AN ASSESSMENT OF SCHOOL READINESS
AMONG PROJECT HEAD START CHILDREN

by

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SIGNED: [Signature]

APPROVAL BY THESIS DIRECTOR

This thesis has been approved on the date shown below:

[Signature]  August 8, 1966
WILLIAM T. KETCHERSIDE  Date
Assistant Professor of Education
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ABSTRACT

This study investigated the school readiness among Project Head Start children. The Anton Brenner Developmental Gestalt Test of School Readiness and The Pictorial Test of Intelligence were given to 30 Spanish-American children who participated in a Project Head Start program and to a like group who qualified for such a program but did not participate. The test results were compared and correlated with teacher grade evaluations.

A statistical analysis of the data showed that the Non-Head Start group did significantly better on the school readiness test and arithmetic grades, and that all but two of the correlation coefficients were significant at the .01 level. None of the six sets of correlation coefficients was significantly different as determined by the z-scores.

It was concluded that the 1965 Project Head Start participants did not benefit in the area of school readiness as measured in this study, and that the Anton Brenner Developmental Gestalt Test of School Readiness and The Pictorial Test of Intelligence were not good predictors of
school achievement. Reading grades, however, could be used with a high degree of confidence to predict arithmetic grades or vice versa.

Recommendations given in this study were that a more extensive investigation be conducted to ascertain the benefits derived from Project Head Start, an evaluation of the program be done to enable improvement of staff and activities, tests be given early and periodically throughout the school year, and that a first grade program be developed to continue to complement the activities started in Project Head Start.
CHAPTER I

ORIENTATION TO THE STUDY

Throughout the United States, educational programs are being developed for the youth living in economically-deprived areas. Programs such as the Youths' Homework Helper are being instituted in the high schools and enrichment programs are becoming more and more widespread throughout the elementary schools.

People working in various educational programs for economically deprived youth are beginning to realize that they are arriving too late on the developmental scene to effect any real changes. Research in this area indicates that the development of pre-school educational programs may help solve this problem. One such research study was done by Selmar Herr (1946), who demonstrated that a pre-school preparatory training program for economically deprived Spanish-American children increased their school readiness and gave the children time to acquire needed social and emotional adjustments.

As pointed out by Fowler (1962), seemingly minimal cognitive stimulation in the pre-school years, when
organized appropriately to the capabilities of the child, could effectively accelerate the development of the child's intellectual functions. Particular stimulation, according to Fowler, always must be supplied at a special time or within certain time limits if the most desired effect is to be obtained.

Bloom stated in his book, *Stability and Change in Human Characteristics*, that one-half of a child's total development occurs before he reaches school age and that general school achievement is already half developed by grade three. According to Spodek (1965, p. 595), "This would suggest that in order for environmental manipulation to have its greatest impact in the area of intelligence, it ought to occur during the pre-school years."

Project Head Start is one of the newly-developed educational programs designed to help pre-kindergarten and pre-first grade children coming from impoverished areas. These children have grown up without the day-to-day experiences and opportunities normally encountered by children of their own age. Without such experiences and opportunities, these children are not ready to benefit properly from the academic program of a regular classroom. Project Head Start is designed to give economically-deprived children a background which will enable them to benefit to a much greater degree from their school experience.
Statement of the Problem

Are the children who participate in a Project Head Start program able to "get more" out of school when they enter than are those children who do not participate in such a program, but who have similar problems of economic deprivation? In order to answer this question, the following study was designed to investigate and compare the academic readiness, intelligence, and teacher grade evaluations of children involved in the Summer 1965 Project Head Start program in the Tucson, Arizona, area with the academic readiness, intelligence, and teacher grade evaluations of a like number of disadvantaged children who qualified, but did not participate in the Summer 1965 Project Head Start program.

Importance of the Study

According to Deutsch (1965, p. 701), "the experiences of the child from the disadvantaged background do not prepare him for successful school performance." Deutsch feels that children who have had pre-school experiences are more likely to cope appropriately with the kinds of things the school demands intellectually than
are children who have not had this kind of previous experience. This is most true for children who come from the most peripheral and lower socio-economic groups.

Pre-school programs for economically-deprived children will become more numerous in the future since Federal money is available through grants. These pre-school programs should serve as a means of accommodation between the school, the child, and his family. Each community should have a well-thought-out program, which is tailored to the needs of the people living there. Constant evaluation and re-evaluation should be done with each program to see if the needs of the community are being met. The data obtained in this study should enable an evaluation of the 1965 Summer Project Head Start program in the Tucson, Arizona, area. On the basis of such an evaluation, improvements and expansion of future programs would be possible.

