

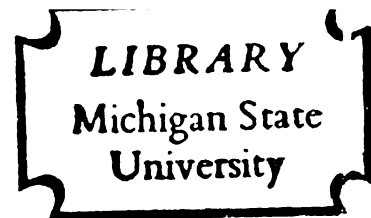
A COMPARISON OF THE PERFORMANCE
OF KINDERGARTEN CHILDREN FROM
CULTURALLY DEPRIVED HOMES AND
CHILDREN FROM NON-CULTURALLY
DEPRIVED HOMES USING THE ILLINOIS TEST
OF PSYCHOLINGUISTIC ABILITIES

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Suzanne B. Mills

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THESIS



ABSTRACT

A COMPARISON OF THE PERFORMANCE OF KINDERGARTEN CHILDREN FROM CULTURALLY DEPRIVED HOMES AND CHILDREN FROM NON-CULTURALLY DEPRIVED HOMES USING THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES

by Suzanne B. Mills

The purpose of this study was to determine whether any difference existed between children from culturally deprived homes and children from non-culturally deprived homes in the area of psycholinguistics as measured by the Illinois Test of Psycholinguistic Abilities (ITPA).

Psycholinguistic abilities which were studied and compared were those defined by the authors of the ITPA, Samuel Kirk and James McCarthy. There were nine such abilities assessed in the nine subtests which make up the battery of the ITPA.

There was a total of sixty subjects used in this study, thirty who were from culturally deprived backgrounds and thirty who were from at least middle class backgrounds. The control group was matched with the experimental group on the basis of race, sex, and age. All subjects were enrolled in the Public Schools in Lansing, Michigan. The culturally deprived children had been enrolled in the Operation Headstart Program the previous summer.

The experimental edition of the ITPA, developed in 1961 at the Institute for Research of Exceptional Children, University of Illinois, was used in this study. Statistical comparisons were made between the nine subtests and the total test performance for the control and experimental groups based on the raw scores obtained by each subject.

The results of this study indicated that there was a significant difference in the performance of children from culturally deprived homes when compared to the subtest performance of children who were not culturally deprived, the latter being superior. A significantly greater psycholinguistic ability was evident in children who were not culturally deprived when the results of the total ITPA battery were statistically analyzed.

In analyzing the differences between the nine subtests, it was evident that children from culturally deprived homes were weaker in certain areas of psycholinguistic abilities than they were in other psycholinguistic areas. It was possible to rank the nine subtests in the order of greatest difference of ability between the two groups.

It was suggested that using the above ranking of subtests and with knowledge about the ITPA, this test might be used as a diagnostic tool for planning remedial therapy for culturally deprived children. The author suggests that this be done in pre-school nursery programs or programs like Operation Headstart to help a culturally deprived

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child to be more ready to adjust to the classroom situation upon entering kindergarten.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

Language is generally admitted to be the most outstanding feature that distinguishes man from the lower animals.¹ When we consider the tremendous gap between man and the lower animals in intellectual development, we realize to some extent the vast importance of language. The greatest contrast in intellectual development between primitive peoples and the civilized world is essentially a matter of language.² The acquisition of this important tool, language, is dependent on many things. Recently our attention has been directed to the effects of environment on all phases of child development. But as early as 1931 Goodenough and Anderson found that:

Upon the average, children who come from the better socio-economic classes stand higher on intelligence tests, are more advanced in language, sleep more, are less likely to fail in school³

¹Dorothea McCarthy, The Language Development of the Preschool Child (Minneapolis: University of Minnesota Press, 1930), p. 2.

²Ibid.

³F. Goodenough and J. E. Anderson, Exceptional Child Study (New York: Century Co., 1931), p. 235.

Since language is so important in intellectual development, the effect that the environment of the culturally deprived child might play on language ability should be researched.

Statement of Problem and Purpose of Study

Language ability involves more than the production of words. It includes the psychological foundation for this behavior, the structures of language, and the relationship of the two (psycholinguistics).¹ Many children from culturally deprived homes have difficulty adjusting to the classroom situation upon entering school in the early years. Often the adjustment problem is due to communication difficulties.

