were used to assess intelligence, showed a more significant gain in intelligence than occurred with the control group. The authors conclude that many factors such as sensory-motor, emotional problems, and immaturity could have had a depressing effect on these children's initial low scores. To help ameliorate this situation in the future, Head Start teachers might effectively identify problems early in the year so that more specialized programs can be initiated.

Larson and Olson (10) are of the opinion that "one-shot" efforts with disadvantaged children produce academic progress which is easily lost after special efforts are reduced. They designed a pilot program for disadvantaged kindergarten children in Racine, Washington, from 1962 to 1964. The control and experimental groups were matched for family background, sex, and race. The control group attended a traditional kindergarten program for half days. The experimental group was not only in attendance half days but attended school an additional half day at a program designed to alleviate their weaknesses. Binet intelligence scores increased 5.94 points for the experimental group and 3.30 points in the control group. The major finding of this study is that, when randomly placed in first-grade classes, children showed considerable gains. The
authors implied that Follow-Through evaluation is a step in the right direction if the structured curriculum is extended.

Vane and Davis (19) did a study in which a test, retest method of appraisal with the Vane Kindergarten Test was used on approximately three hundred children who attended Head Start for about six weeks. There were a few more boys than girls but an equal number of Negro and white children.

The test, retest data for one hundred sixteen children indicate that gains were made in all schools in tested mean IQ. Although the majority of all children showed gains in intellectual functioning, some did not. Analysis of the individual protocols indicated that there was a trend in most of the programs for the children who had lower intelligence initially to show more gains than those who had higher IQ's initially. The authors conclude that their study suggests that compensatory preschool programs might be more effective if the programs were planned to meet the needs of the children who represent a broader range of potential than is expected to be found in a group of disadvantaged children.

Vane, Weitzman, and Appleborn (20) report their study suggests that it is possible that the general tested intelligence of children in the United States has risen somewhat above the statistical mean IQ of 100. These researchers
found that particularly high levels of tested intelligence may be found in areas of cultural and educational enrichment. Although this points to the strong influence of environment, Vane and others did not feel that it renders the Stanford-Binet or other intelligence tests invalid as measures of intellectual potential. It does indicate, however, that results should be interpreted within a framework that includes an awareness of the environmental factors to which the child is exposed.

Purpose of the Study

The foregoing research points out the many complex problems of the disadvantaged child. The purpose of establishing many preschool programs throughout this country has been to seek the most effective ways of educating the culturally deprived and to utilize the standardized measurements to assess various programs.

The purpose of the present study is to evaluate the intellectual functioning and sensory-motor abilities of the disadvantaged child at the preschool level, to determine his growth in these areas during his participation in the program, and to determine whether or not four different teaching models are instrumental in bringing about intellectual and sensory-motor improvements.
Definitions

For the purpose of this study, the following definitions were formulated:

**Intellectual functioning:** Defined as IQ scores on the **Stanford-Binet Intelligence Scale, Form L-M**, or as IQ scores on the **Peabody Picture Vocabulary Test**.

**Sensory Motor Abilities:** Defined as the number of errors on the **Bender Gestalt Test**.

Hypotheses

Because of the nature of research dealing with preschool programs and their effectiveness in lower socioeconomic status, the following hypotheses were investigated:

**Hypothesis I:** That significant overall gains in intellectual functioning for all children would occur after the treatment period.

**Hypothesis II:** That significant improvement in sensory-motor abilities would occur during the treatment period.

**Hypothesis III:** That treatment effect would differ significantly among the models.
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CHAPTER II

METHODS AND PROCEDURES

Source of Data

In January, 1969, the Dallas Independent School District initiated a pilot kindergarten program to investigate the effectiveness of providing free public kindergartens. The overall objective of this program was to evaluate whether or not such an experience would prove beneficial, especially to children from low socioeconomic and culturally disadvantaged families. More specific objectives included the evaluation of four different instructional models which were used in this program.

Three elementary schools, located in primarily a low-income, minority-group area, were chosen as sites for the pilot kindergartens, and specially built portable buildings were erected on each of the three campuses. Each teacher was employed especially for this program. Additionally, a teacher aide was selected and hired on the basis of general intelligence, interest in working with children, aptitude, and a background of minority-group membership. All teacher aides were either Negro or Mexican-American, and one aide was assigned to each teacher. This pilot program was voluntary and free to all children located in the vicinity
of each of the three schools, provided they were eligible for enrollment in the first grade at that school in September, 1969.