Definitions of Terms Used

Spanish-American

As used in this study, the term 'Spanish-American' applies to those children coming from homes in which one or both parents are of Spanish extraction and wherein Spanish is the predominant language.
Economic Deprivation

In this study, economic deprivation was determined by using the same criteria used in Project Head Start. The area must have a high unemployment rate, a significant proportion of the families on welfare (specific figures are not available on these items), and individual families must not have an income exceeding three thousand dollars per year.

School Readiness

Anton Brenner's definition is used for purposes of this study. Readiness is a child's functional potentiality and/or state of development which enables the child to relate successfully to reality in general and, specifically, to the reality of school demands (Brenner, 1959, p. 27).

Limitations of the Study

The sample was limited to six- and seven-year-old Spanish-American children living in areas of Tucson, Arizona, which were considered economically deprived according to the criteria set up by Project Head Start. The findings will be limited in their application to similar samples of six- and seven-year-old Spanish-American children coming from economically-deprived areas in Tucson, Arizona.
Hypotheses

To find out if the Project Head Start program afforded the participants any advantages upon entering school the following hypotheses were proposed in this study:

1. There is no significant difference between the means of the Head Start group and the Non-Head Start group on a test of school readiness.

2. There is no significant difference between the means of the Head Start group and the Non-Head Start group on a test of intelligence.

3. There is no significant difference between the means of the teacher grade evaluations for reading for the Head Start and the Non-Head Start group.

4. There is no significant difference between the means of the teacher grade evaluations for arithmetic for the Head Start and the Non-Head Start group.

5. There is no significant difference between the coefficients of correlation relating the school readiness test scores and the intelligence test scores for the Head Start group and the Non-Head Start group.

6. There is no significant difference between the coefficients of correlation relating the school readiness test scores and the teacher grade evaluations
for reading for the Head Start group and the Non-Head Start group.

7. There is no significant difference between the coefficients of correlation relating the readiness test scores and the teacher grade evaluations for arithmetic for the Head Start group and the Non-Head Start group.

To investigate these hypotheses, the following study was conducted during the latter part of the children's first semester of regular school attendance.
Rationale for Pre-School Education

The decade of the sixties might be referred to as the decade of the disadvantaged, a time in which there was an emphasis upon the role education can play to help economically-deprived children overcome the effects of their cultural and economic background.

There are several theories now being proposed to justify pre-school education as a means of raising the academic performance of economically-deprived children. Most of these theories use the newer concepts of intelligence which attack the idea of fixed intelligence and suggest that experiences are a major determinant in fulfilling a child's potential.

Bloom, in Stability and Change in Human Characteristics, has analyzed and interpreted studies on human development which have been reported by various researchers over the past years. Bloom (1964, p. 88) stated, "there is little doubt that intellectual development is in part a function of the environment in which an individual lives." Bloom (1964, p. 89) also suggested that
"... the evidence so far available suggests that marked changes in the environment in the early years can produce greater changes in intelligence than will equally marked changes in the environment at later periods of development."

Bloom (1964) proposed that there are periods of most rapid change for each developmental characteristic, and that the environment can have its greatest effect upon a characteristic during these periods of rapid change. Developmental periods or stages are also suggested by Piaget in his theory of intellectual development. The child progresses through four stages of intellectual development: (1) sensory-motor, (2) pre-operations, (3) concrete operations, and (4) formal operations. Piaget considers these stages as invariant, but the rate of progress through these stages can vary. As the child develops from one stage to the next, he continually interacts with his environment and through the processes of accommodation and assimilation he is constantly changing his schema to fit newly-acquired information. According to Piaget, intellectual development is influenced by four main factors: (1) maturation, (2) experience, (3) social transmission, and (4) equilibrium (Piaget, 1964).

Hunt (1964) has synthesized Piaget's theory of intellectual development with other studies in learning
and mental development. He suggested that the early years of development are of major importance for providing the generalized conceptual skills needed for later learning. He felt that an economically-deprived child did not receive the experiences required for adequate development of those semi-autonomous central processes, such as perception and speech, which are needed for acquiring skill in the use of linguistic and mathematical symbols.