The Illinois Test of Psycholinguistic Abilities (ITPA) developed in 1961 by Samuel Kirk and James McCarthy is a diagnostic test designed to detect specific abilities and disabilities in children. It defines nine psycholinguistic abilities and has subtests for each one so that specific psycholinguistic problems can be pinpointed. The purpose of this study is to see how children from culturally deprived homes compare with children from non-culturally deprived homes in the area of psycholinguistics as measured by the ITPA. It is thought that the answers

¹Dorothy Sievers et al., Selected Studies on the Illinois Test of Psycholinguistic Abilities (Madison, Wisconsin: Photo Press, Inc., Xer-Lite Service, 1963), p. 27.

to the following questions can, in part, be obtained:

(1) Do children from culturally deprived homes perform differently than children from non-culturally deprived homes in the areas of psycholinguistics which are measured by the ITPA? (2) If so, in what areas (subtests) are there significant differences? (3) With knowledge about the ITPA, can it be used with children from culturally deprived homes as a diagnostic tool to design a school program in language to meet their needs?

Hypotheses

The first two questions can be used for the following null hypotheses:

1. There is no significant difference between the mean scores obtained by the children from culturally deprived homes and children from non-culturally deprived homes on any of the nine subtests of the ITPA.
2. There is no significant difference between the ITPA mean total scores obtained by children from culturally deprived homes and non-culturally deprived homes.

Importance of Study

It is clear that children do not come to school equally prepared for the learning tasks of the first

grade.¹ Until recently, differences in children's IQ's were attributed largely to native endowment; very little of the variation was attributed to the effects of environment.

At the present time, the literature is filled with reports of studies which relate socio-economic level and results of intelligence tests; and the general conclusion is, as Kavin states it:

The literature, reporting various types of studies in various parts of the world reveals a general trend for the level of intelligence (as measured by standard intelligence tests) to rise with socio-economic level, so far as children are concerned.²

However, McCarthy points out:

It is possible that the lower intelligence test scores obtained by the children of the lower occupational group may be a function of slower linguistic development and since tests involving linguistic ability preponderate in the standard intelligence tests, the children in the upper occupational class may be placed at an advantage in the test situation.³

Goodenough and Shapiro, when examining the language factor in standard intelligence tests concurred with McCarthy's thoughts when they found that "the greatest

¹Benjamin S. Bloom et al., Compensatory Education for Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1965), p. 12.

²Ethel Kavin, Children of Preschool Age: Studies in Socio-Economic Status, Social Adjustment and Mental Ability, with Illustrative Cases (Chicago: University of Chicago Press, 1934), pp. 119-120.

³McCarthy, op. cit., p. 148.

superiority of the group from the upper socio-economic group was on language tests."¹

There are presently two points of view on intelligence and language ability:

1. One point of view holds that language ability is a measure of intelligence.
2. The opposing viewpoint is that language is chiefly a product of environment, dependent upon environmental richness and paucity.

Kawin feels it is impossible at the present time to determine which of these hypotheses is correct. But she states: "Language development certainly appears to be intimately associated with growth in intelligence as measured by intelligence tests."²

In a study which juggled the language factor in the tests between two different socio-economic groups, Kawin concluded that " . . . the significant differences found between the test results . . . are primarily due to language factor."³

If we could single out this factor of language and analyze it through a battery of tests designed to detect specific abilities and disabilities in the children tested,

¹F. Goodenough and G. Shapiro, "The Performance of Preschool Children of Different Social Groups on the Kuhlmann-Binet Tests," Journal of Educational Research, XVIII (November, 1928), 361.

²Kawin, op. cit., p. 153.

³Ibid., p. 152.

we would be able to work on the areas of language in which children from culturally deprived homes prove to be the weakest. This would help them upon entering school to be equally prepared, at least in the areas of language, for the learning tasks of the first grade.

The author hopes that the results of this study will help fill this need.

Definition of Terms

For the purpose of this study, the terms used are defined in the following manner:

Illinois Test of Psycholinguistic Abilities (ITPA)--

A standardized test developed in 1961 by Samuel A. Kirk and James J. McCarthy for the purpose of identifying psycholinguistic abilities and disabilities in children between the ages of two and one-half and nine (See Appendix A).

Psycholinguistic Abilities--The relationship between the psychological foundations for the production of speech and the structures of the language.