The four instructional models utilized placed emphasis on different teaching materials and on some different aspect of preschool experience; however, the general goals were quite similar. The following descriptions of the models were presented in a School District Research Department interval communication:

The Bank Street Model, developed at Bank Street College, New York, New York, emphasizes a program which is designed to develop a positive self-concept and to contribute to cognitive growth. The securing of parental involvement is also emphasized. The four instructional goals are

1. Intellectual development
2. Teacher-child supportive interaction
3. Parental involvement
4. Emotional growth.

The Deutsch Model, derived from programs at the Institute for Developmental Studies, New York University, New York, New York, has been described as being an eclectic approach. It emphasizes language development through classroom participation designed to elicit verbal responses from the students. The four major instructional goals are
1. Language development
2. Perceptual development
3. Concept formation and development

The Marie Hughes Model, developed by Dr. Hughes at the University of Arizona, Tucson, Arizona, utilizes a bilingual approach to facilitate language development and cognitive growth with heterogeneous groups. The four instructional goals are
1. Intellectual development
2. Foster positive attitudes toward school
3. Language skills development

The Weikert Model, developed by Dr. Weikert and Dr. Constance Konisi at the Ypsilanti Public Schools, Ypsilanti, Michigan, is based on Piagetian concepts and emphasizes cognitive growth and language stimulation. Intellectual growth is facilitated by a step-by-step approach which facilitates the transition from sensory-motor to conceptual abilities. Five major instructional goals are
1. Intellectual development
2. Concept formation
3. Language development
4. Development of sensory-motor/perceptual skills
5. Parental involvement.
Similarities and differences among the four models were not considered to be of significant importance in the present study since there seemed to be a considerable overlap in the materials, goals, and methods. It was not expected that there would occur differences in intellectual functioning or sensory-motor abilities which would be attributable to differences among the instructional models.

The Research Department of the Dallas Independent School District conducted a comprehensive appraisal project to evaluate the effectiveness of the Pilot Kindergarten Program. Improvement in the areas of intellectual functioning, self-image, peer interaction, reading-readiness level, and sensory-motor abilities was the major objective to be appraised. Evaluative procedures consisted of nine test instruments which were administered to all children in the program and of two individual tests which were administered to a random sample of the students. To determine parental involvement and gain impressions concerning attitudes toward the program, a questionnaire for parents was utilized. Also used were three additional instruments which were administered to teachers and teacher aides.

Subjects

Originally, 269 students were enrolled in the Pilot Kindergarten Program, but 73 were deleted because of absence
during data collection or withdrawal from the program. Therefore, 196 kindergarten children eligible for enrollment in first grade before September, 1969, at each of the three campuses were used as subjects in this study. The distribution of ethnic groups which participated was as follows: 60 per cent Negro, 30 per cent Mexican-American, and 10 per cent Caucasian. Although income was not formally assessed, it was estimated that fewer than 5 per cent of the families with children enrolled in this program had incomes above the "poverty level."

A sample of twenty-five children was randomly selected from the 196 students to be given the Stanford-Binet Intelligence Scale and the Illinois Test of Psycholinguistic Abilities. Forty children were originally selected from the sample, but fifteen had to be deleted because of absence during either the pre- or post-test or because of withdrawal from the program. The mean age for the children was five years, eleven and a half months.

Description of the Instruments

The Stanford-Binet Intelligence Scale, Form L-M, has been widely utilized in pre- and post-testing, and from it one can derive both a mental age and an intelligence quotient.

The Peabody Picture Vocabulary Test, primarily a test of listening ability, is a nonverbal intelligence test
which yields both a mental age and intelligence quotient.

The **Bender Gestalt Test** consists of nine figures which are presented one at a time and which the subject is asked to copy on a blank piece of paper.

**Treatment of the Data**

Tests were administered at the beginning and the end of the Pilot Kindergarten Program. In order to test the first hypothesis, mean differences were computed for the thirty-five students' sample scores on the *Stanford-Binet*. The significance of the difference was tested by the use of Fisher's *t* Test. Also a single classification analysis of variance for repeated measures was used to test mental age and intelligence quotient differences on the *Peabody Picture Vocabulary Test*.