The position for specially organized early stimulation of the child and its implication found support in an article by Bruner on cognitive consequences of sensory deprivation. He said:

"... not only does early deprivation rob the organism of the opportunity of constructing models of the environment, it also prevents the development of efficient strategies for evaluating information ... . Robbed of development in this sphere it becomes the more difficult to utilize probable rather than certain cues, the former requiring more efficient strategy than the latter." (Bruner, 1961, pp. 202-203).

Although Bruner did not speak directly about economic deprivation, his emphasis on the importance of a "normally rich environment" implied serious cognitive consequences of a deprived environment.

According to Brenner (1959), as a child approaches the age for entering school, the ability to perceive
similarities and differences, analyze and synthesize forms, and to see spatial and causal relationships is an important feature of the child's development. This perception and sensitivity to environmental stimuli is the basis for concept formation. The child must be able to recognize a particular common factor or set of factors in a group of complex experiences and be able to relate to others what he perceives by a symbol mutually understood. Robinson and Mukerji (1965) pointed out that language is an essential means of encoding and decoding experiences, for understanding, and for communicating. Therefore, the ability to conceptualize will increase as the spoken and written language is acquired.

Whatever a child's genetic potentialities, cognitive development occurs largely in response to a variable range of stimulation. Huey (1965, p. 118) stated that "the more abundant a child's sensory experiences and past associations, the richer his perceptions and the greater his learning potential will be." In an economically-deprived environment, however, there is a restricted and less adequate range of stimulation.

The effects of a restricted environment, according to Ausubel (1965, p. 10), include poor discrimination skills; inability to use adults as sources of information and correction; an impoverished language; and a
paucity of information, concepts, and relation propositions.

Intellectual retardation of the economically-deprived child with respect to language development and abstractions was demonstrated by Berstein in 1959. He studied the language development of the lower class (now referred to as the economically deprived) and the middle class and identified the differences in the language used by each class. The language of the lower class tended to be composed of short and grammatically simple sentences, containing symbols of low order. It is a language of implicit meaning. It limits the kind of ideas that can be expressed and the kind of thought that can be ordered within it. The language of the middle class was more accurate and precise and could express a wide range of thought.

A deficit incurred from past deprivation does not allow the child to profit from new and more advanced levels of environmental stimulation. Thus, according to Ausubel, regardless of the adequacy of all other factors the child's deficit tends to increase cumulatively and leads to permanent retardation. Ausubel (1965, p. 11) stated, "... some of this failure in developmental actualization is irreversible and cannot be compensated for later, irrespective of the amount of hyper-stimulation that is applied."
Because the achievement gap continually increases between the economically-deprived child and the middle-class child, Deutsch (1964) has suggested that at the three-four-year level systematic stimulation through structured learning programs might prepare the economically-deprived child for the more formal and demanding structures of school. At this age there is considerably less to be compensated for than exists when a child gets to the first grade.

Several pre-school programs have been developed in the past few years such as Deutsch's project in New York, Olson and Larson's program in Wisconsin, the Baltimore Early Admissions Program, and the many Project Head Start programs all over the United States. The projects are still in progress and the results at this point are more indicative than conclusive. Each program, however, seems to stress the development of self-concept, cognitive skills, language facility, and motivational patterns through environmental stimulation and enrichment.

The selected review of literature cited here regarding the rationale for pre-school education suggests that a child's intellectual development will vary as a function of his environment and that early intervention can have maximum impact in the acceleration of intellectual develop-
ment. Spodek (1965, p. 110) suggested on the basis of Bloom's book, Stability and Change in Human Characteristics, that early programs "... can have a much greater effect than more extensive remedial programs provided later in the child's life."

**Instruments**

A review of the available literature regarding the instruments used in this study revealed that few research studies have been done using either instrument. Most of the research was carried out to fulfill requirements for a M.A. degree or a Ph.D. degree.

The first study was done in 1961 by Jean S. Ralph, who studied the readiness level of 30 first-grade children, 15 boys and 15 girls, coming from middle-to upper-middle-class families. The Anton Brenner Developmental Gestalt Test of School Readiness and the Harrison-Stroud Reading Readiness Test were administered to the children in the fall and spring. The rank-difference coefficients of correlation (rho) for the Gestalt Readiness Test and teacher ratings of ability were: .64 in the fall and .55 in the spring. The rho coefficients of correlation for the Gestalt Readiness Test and teacher ratings of achievement were .59 in the fall and .55 in the spring. All were significant beyond the .01 level.
In a study involving 63 children of lower-income families in Detroit, Michigan, Sandhu (1963) found that the Gestalt Readiness Test when correlated with teacher ratings of achievement yielded a coefficient of .60 and suggested that the Gestalt Readiness Test could be used for the early identification of the under-achiever.