Language--Any system of recognized symbols to produce or prevent specific responses of thoughts, or feelings, or actions.¹

Children from Culturally Deprived Homes--Children who were included in the Operation Headstart Program in the

¹Jon Eisenson, The Psychology of Speech (New York: F. S. Crofts, and Co., 1938), p. 3.

Public Schools of Lansing, Michigan, and were selected by officials of the program as meeting the following United States Government regulations: The children were to be from disadvantaged homes, most of which were on public assistance. A family of four could have an income of no greater than \$3,000 annually with an allowance of \$500 for each additional child.

Organization of the Thesis

Chapter I contains a statement of the problem and the purpose of the study. It sets forth the hypotheses to be considered, the importance of the study, and defines certain terms as they are to be used in this study.

Chapter II contains a review of the literature which pertains to this topic.

Chapter III contains a discussion of the subjects used in this study, the equipment employed, and the procedures employed in securing and analyzing the relevant data.

Chapter IV contains a discussion of the results of the study.

Chapter V contains a summary, the conclusions of the study, and implications for future research.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Very few problems in the field of education are as complex as the problems of cultural deprivation. In order for educational facilities to meet the needs of all children, research is continually being conducted. A great deal of research has been done on the relationship between socio-economic status (SES) and intelligence. This prompted researchers to delve further into the part language played in determining the intelligence quotient and in turn led researchers to studies on language alone.

It is necessary to be acquainted with the Goodenough Scheme of Classification¹ in order to understand research done among various social classes, as it is the scale that is used by a majority of researchers. It is based on the occupation of the father and grouped according to the following classifications:

¹Florence L. Goodenough, "The Kuhlmann-Binet Tests for Children of Preschool Age: A Critical Study and Evaluation," University of Minnesota, Institute of Child Welfare, Monograph Series, No. 2 (1928), 146.

- Group I: Professional
- Group II: Semi-professional, managerial
- Group III: Clerical, skilled trades, retail businessmen
- Group IV: Semi-skilled
- Group V: Slightly skilled
- Group VI: Day laborers

The reader is to assume that all research cited in this study is based on this scale unless otherwise indicated.

Relationship Between Socio-economic Status (SES) and Intelligence

One of the early researchers from the standpoint of children and their abilities in reflection to their background was Ethel Kavin. In the early 1930's she compared two groups with very different socio-economic backgrounds. In one group, ninety percent of the fathers were professional and in the other group fifty percent of the fathers were unskilled laborers. On the Merrill-Palmer Tests she found very little difference on the IQ scores between her two groups. Laborers' children were not as high, but the difference was not significant. On the Binet, however, the professional children did significantly better.¹

Beth Wellman, in her research in connection with the Studies in Child Welfare at Iowa University found similar results to Kavin. Comparison of scores on Merrill-Palmer Tests did not reveal differences between the children

¹Kavin, op. cit., p. 138.

whose fathers were in Group I (Professional) and the children whose fathers were in lower classes.¹ But she, like Kavin, also found that on entrance to preschool, children from higher professional classes have been found to have a significantly higher Binet IQ than children from lower classes.²

Wellman went one step further and placed the children into groups based on parental education. She found no outstanding differences in Merrill-Palmer test results between children whose parents were better educated and children whose parents were less well educated. This again was in contrast to the results she secured on the Binet.³

Morris Krugman, the Associate Superintendant of Schools in New York City states:

City wide testing in New York City Schools showed that third graders in a large, low socio-economic district had a median IQ ten points lower than that of all third graders throughout the city. The median IQ of sixth graders from the same area was seventeen points lower and that of eighth graders, twenty points lower than the median IQ for the entire city.⁴

¹Beth Wellman, "The Intelligence of Preschool Children as Measured by the Merrill-Palmer Scale of Performance Tests," Iowa University, Studies in Child Welfare, XV, No. 3 (1938), 80.

²Ibid., p. 78.

³Ibid., p. 94

⁴Morris Krugman, "The Culturally Deprived Child in School," NEA Journal, L (April, 1961), 23.