To test the second hypothesis, a 4 x 2 analysis of variance for pre- and post-tests was used.

Statistical analysis used to test the third research hypothesis was two analyses of variance for repeated measures. Results of these analyses would confirm the third hypothesis if no significant differences were found between models.
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CHAPTER III

RESULTS

It was hypothesized in Chapter I that the pupils in the present study would show significant differences between pre- and post-test scores on tests of intelligence if the kindergarten program were indeed successful in improving intellectual abilities in culturally deprived children.

Pre- and post-test IQ scores from the Stanford-Binet Intelligence Test were recorded for a random sample of twenty-five children drawn from the total kindergarten population. The difference between these scores was computed, and a Fisher's t Test was utilized to determine significance. For the sample children, pre- and post-test IQ scores on the Stanford-Binet did not differ significantly: \( t=1.781, P < 7.05 \). These results support the rejection of the first hypothesis. The mean change in mental age was 4.76 months which is roughly equivalent to the mean change in chronological age.

However, gains in intelligence were also measured with pre- and post-IQ scores from the Peabody Picture Vocabulary Test. Table I shows mean IQ and mental-age scores on the PPVT and their difference for pre- and post-test. Since
it is necessary to show gains in mental age in terms of months in the tables, it will be noted that the mean mental age on the pre-test is approximately 3 years, 8 months, while on the post-test it is approximately 4 years, 2 months. Since all the children enrolled in the Pilot Kindergarten Program must have been eligible for enrollment in first grade in September, it can easily be seen that the group as a whole was markedly below chronological age. This is to be expected, as had been found, with children who are culturally deprived. A 4 x 2 analysis of variance for repeated measures calculated on IQ scores is shown in Table II.
TABLE II
ANALYSIS OF VARIANCE: PPVT IQ SCORES BY MODEL

<table>
<thead>
<tr>
<th>SOURCE OF VARIATION</th>
<th>df</th>
<th>Mean Square</th>
<th>F-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Models</td>
<td>195</td>
<td>6,854.556</td>
<td>8.59*</td>
</tr>
<tr>
<td>Error Between</td>
<td>192</td>
<td>798.003</td>
<td></td>
</tr>
<tr>
<td>Within Test</td>
<td>196</td>
<td>5,086.567</td>
<td>33.35*</td>
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<tr>
<td>Model X Test</td>
<td>3</td>
<td>1,074.235</td>
<td>7.04*</td>
</tr>
<tr>
<td>Error within</td>
<td>192</td>
<td>152.526</td>
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</tr>
</tbody>
</table>

*P < .01

The F ratio within tests is significant, indicating that the subjects' IQ scores increased during the kindergarten program.

Fisher's *t* test was used to determine significance of differences between pre- and post-test performance on the Peabody Picture Vocabulary Test for each model.

TABLE III
*t* VALUES: DIFFERENCE BETWEEN PRE- AND POST-TEST PERFORMANCE ON PPVT BY MODEL

<table>
<thead>
<tr>
<th>MODEL</th>
<th><em>t</em></th>
<th><em>P</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Street</td>
<td>-</td>
<td>NS</td>
</tr>
<tr>
<td>Deutsch</td>
<td>7.33</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Hughes</td>
<td>2.81</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Weikart</td>
<td>2.31</td>
<td>&lt; .05</td>
</tr>
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</table>
As can be seen from Table III, which gives t's for each group, all models show a significant increase with the exception of the Bank Street model. Results from the Peabody Picture Vocabulary Test as seen in Tables I, II, and III support the acceptance of Hypothesis I.

In order to test the second hypothesis, pre- and post-test error scores on the Bender Gestalt Test were computed for the pupils in each of the four models. A one-way-classification analysis of variance is shown in Table IV. The significant F obtained supports the acceptance of Hypothesis II. These results indicate that the pupils' sensory-motor abilities increased over the kindergarten term.

### Table IV

**ANALYSIS OF VARIANCE: PRE- AND POST-ERROR SCORES ON BENDER BY MODEL**

<table>
<thead>
<tr>
<th>SOURCE OF VARIATION</th>
<th>df</th>
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<th>F-ratio</th>
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<td>195</td>
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<td></td>
</tr>
<tr>
<td>Within</td>
<td>196</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Post Test administration</td>
<td>1</td>
<td>59.7169</td>
<td>15.49*</td>
</tr>
<tr>
<td>Residual</td>
<td>195</td>
<td>3.8553</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>391</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P < .001
Table V shows mean and mean difference for pre- and post-test performance on the **Bender Gestalt Test** for all models. Examination of Table V shows that mean-error scores decreased for all groups except the Weikart which remained the same.