In a study done by Nash (1963), involving 132 Caucasian pre-first grade children selected in order that all socio-economic levels would be represented, the Gestalt Readiness Test, when correlated with the Gates Primary Reading Test, yielded a coefficient of correlation of .599. Nash also showed, in a composite of predictors for reading success in the first grade, that the substitution of the Gestalt Readiness Test for the Stanford-Binet items resulted in approximately the same total prediction.
CHAPTER III

METHODOLOGICAL PROCEDURE

The procedural framework of this study included a consideration of the following: (1) subjects, (2) instruments, (3) procedures, and (4) treatment of the data.

Subjects

The experimental group consisted of thirty Spanish-American children who participated in the Summer 1965 Project Head Start program in either the Sunny-side or Amphitheater school districts in Tucson, Arizona. The sample was composed of sixteen girls and fourteen boys, all in the age range of 74 months to 86 months (6 years 2 months to 7 years 2 months). The mean age was 76.57 months (6 years 4.5 months).

The control group consisted of thirty Spanish-American children who qualified for the Summer 1965 Project Head Start program, but who did not participate. The sample was composed of sixteen girls and fourteen boys, all in the age range of 71 months to 90 months (5 years 11 months to 7 years 6 months). The mean age was 78.93 months (6 years 6 months).
Instruments

A test of school readiness and an intelligence test, each minimizing language usage, were needed to conduct this study. The Anton Brenner Developmental Gestalt Test of School Readiness by Anton Brenner and the Pictorial Test of Intelligence by Joseph French were used.

Anton Brenner Developmental Gestalt Test of School Readiness

This test is based on the principle that perceptual and conceptual differentiating abilities are the most important factors in learning and personality development. It assesses reading and number readiness and is purported to be a measure of general social readiness. The greatest predictive value of the test is for children five and six years old. The majority of "normal average" seven- or eight-year-old children will reach the ceiling of the test with a score of 80 points (100 percent) (Brenner, 1964, p. 5). Sex differences, although not statistically significant, have been noted, with the girls tending to score slightly higher than the boys (Brenner, 1964, pp. 21-22).

The time required to administer the test ranges from three to ten minutes for the five tasks. The short testing time minimizes the elements of fatigue and boredom.
The test is composed of the following five sub-tests:

1. Number producing: the child is asked to place three blocks and then five blocks in the examiner's hands. Then the blocks are combined, and the examiner says to the child, "Now I put them all together. How many do I have?"

2. Number recognition: the child is asked to identify the number of dots in each arrangement pointed to by the examiner.

3. Ten dot gestalt: the child is asked to reproduce a ten dot gestalt exactly as he sees it.

4. Sentence gestalt: the child is asked to copy the sentence, "Fred is here" exactly as it looks. The child is not required to read the sentence.

5. Draw-a-Man: the child is asked to draw a picture of a man, the very best picture he can draw.

To score the test, each correct answer is scored plus and each incorrect answer is scored minus. The only exception is in subtest four where certain responses are scored zero. The range of scores is 0 to 80.

All positive scores are totaled and then added to forty; then from this subtotal is subtracted the total number of minus scores. Tables are provided to aid
interpretation of the resulting score in terms of unreadiness, low readiness, average readiness, and high readiness.

The test was standardized on many groups before the final norms were made. Testing was done on normal and exceptional children ranging from four years to twenty-four years of age. Studies included white, Negro, and Mexican children. Tests were administered prior to kindergarten, in the first grade, and at various times in kindergarten and first grade (Brenner, 1964, p. 22).