Atkins compared a combined Group I (Professional), Group II (Semi-professional), with a Group VI (Day laborers) on a general intelligence Object-Fitting Test. On the basis of non-verbal actions, results showed the mean IQ of Group I-Group II, was sixteen points higher.¹

McHugh studied a select group of children, only two of whom were from laborers' families. The test employed was the 1937 Stanford-Binet Revision. McHugh found in a test-retest situation of kindergarteners that the socio-economic and educational status of the parents and home ratings were not found to be specifically related to IQ gains on a test-retest basis, but evidence was offered for a positive relationship between lack of school-like experience before entrance to school (Sunday School, camp, etc.) and gain in IQ after school experience. He concluded that IQ gains resulting from the experience in school were adjustmental gains rather than growth in IQ.²

We can see that the literature reveals a general trend for the level of intelligence to rise with socio-economic level. But the author restates McCarthy's view, previously cited in Chapter I:

¹R. E. Atkins, "The Measurement of the Intelligence of Young Children by An Object-Fitting Test," University of Minnesota Institute of Child Welfare, Monograph Series, No. 5 (1930), 201.

²Gelolo McHugh, "Changes in IQ at the Public School Kindergarten Level," Psychological Monographs, LV, No. 2, Whole No. 250 (1943), 29-32.

It is possible that the lower intelligence test scores obtained by the children of the lower occupational group may be a function of slower linguistic development and since tests involving linguistic ability preponderate in the standard intelligence tests, the children in the upper occupational class may be placed at an advantage in the test situation.¹

This leads up to the literature on the relationship between socio-economic status and language.

Relationship Between Socio-economic Status and Language

When studying the development of language, we must study a child from the moment of birth. Irwin studied the relationships between age, parental occupational status, and the use by the infant of speech-sound types. He found that during the first eighteen months, there was little difference in sound production of infants whose parents were professional, business, or clerical workers as compared with infants reared in homes where the fathers were laborers. After eighteen months, however, clear-cut differences began to appear in favor of children from the professional, business, and clerical groups. Irwin attributed the difference to the greater amount of parental stimulation for speech the infants receive in the non-laboring group.²

¹McCarthy, loc. cit.

²O. C. Irwin, "Infant Speech: The Effect of Family Occupational Status and of Age on Sound Frequency," Journal of Speech and Hearing Disorders, XIII, No. 4 (1948), 322.

Different aspects of language have been analyzed in separate studies. McCarthy studied, among other things, the mean length of response; and she found interesting trends when considered in relation to parental occupation. She found a clear superiority of Group I (Professional) over all occupation groups, and the occupation groups appeared in the expected positions at nearly all age levels.¹ In connection with length of response, McCarthy examined the test results of children from bi-lingual homes. It is interesting to note that:

The hearing of a foreign language in the home does not seem to be a serious handicap to linguistic development as measured by the mean length of response.²

McCarthy also studied the mean length of sentence. For this study she combined Groups I, II, and III, (professional, semi-professional, and clerical) and compared their test results with a combined Group IV, V, and VI, (semi-skilled, slightly skilled, day laborers). The mean length of sentence proved to be significantly superior statistically for the upper groups.³

In an analysis of parts of speech based on parental occupation, McCarthy found "nouns are a higher percentage of the total number of words used by the children who

¹McCarthy, op. cit., pp. 56-57.

²Ibid., p. 67.

³Ibid., p. 57.

belong in the lower occupational group."¹ This is in line with other findings on occupational group differences because a larger percentage of other types of words indicate a higher stage of linguistic development.

When making a construction analysis of language, McCarthy found the children of upper occupational groups to be markedly superior to those of the lower occupational groups on all items.² In a functional analysis of language McCarthy found that children in the upper occupation groups have much larger proportions of adapted information and of questions than do those in the lower occupation groups, based both on chronological age and when compared on mental age.³

In 1941, Florence Young did several studies on aspects of language when comparing two groups of children of different SES. One group, labeled Regular Subjects, came from homes "of superior socio-economic status." The other group, labeled Relief Cases, were from "less fortunate circumstances where government aid was being received." Young's results on the study of length of response supported McCarthy's earlier findings when Young stated: "Regular subjects were superior to relief

¹Ibid., p. 123.

²Ibid., p. 110.