**TABLE V**

**BENDER MEAN-ERROR SCORES BY MODEL**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Pre-Test Mean</th>
<th>Post-Test Mean</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Street</td>
<td>13.83</td>
<td>12.63</td>
<td>1.20</td>
</tr>
<tr>
<td>Deutsch</td>
<td>14.62</td>
<td>14.16</td>
<td>.46</td>
</tr>
<tr>
<td>Hughes</td>
<td>13.23</td>
<td>11.83</td>
<td>1.40</td>
</tr>
<tr>
<td>Weikart</td>
<td>14.53</td>
<td>14.53</td>
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</table>

In order to test the third hypothesis, a 4 x 2 analysis of variance for repeated measures was computed for performance on the **Peabody Picture Vocabulary Test** and the **Bender Gestalt Test**. The results are summarized in Table II and in Table VI. The F-ratios between models in both cases were significant, indicating that Hypothesis III be accepted. It will be noted in Tables II and VI that differences in models were significant; however, the model which showed greatest gains in intelligence on the **PPVT** was not the same as on the **Bender**. Review of the mean-IQ scores in Table II shows that gains in IQ were greatest in the Deutsch model, followed by the Marie Hughes and Weikert model. A
loss rather than gain is noted on the Bank Street Model. Results in Table VI indicate that improvement on sensory-motor abilities also varied significantly with the different models. Review of the mean-error scores on pre- and post-test performance shows that the pupils' errors on the Bender Gestalt Test were reduced by the Marie Hughes model, followed by the Bank Street, Deutsch, and Weikert models.

<table>
<thead>
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<th>SOURCE</th>
<th>df</th>
<th>Mean Square</th>
<th>F-ratio</th>
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<td>4.96**</td>
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<tr>
<td>Error Between</td>
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<tr>
<td>Within</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Test</td>
<td>1</td>
<td>57.4194</td>
<td>15.31***</td>
</tr>
<tr>
<td>Models X Test</td>
<td>3</td>
<td>10.5069</td>
<td>2.80*</td>
</tr>
<tr>
<td>Error within</td>
<td>192</td>
<td>3.7515</td>
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</tr>
</tbody>
</table>

*P < .05  **P < .01  ***P < .001
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CHAPTER IV

DISCUSSION AND CONCLUSIONS

The findings presented in the preceding chapter concerning the first hypothesis are contradictory with regard to increased IQ scores for children participating in the kindergarten program. Results on the Peabody Picture Vocabulary Test support the hypothesis and show gains in IQ scores, while gains in intellectual functioning on the Stanford-Binet Intelligence Test were not significant. It is believed that had the sample of children to whom the Binet was given been larger, statistically significant gains would have resulted.

Another possible reason for the failure of the Binet to show significant gains is that, of the twenty-five randomly sampled pupils, seven had IQ scores in the average range on the pre-test. Of the seven children, six showed losses in intellectual functioning. When these seven children are deleted from the sample, results obtained by Fisher's t test are significant at the .01 level ($t = 3.6, < .01$). In a study by Vane and Davis (6), it is suggested that scores of children at the lower end of the IQ scale tend to move upward, while scores at the upper end of the IQ scale tend to move downward. This might indicate
that changes between pre- and post-test scores may reflect the phenomenon of regression toward the mean.

Also of importance are the differences between the two instruments used to measure intelligence. The Stanford-Binet Intelligence Test is primarily verbal in nature and includes subtests for ages three to six in comprehension, vocabulary, responses to pictures, opposite analogies, differences, and number concepts as well as subtests measuring visual-motor coordination (5).

In comparison, the Peabody Picture Vocabulary Test is totally nonverbal in nature, and although it yields an IQ score, it may be best described as primarily a test of listening ability. One suspects that, although the Stanford-Binet Intelligence Test may be a better predictor of success in a traditional school setting, the importance of the gains made by children in this study on the Peabody Picture Vocabulary Test should not be minimized. One study has shown that an enriched curriculum was more proficient in receptive language ability as measured by the PPVT than in the abilities measured by the Binet (1). Goolsby (2) cites data which postulate that more than half of these studies show the positive effects of increased listening on reading ability.