Reliability determined by the test-retest method using 328 children of elementary school age yielded coefficients ranging from .55 to .74, all reaching significance at the .01 level (Brenner, 1964, p. 24). Reliability determined by the split half method yielded coefficients of .83 and .92 (Brenner, 1964, p. 25). A third study was made correlating the combined subscores on the Ten Dot Gestalt and Sentence Gestalt (copying), Number Producing and Number Recognition (numbers), and the subscore on the Draw-a-Man to the total score. The results yielded the following correlation coefficients (Brenner, 1964, p. 25):

1) copying: .96 in January
   .93 in June
(2) Numbers: 
   .61 in January
   .71 in June

(3) Draw-a-Man: 
   .66 in January
   .66 in June

To check validity, total test scores were correlated with concurrent teacher ratings of 353 kindergarten children. The resulting correlation coefficient of .61 was significant beyond the .01 level. The coefficients of correlation increased to .71 and .68 when the total test scores of the kindergarten children were compared seven months later with first-grade teacher achievement ratings. The correlation of January and June total test scores with first-grade October performances on the Metropolitan Readiness Test yielded coefficients of .66 and .75 (Brenner, 1964, p. 26).

The test norms were based on the test performance of 748 kindergarten children from the same Michigan school system. The age range was four years nine months through six years ten months.

The Pictorial Test of Intelligence

This individual test of intelligence is easily administered and objectively scored. The examiner presents to the child in each of the six subtests a series
of cards which usually have four pictorial choices, and the child chooses the correct picture for the task given.

The Pictorial Test of Intelligence consists of the following six subtests:

1. Picture vocabulary: this subtest is designed to measure language comprehension. The words were chosen on the basis of frequency used in textbooks for the lower grades and observations of word levels used by children in various situations.

2. Form discrimination: this subtest measures perceptual organization. The child is to differentiate the forms on the response card and choose the form that is like the form presented simultaneously on a stimulus card.

3. Information and comprehension: this subtest is designed to sample the child's range of knowledge and general understanding. Effort was made to develop cross-cultural items, but the child's experiences are used when solving the problems.

4. Similarities: this test reveals the child's ability to generalize and differentiate. Three of the four pictures on the response card are alike, the child is to choose the one picture that is different from the others.
5. Size and number: perception and recognition of size and number symbols plus ability to count and to do simple arithmetic problems is tested.

6. Immediate recall: attempts to test the ability to retain size, space, and form relationships. A stimulus card is presented for five seconds and then removed. The response card is presented and the child is to identify the same drawing which was presented on the stimulus card.

The standardization sample was selected to represent the population of children ages three through eight in the United States. A total sample of 1,830 children was used.

The intercorrelations among the subtests and the total score ranged from .57 for immediate recall to .69 for form discrimination. Reliability coefficients (using the Kuder-Richardson formula #20) ranged from .93 for six-year-olds to .87 for three-year-olds. When the test-retest method was used for determination of reliability, the results yielded reliability coefficients of .90 or above for all eight-year-olds and younger (French, 1964, p. 17).

Studies were done to determine the predictive validity and concurrent validity coefficients. Predictive validity in two studies gave a rank-difference
correlation coefficient of .77. Concurrent validity was evaluated by comparing scores on The Pictorial Test of Intelligence with scores on other intelligence tests which were administered concurrently, and with teacher ratings. The correlation of The Pictorial Test of Intelligence with the Stanford-Binet was .72, with the WISC .65, and with the California Test of Mental Maturity .53. The teachers' evaluations correlated with scores on The Pictorial Test of Intelligence yielded coefficients of .30 to .77 (French, 1964, pp. 21-22).

Test results are reported in terms of a Deviation IQ. Tables are provided for equivalents for each subtest, complete test and a short form of test. Since the subtests are shorter than the total test and therefore less reliable, caution should be used when interpreting the results.

**Procedures**

**Arrangements with the School Systems**

Arrangements were made directly with the school administrators at the beginning of November, 1965, regarding: (1) permission to test the children, (2) times to test the children, and (3) obtaining first-semester teacher grade evaluations for all subjects.
Sampling

A table of random numbers was used to select a sample of 30 students from a list of names consisting of all Spanish-American children attending Liberty, Nash, and Prince Elementary Schools in Tucson, Arizona, and who participated in the 1965 Project Head Start program.

In like manner, a sample of 30 students was selected from a second list of names consisting of all Spanish-American children attending Liberty, Nash, and Prince Elementary Schools in Tucson, Arizona, and who qualified but did not participate in the 1965 Project Head Start program.