³Ibid., p. 88.

cases in mean length of response."¹ Young also found that "when compared as to amounts of verbal behavior . . . regular subjects are superior to relief subjects, the difference being statistically reliable."²

In all of Smith's studies on language development, the relationship between language and mental age was found to be as close as between language and chronological age.³

Kawin ran several studies on language tests between groups of children classified according to Goodenough's scale and found that "children in Class A (Groups I, II, III--professional, semi-professional, clerical) were found definitely superior in language tests to those in Class B (Groups IV, V, VI--semi-skilled, slightly skilled, day laborers)."⁴

While studies on language were flourishing in the United States, A. F. Watts, in 1948, did an extensive study using his vocabulary tests on

. . . thousands of Birmingham [England] children. The children were divided into two groups

¹Florence M. Young, "An Analysis of Certain Variables in a Developmental Study of Language," Genetic Psychology Monographs, XXIII (1941), 30.

²Ibid., p. 31.

³M. E. Smith, "An Investigation of the Development of Sentence and Extent of Vocabulary in Young Children," University of Iowa Studies in Child Welfare, III, No. 5 (1926).

⁴Kawin, op. cit., p. 122.

representing poor and comparatively well-to-do districts respectively. The results showed that at ten (10) years of age the children from the latter districts were able to score an average of fifty (50) percent more marks than their less fortunately placed fellows, but that as age rose, this advantage gradually slipped away, and at age fourteen (14) there was little to choose between the two types of child.¹

Studies Available Using the ITPA

It is only natural that since the ITPA was developed in 1961, it has been the testing tool employed in several research projects. Unfortunately many of these studies are not published, so they are unavailable for review at the present time. Those which have been published used the ITPA with children who have a variety of disorders, hoping to determine the ITPA's ability to differentiate and diagnose these disorders. A selected few of the published studies will be reviewed here to place more light on information about the ITPA as a diagnostic tool.

James L. Olson used the ITPA to study three groups of children with extreme language disabilities: receptive aphasics, expressive aphasics, and deaf children. Olson felt that these children were often mislabeled and that by comparing the behavior of the three groups on the ITPA, their differing patterns of responses would point a

¹A. F. Watts, The Language and Mental Development of Children (London: D. C. Heath and Company, 1948), pp. 25-26.

way toward a relatively clear-cut method of differential diagnosis. His study showed that the clinically diagnosed receptive aphasic children achieved a profile of scores on the ITPA which were similar to the clinical diagnosis. The ITPA profile also seemed to assess more clearly linguistic strengths and weaknesses than did the case study type of diagnosis.¹

Barbara Bateman used the ITPA on partially seeing children in search of a relationship between the ability to read and the psycholinguistic process. She concluded that the ITPA appears to be an excellent diagnostic aid for determining the level of the visual functioning in partial-seeing children.²

Corrine Kass used the ITPA with children who had severe reading disability not due to mental retardation or to sensory defects. She found that these children tended to have more deficiencies at the integration level than at the representational level of psycholinguistic functioning.³

¹James L. Olson, "A Comparison of Receptive Aphasic, Expressive Aphasic, and Deaf Children on the ITPA," in Dorothy Sievers, et al. (ed.) Selected Studies on the ITPA (Madison, Wisconsin: Photo Press, Inc., Xer-Lite Service, 1963), pp. 46-69.

²Barbara D. Bateman, "Reading and Psycholinguistic Processes of Partially Seeing Children," Dorothy Sievers, et al. (ed.), ibid., pp. 70-84.

³Corrine E. Kass, "Some Psychological Correlation of Severe Reading Disability," in Dorothy Sievers, et al. (ed.), ibid., pp. 87-95.

Smith, using matched pairs of children who were classified as educable mentally retarded ranging in age from seven to ten years, was interested in seeing whether their language age could be increased in a significant amount as a result of three months experimental treatment. In this study on the effects of group language development, he was able to demonstrate that the language age could be increased significantly as obtained by the ITPA.¹

Janet Kinstle compared two groups of children on the ITPA, one with functional articulation defects and the other with normal speech. She wanted to determine whether any difference existed between their psycholinguistic abilities. The results of this study indicated that there were only slight differences in the performances of the children with functional articulatory defects when compared to the subtest performance of children with normal speech, but on the total ITPA battery children with functional articulatory defects did better. She concluded that the ITPA can be useful as a diagnostic tool for planning remedial therapy for children with functional articulation defects when working with each child separately.²

¹James Otto Smith, "Group Language Development for Educable Mental Retardates," Exceptional Children, XXIX (October, 1962), 95-101.