The results presented in Tables IV and V in Chapter III support the acceptance of the second hypothesis. There was a reduction in errors on the Bender Gestalt Test in the
kindergarten children on post-testing. It will be remembered that foregoing studies have emphasized the importance of sensory-motor abilities on school performance. The literature has also pointed out that perceptual deficiencies are prevalent in the disadvantaged child. One suspects that many culturally deprived children have never attempted to manipulate or even properly hold a pencil before entering school. Although parental information obtained in this study did not include a statement as to whether or not the children had been exposed to pencil and paper tasks, one wonders if, in fact, many of them had. If not, then exposure to such tasks in the kindergarten program might be one of the reasons for significant increases in sensory-motor ability. Although it cannot be explained by present data, it is interesting to note that the two models which showed the most significant gains in sensory-motor ability, Marie Hughes and Bank Street, did not include perceptual training in their major instructional goals, while the two models which were lowest in gains made emphasized perceptual training as part of their major instructional goals.

Tables II and VI of Chapter III support the acceptance of the third hypothesis. Indeed, there were significant differences among the four models on both the Peabody Picture Vocabulary Test and the Bender Gestalt Test. The greatest gains in intellectual functioning were made by children in the Deutsch model, followed by the Marie Hughes
and Weikert model. The Bank Street model showed a loss rather than a gain during the kindergarten program. It should be noted, however, that data show this loss to be attributed to one teacher in this model. When test data for children in this teacher's classroom are deleted, the Bank Street model also shows gains which are statistically significant. This leads one to hypothesize that teacher variables may be significantly different, possibly accounting for gains or losses in any one of the four models used in this study. Perhaps teacher differences could also explain why the Weikert model showed no improvement in sensory-motor abilities, even though perceptual training was one of its major instructional goals. However, this is purely speculative and might not apply to each model to the same degree.

Conclusions

The present study found that the culturally disadvantaged children entering the kindergarten program had expected deficiencies in intellectual functioning and sensory-motor skills. The same general pattern emerged at the conclusion of the kindergarten program, although significant gains were made in both areas tested.

Results indicate that, while gains in intellectual functioning were not significant on the Stanford-Binet Intelligence Test, they were statistically significant on the
Peabody Picture Vocabulary Test. Thus, some of the hypotheses found in other studies utilizing the Binet to show significant gains in intellectual functioning among disadvantaged preschool children were not supported by this study. This may largely have been due to the small number of randomly selected children who were included in the sample. Other possibilities have already been discussed in Chapter III. Further investigation of the two instruments used to measure intelligence is needed.

Results also indicate that statistically significant gains were made by children in this study in sensory-motor abilities. It was concluded from these data that the stated instructional goals of each of the four models had little effect on the gains made in sensory-motor abilities.

In conclusion, data reveal statistically significant differences among the four models in gains made both in intellectual functioning and increased sensory-motor abilities. In computing the differences between models on the Peabody Picture Vocabulary Test, it was found that, by deleting one teacher from the Bank Street model, it, too, showed gains in intellectual functioning which were statistically significant. Thus, it may be hypothesized that teacher differences have a definite effect on the outcome of gains made by their students. Future studies involving statistics which control for teacher differences would certainly be helpful in determining whether or not teacher
variables play a significant role in predicted gains or losses in intellectual functioning and/or sensory-motor abilities among preschool children. Data bearing on this question were ambiguous and not formally taken into account in the present study.

The history of the disadvantaged child is quite different from that of middle-class children. Jensen (3) points out that, because of these differences, schools should assume more responsibility for child-rearing practices of the culturally deprived children since they do not go home after school to an essentially tutorial setting as do the middle-class children. Larson and Olson (4) also postulate that, without proper follow-up, one cannot contend that gains made in a preschool program will carry over to the primarily traditional type of teaching methods found in the elementary schools.

Further research is needed to support or contest the conclusions of the present study. It would have been helpful to have had a control group which had no kindergarten experience and to contrast the readiness scores of the two groups upon their entrance into first grade. It would also have been helpful to control for teacher differences within the four instructional models.
CHAPTER BIBLIOGRAPHY


BIBLIOGRAPHY

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