Administration of the Instruments

Administration of the Anton Brenner Developmental Gestalt Test of School Readiness began November 30, 1965, and was concluded December 3, 1965. Administration of The Pictorial Test of Intelligence began December 6, 1965, and continued until December 10, 1965. Testing was then terminated for Christmas vacation and was resumed January 11, 1966, and concluded January 17, 1966. All testing was done by the writer.
The following statistical treatments were performed on the collected data:

1. Means and standard deviations were calculated for all measures to determine if there was (a) any difference between the performance of the Head Start group and the Non-Head Start group on the Anton Brenner Developmental Gestalt Test of School Readiness, (b) any difference between the performance of the Head Start group and the Non-Head Start group on The Pictorial Test of Intelligence, and (c) any difference between the teacher grade evaluations for the Head Start group and the Non-Head Start group.

2. The test of significance of the difference between means was calculated for each of the above sets of means.

3. The coefficient of correlation between the two tests was computed, and each test was correlated with the teacher grade evaluations. This was done in order to compare the correlations between readiness and intelligence for the Head Start group and the Non-Head Start group, and to compare the correlations between the teacher grade evaluations, readiness and intelligence for the Head Start group and the Non-Head Start group.
4. The results are graphically depicted for ease of interpretation and understanding.
CHAPTER IV

ANALYSIS AND PRESENTATION OF RESULTS

In order to meet the stated purposes of this study, the means and standard deviations were computed for the Head Start and Non-Head Start groups for the following variables: age, Anton Brenner Developmental Gestalt Test of School Readiness, The Pictorial Test of Intelligence, and teacher grade evaluations for reading and arithmetic. These means and standard deviations appear below in Table I.

TABLE I
MEANS AND STANDARD DEVIATIONS FOR HEAD START AND NON-HEAD START GROUPS ON ALL VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>HEAD START</th>
<th>NON-HEAD START</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Age</td>
<td>76.5667</td>
<td>3.5176</td>
</tr>
<tr>
<td>Readiness Test</td>
<td>57.7667</td>
<td>13.2758</td>
</tr>
<tr>
<td>PTI</td>
<td>84.5333</td>
<td>12.2140</td>
</tr>
<tr>
<td>Reading*</td>
<td>3.3667</td>
<td>1.0796</td>
</tr>
<tr>
<td>Arithmetic*</td>
<td>3.3667</td>
<td>1.0160</td>
</tr>
</tbody>
</table>

* Grades were computed by the following system: 1 = A, 2 = B, 3 = C, 4 = D, and 5 = E.
As shown in Table I, the Non-Head Start group had higher means on all variables. To determine if the noted differences between the five sets of means were significant, t-tests of significance of the difference between means were calculated. The results of the t-tests yielded only two sets of means significantly different, the Anton Brenner Developmental Gestalt Test of School Readiness at the .02 level and the arithmetic grades at the .05 level. The results appear below in Table II.

**TABLE II**

**SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEANS FOR ALL VARIABLES**

<table>
<thead>
<tr>
<th>Variable</th>
<th>t-score</th>
<th>Level of Significance</th>
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<tbody>
<tr>
<td>Age</td>
<td>1.7613</td>
<td>NS</td>
</tr>
<tr>
<td>Readiness Test</td>
<td>2.5461</td>
<td>.02 level</td>
</tr>
<tr>
<td>PTI</td>
<td>1.5330</td>
<td>NS</td>
</tr>
<tr>
<td>Reading</td>
<td>1.2123</td>
<td>NS</td>
</tr>
<tr>
<td>Arithmetic</td>
<td>2.2216</td>
<td>.05 level</td>
</tr>
</tbody>
</table>

Since there was a significant difference noted between the means for the Head Start and the Non-Head Start groups on the test of school readiness, Hypothesis I was not accepted. It was stated in Hypothesis I that, "There is no significant difference between the means of
the Head Start group and the Non-Head Start group on a
test of school readiness."

Since there was also a significant difference
between means noted for the teacher grade evaluations
for arithmetic, Hypothesis IV was not accepted. It was
stated in Hypothesis IV that, "There is no significant
difference between the means of the teacher grade evalu­
ations for arithmetic for the Head Start group and the
Non-Head Start group."

Hypothesis II, in which it was stated that,
"There is no significant difference between the means of
the Head Start group and the Non-Head Start group on a
test of intelligence," was accepted since no significant
difference between the means for The Pictorial Test of
Intelligence was noted.

Hypothesis III, in which it was stated that,
"There is no significant difference between the means of
the teacher grade evaluations for reading for the Head
Start and the Non-Head Start group," was also accepted
since no significant difference between the means for
grades in reading was noted.