²Janet S. Kinstle, "A Comparison of the Performance of Children with Functional Articulation Defects to Children with Normal Speech on the Illinois Test of Psycholinguistic Abilities," (Unpublished Master's thesis, Michigan State University, 1964).

Since the ITPA is such a relatively new test there is always a need for further research to determine its practical application.

CHAPTER III

SUBJECTS, EQUIPMENT, AND PROCEDURE

Subjects

A total of sixty subjects was used in this study, thirty who were from culturally deprived backgrounds and thirty who were from at least middle class backgrounds. The thirty culturally deprived children made up the experimental group and the thirty non-culturally deprived children were considered as the control group.

The experimental group consisted of subjects who had all been enrolled in the Operation Headstart Program in the Public Schools of Lansing, Michigan, in the summer of 1965 and were, in order to qualify for this program, from culturally deprived backgrounds as determined by Government standards. There were one hundred and seventy children enrolled in the pre-school program in centers scattered throughout the city. At the request of the Lansing School Research Director only the children from three schools were available for this study. These three schools--Kalamazoo Street School, Allen Street School, and High Street School--had a total of sixty-six children who had been enrolled in the pre-school program and who were presently enrolled in regular kindergarten classes.

These subjects' names were divided into three groups--Negroid, Mexican, and Caucasian--and a random sample of ten (five boys and five girls) was selected from each group.

All of the subjects in the experimental group were of legal kindergarten age as determined by the Lansing Public Schools. They were five years of age on or before December 1, 1965. The mean age of the group was five years, ten months at the time of testing. The mean age for the Caucasian children was five years, nine months; for the Negroid children five years, ten months; for the Mexican children five years, ten months.

The IQ's of the subjects were determined by the author on the basis of the results of the Peabody Picture Vocabulary Test (PPVT).¹ The mean IQ for the experimental group was 92.7. The mean IQ for the Caucasian children was 103.5; for the Negroid children, 89; for the Mexican children 85.6.

The children in the control group were matched to the children in the experimental group on the basis of race, sex, and age (all met the stipulation of the legal kindergarten age). At the request of the Lansing School Research Director these children were selected from the

¹Lloyd M. Dunn, Peabody Picture Vocabulary Test (Minneapolis, Minnesota: American Guidance Service, Inc., 1965).

remaining kindergarteners in the same three schools. After the total group of remaining kindergarteners was divided into six groups (three by race, and again divided by sex), the final control group was randomly selected.

For informational purposes it is pointed out that this randomly-selected control group had a mean age of six years. The mean age for the Caucasian children was six years even; for the Negroid children six years, three months; and for the Mexican children five years, nine months.

The IQ's for the control group were determined by the author on the basis of the Peabody Picture Vocabulary Test. The mean IQ of the control group was 101.1. The mean IQ for the Caucasian children was 110.8; for the Negroid children 99.7; and for the Mexican children 93.

As the reader can easily detect, the author did not match the two groups on the basis of IQ. Nine out of the thirty children in the experimental group had an IQ which fell below 80, the cut-off point for the classification of educable mentally retarded in the Lansing Public Schools. In this experience of testing the IQ's of children from homes not classified as low socio-economic status, only one child was found to be below 80. A review of the literature had revealed statistical evidence that the IQ's of children from lower socio-economic status are lower on standard intelligence tests, due probably from the standpoint of

the language factor inherent in the standard intelligence test. Therefore, the IQ factor in the study was not used as a basis of matching groups. The author's purpose in doing this study was to see in which areas of language the typical culturally deprived child, competing academically in the regular classroom, was weakest. By eliminating approximately one-third of a given sample on the basis of IQ, the picture of the language pattern on the ITPA of a "typical culturally deprived child" would have been destroyed.

Equipment

The Peabody Picture Vocabulary Test (PPVT), developed by Lloyd M. Dunn, Ph.D., Director, Institute on Mental Retardation and Intellectual Development, George Peabody College for Teachers, Nashville, Tennessee, was used for testing the intelligence of the children. Sixty appropriate record forms were used to record each child's responses individually.

The Illinois Test of Psycholinguistic Abilities, developed by Samuel A. Kirk and James J. McCarthy at the Institute for Research on Exceptional Children, University of Illinois, Urbana, Illinois, was used for the language testing. Sixty record forms were used to record each child's responses individually.

Testing was done in the individual schools in any available room designated by the Principal. At all times

only the examiner and the subject were in the room while the individual tests were administered.

Procedure

Before any testing was done, the examiner visited each classroom from which subjects would be taken and was introduced to the class by the teacher. Each child used in the study was seen twice. The first time was for the administration of the Peabody and as a get-acquainted session to establish rapport. The PPVT was administered to all subjects according to the standardized procedure as outlined in the manual. At a follow-up session each child was given the ITPA which was also administered according to the standardized procedure outlined in its respective manual. All of the subjects in the experimental group were tested first; then the subjects in the control group were tested.

The subjects were not informed that they were in a test situation because of their age, although they were encouraged to do the best they could at the various tasks.

Test results were recorded with as little writing as possible according to the instructions in the manuals. Total ITPA Scores, Language Age Scores, and Standard Scores were assigned to each subject (See Appendix C).

CHAPTER IV

RESULTS AND DISCUSSION

The test results of the experimental group (thirty children from culturally deprived homes) and the control group (thirty children from non-culturally deprived homes) on the Illinois Test of Psycholinguistic Abilities (ITPA) were analyzed and compared to determine how these two groups performed on this test. These results may give some indication whether there is a relationship between psycholinguistic ability (as determined by the ITPA) and cultural environment.

Methodology

Upon the completion of testing with the ITPA, the following scores were obtained for each subject: (1) the raw score of each subtest, (2) the total raw score, (3) the language age for each subtest, (4) the total language age, (5) the standard score for each subtest, and (6) the total standard score (see Appendix C).

The mean of the raw scores for each subtest and the total score was calculated for the control group and the experimental group to determine if any difference existed between the mean scores of the two groups on this test performance. The formula described in Blalock's Social

Statistics¹ was employed. The means of the ITPA subtests by groups appear in Table 1. The means of the ITPA total scores appear in Table 2. The means of the ITPA subtests and total score were also computed for the experimental and control groups when classified as to whether the subjects were Negroid, Mexican, or Caucasian. This information appears in Tables 3, 4, 5, 6, 7, and 8. The latter material is presented here for information only and will be discussed further in Chapter V under implications for future research.

A difference of means test (t-test), as employed by Blalock², was done to determine if there were a significant difference in the variation of the test scores in these two groups' performance on the ITPA. The analysis was done between the means of each of the nine subtests for the control group and the experimental group and between the mean total score for the control and experimental groups. The results of this analysis are found in Table 9.

Results

According to Fisher and Yates' Table of the Distribution of t³ with 58 degrees of freedom and a significance

¹Hubert M. Blalock, Social Statistics (New York: McGraw-Hill Book Co., Inc., 1960), p. 46.

²Ibid., p. 170.

³Ibid., p. 442.

TABLE 1.--Mean scores on subtests of the Illinois Test of Psycholinguistic Abilities for the control and experimental groups.

Subtests	Control Group	Experimental Group
Auditory Decoding	20.50	16.93
Visual Decoding	14.77	12.13
Auditory-Vocal Association	15.80	12.60
Visual-Motor Association	16.77	11.10
Vocal Encoding	18.83	12.93
Motor Encoding	14.87	11.63
Auditory-Vocal Automatic	10.37	6.83
Auditory-Vocal Sequencing	22.06	17.93
Visual-Motor Sequencing	13.23	11.47

TABLE 2.--Mean scores on total Illinois Test of Psycholinguistic Abilities for the control and experimental groups.

Total ITPA	Control Group	Experimental Group
Total ITPA Mean Score	147.23	113.57

TABLE 3.--Mean scores on subtests of the Illinois Test of Psycholinguistic Abilities for Negro subjects in experimental and control groups.

Subtests	Control Group	Experimental Group
Auditory Decoding	19.9	14.4
Visual Decoding	15.2	11.0
Auditory-Vocal Association	16.0	13.0
Visual-Motor Association	18.3	10.0
Vocal Encoding	17.4	10.8
Motor Encoding	14.7	11.0
Auditory-Vocal Automatic	9.6	6.2
Auditory-Vocal Sequencing	23.7	21.3
Visual-Motor Sequencing	13.8	10.9

TABLE 4.--Mean scores on total Illinois Test of Psycholinguistic Abilities for Negro subjects in the control and experimental groups.