The next step was to determine the degree of cor­
relation between all measures. The Pearson product-
moment method was used to determine the coefficient of
correlation (r). The results are shown in Table III.
As shown in Table III, the obtained correlation coefficient for Anton Brenner Developmental Gestalt Test of School Readiness and reading grades for the Head Start group was significant at the .05 level and the correlation coefficient for the Anton Brenner Developmental Gestalt Test of School Readiness and arithmetic grades for the Non-Head Start group was not significant. All other correlation coefficients were significant at the .01 level.

To determine if there was a significant difference between the coefficients of correlation z-scores
were calculated and the level of significance was determined. The results are shown below in Table IV.

**TABLE IV**

SIGNIFICANCE OF THE DIFFERENCE BETWEEN

COEFFICIENTS OF CORRELATION

<table>
<thead>
<tr>
<th>Measures</th>
<th>z-Scores</th>
<th>Level of significance</th>
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<td>NS</td>
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<td>.2204</td>
<td>NS</td>
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<tr>
<td>Arithmetic</td>
<td></td>
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</tr>
</tbody>
</table>

On the basis that none of the coefficients of correlation was significantly different, Hypotheses V, VI, and VII were accepted. A restatement of these hypotheses follows:

**Hypothesis V:** "There is no significant difference between the coefficients of correlation relating the school readiness test scores and the intelligence test scores for the Head Start group and the Non-Head Start group."

**Hypothesis VI:** "There is no significant difference between the coefficients of correlations relating
the school readiness test scores and the teacher grade evaluations for reading for the Head Start group and the Non-Head Start group."

Hypothesis VII: "There is no significant difference between the coefficients of correlation relating the school readiness test scores and the teacher grade evaluations for arithmetic for the Head Start group and the Non-Head Start group."

Discussion

The results of this study are not conclusive; at the most they are only indicative of certain factors. One such factor seems to be that the Summer 1965 Project Head Start program did not afford its participants any advantages in the realm of school readiness as measured in this study. Whenever a statistically significant difference was noted, it was in favor of the Non-Head Start group. The two variables upon which the Non-Head Start group made significantly higher scores were the Anton Brenner Developmental Gestalt Test of School Readiness and arithmetic grades.

Two of the five subtests of the readiness test involved number concepts. Since the Non-Head Start group did significantly better on both the readiness test and arithmetic grades, one might conclude that the
Non-Head Start group definitely had a better understanding of number concepts. This may have been due to the various teaching approaches of the teachers. Often the Head Start group and the Non-Head Start group did not have the same teachers.

Possibly, better results were not obtained from the Project Head Start program because it was hastily organized and optimal conditions were not possible. For instance, quite often teachers who did not have training in teaching pre-school children attempted this task. Consequently, what was presented was a watered-down version of the first grade, which was beyond the cognitive level of the children. Regarding this, Ausubel (1965) has suggested that the economically-deprived child often cannot profit from new experiences because he is overwhelmed by exposure to learning tasks that exceed his level of cognitive readiness.

Another problem encountered was that these children came from homes where Spanish was the predominant language. Very often these children were not equipped with a good language background in either English or Spanish. Huey (1965) noted that concept development and language development are mutually interdependent processes. Therefore, not having language development, little concept development was possible.
The correlations between reading and arithmetic grades were high for both groups. This was probably because a child who understood the language well enough to get good grades in reading, understood the language well enough to grasp the number concepts, and if he did not understand the language, he could not grasp the number concepts.

The results of this study also seem to indicate that The Pictorial Test of Intelligence would be a better predictor of grades than the Anton Brenner Developmental Gestalt Test of School Readiness, for the former test correlated better with grades for both groups than did the latter test. However, The Pictorial Test of Intelligence does not correlate high enough with grades to recommend it for the purpose of predicting grades.

Noted differences in this study may have been more distinct if the testing would have been done earlier. Benefits derived from Project Head Start may have been more easily discerned before any schooling had taken place.

Although the results of this study are not conclusive, the indications may warrant further investigation into the problem especially if Project Head Start is to become an effective pre-school program.
CHAPTER V

SUMMARY AND CONCLUSIONS

Restatement of the Problem

The purpose of this study was to assess school readiness among Project Head Start children. This was done by investigating and comparing academic readiness, intelligence, and teacher grade evaluations in reading and arithmetic of the children involved in the Summer 1965 Project Head Start program with the academic readiness, intelligence, and teacher grade evaluations in reading and arithmetic of children who qualified, but did not participate in the 1965 Project Head Start program. In general, it was hypothesized that there would not be any significant differences in the performance of the two groups.

Subjects and Procedures

An experimental group of 30 subjects was chosen by use of a table of random numbers from a list of names of all Spanish-American children who participated in the 1965 Project Head Start program and who attended Liberty, Nash or Prince Elementary School in Tucson, Arizona.
In a like manner, a control group of 30 subjects was chosen from a second list of names consisting of all Spanish-American children who qualified, but did not attend the 1965 Project Head Start program, and who attended Liberty, Nash or Prince Elementary School in Tucson, Arizona.

Each group was administered the Anton Brenner Developmental Gestalt Test of School Readiness and then The Pictorial Test of Intelligence. The results of these administrations were then compared and correlated with each other and with the teacher grade evaluations.

Results

Although the Non-Head Start group had higher means on all variables, only two sets of these means were significantly different as determined by the t-test of significance of the difference between means. These two sets of means were the Anton Brenner Developmental Gestalt Test of School Readiness at the .02 level and arithmetic grades at the .05 level. On the basis of these results Hypotheses I and IV were not accepted, and Hypotheses II and III were accepted.

The Pearson product moment-method was used to determine the coefficient of correlation. All but two coefficients of correlation were significant at the .01
The two exceptions were the correlation coefficient for the readiness test and the reading grades (significant at the .05 level) for the Head Start group, and the correlation coefficient for the readiness test and the arithmetic grades (not significant) for the Non-Head Start group.

None of the six sets of coefficients of correlation between the Head Start and Non-Head Start groups was significantly different as determined by the z-scores. The six sets of coefficients of correlation for which a significance of the difference was calculated are as follows: (1) Readiness Test - The Pictorial Test of Intelligence, (2) Readiness Test - Reading Grades, (3) Readiness Test - Arithmetic Grades, (4) The Pictorial Test of Intelligence - Reading Grades, (5) The Pictorial Test of Intelligence - Arithmetic Grades, and (6) Reading Grades - Arithmetic Grades.

**Conclusions**

The data of this investigation yielded results such that one may conclude:

1. The 1965 Summer Project Head Start program did not afford the participants any advantages in the area of school readiness as measured in this study.

2. The Anton Brenner Developmental Gestalt Test of School Readiness is not a usable predictor of school
achievement or school readiness when administered in November of the first grade.

3. Reading grades may be used with a high degree of confidence to predict arithmetic grades and/or vice versa.

4. The Pictorial Test of Intelligence correlates somewhat with grades, but not enough to use as a predictor for grades.

Recommendations

On the basis of the above conclusions, the following recommendations are in order:

1. A more extensive study should be done to ascertain definitely what specific benefits are derived from the Project Head Start program.

2. An evaluation of the Project Head Start program needs to be done for improvement of staff and activities.

3. Testing should be done early and then periodically throughout the year, so as to ascertain how long it takes the Non-Head Start children to catch up to the Head Start children.

4. A first grade program should be developed which will continue to complement the activities started in Project Head Start.
APPENDIX

(A) SCORES ON THE ANTON BRENNER DEVELOPMENTAL GESTALT TEST OF SCHOOL READINESS AND THE PICTORIAL TEST OF INTELLIGENCE AND GRADES IN READING AND ARITHMETIC FOR THE HEAD START GROUP

<table>
<thead>
<tr>
<th>Subject</th>
<th>Anton Brenner Readiness Test</th>
<th>PTI</th>
<th>Reading Grades</th>
<th>Arithmetic Grades</th>
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</thead>
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<td>97</td>
<td>2</td>
<td>3</td>
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<tr>
<td>Girl B</td>
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<tr>
<td>Girl C</td>
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<td>4</td>
<td>3</td>
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<tr>
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<td>4</td>
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(B) SCORES ON THE ANTON BRENNER DEVELOPMENTAL GESTALT TEST OF SCHOOL READINESS AND THE PICTORIAL TEST OF INTELLIGENCE AND GRADES IN READING AND ARITHMETIC FOR THE NON-HEAD START GROUP

<table>
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<th>Subject</th>
<th>Anton Brenner Readiness Test</th>
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<th>Reading Grades</th>
<th>Arithmetic Grades</th>
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**SUGGESTED READINGS:**