Total ITPA	Control Group	Experimental Group
Total ITPA Mean Score	148.7	108.6

TABLE 5.--Mean scores on subtests of the Illinois Test of Psycholinguistic Abilities for Mexican subjects in control and experimental groups.

Subtests	Control Group	Experimental Group
Auditory Decoding	18.0	16.9
Visual Decoding	14.3	12.6
Auditory-Vocal Association	13.3	11.6
Visual-Motor Association	15.6	11.6
Vocal Encoding	15.3	13.4
Motor Encoding	12.1	11.9
Auditory-Vocal Automatic	8.9	5.6
Auditory-Vocal Sequencing	19.3	15.8
Visual-Motor Sequencing	12.6	12.0

TABLE 6.--Mean scores on total Illinois Test of Psycholinguistic abilities for Mexican subjects in the control and experimental groups.

Total ITPA	Control Group	Experimental Group
Total ITPA Mean Score	129.4	111.9

TABLE 7.--Mean scores on subtests of the Illinois Test of Psycholinguistic Abilities for Caucasian subjects in control and experimental groups.

Subtests	Control Group	Experimental Group
Auditory Decoding	23.6	19.5
Visual Decoding	14.8	12.8
Auditory-Vocal Association	18.1	13.2
Visual-Motor Association	16.4	11.7
Vocal Encoding	23.8	14.6
Motor Encoding	17.8	12.0
Auditory-Vocal Automatic	12.6	8.2
Auditory-Vocal Sequencing	23.2	16.7
Visual-Motor Sequencing	13.3	11.5

TABLE 8.--Mean scores on total Illinois Test of Psycholinguistic Abilities for Caucasian subjects in the control and experimental groups.

Total ITPA	Control Group	Experimental Group
Total ITPA Mean Score	163.6	120.2

TABLE 9.--Analysis of difference of means for significant difference between children from culturally deprived homes and children from non-culturally deprived homes relative to performance on the Illinois Test of Psycholinguistic Abilities.

Subtests	<u>t</u> score
Auditory Decoding	-2.86
Visual Decoding	-3.73
Auditory-Vocal Association	-3.69
Visual-Motor Association	-5.84
Vocal Encoding	-5.31
Motor Encoding	-3.29
Auditory-Vocal Automatic	-4.16
Auditory-Vocal Sequencing	-3.08
Visual-Motor Sequencing	-2.83
Total ITPA	-6.59

Degrees of Freedom: 58

Significance Level: .05

Two-tailed Test

t of (+-) 2.004 (interpolated) or greater is needed to show a statistically significant difference

level of .05 on a two-tailed test, a t score of at least (+-) 2.004 is needed to show a statistically significant difference. Looking at the t scores for the nine subtests as they appear in Table 9 we can see that each t score is greater than (+-) 2.004. The null hypothesis number one, stating that there is no significant difference between these two groups on any of the nine subtests of the ITPA can, therefore, be rejected.

In examining the t score obtained for the total ITPA, it may be seen that it is greater than (+-) 2.004. The null hypothesis number two, stating that there is no significant difference between the total test performance of the control group and the total test performance of the experimental group, can be rejected, also. As a result of this experiment it appears evident that there is a significant difference between the psycholinguistic ability of children from culturally-deprived homes and children from non-culturally deprived homes.

The psycholinguistic ability of children from non-culturally deprived homes is significantly greater statistically in each of the nine subtest areas and in the total area of psycholinguistics than is the psycholinguistic ability of children from culturally deprived homes.

Discussion

In analyzing the individual t scores obtained for each of the nine subtests and the total score, it is interesting to note that the greatest difference statistically was not between the two groups on any one particular subtest area of psycholinguistics. The greatest difference was between the two groups when considering the total area of psycholinguistics. It may be seen, also, in analyzing the differences between the nine subtests that children from culturally deprived homes are weaker in certain areas of psycholinguistic abilities than they are in other areas. If the nine subtests were ranked in the order of greatest difference of ability to least difference of ability they would appear as follows:

- Visual-Motor Association
- Vocal Encoding
- Auditory-Vocal Automatic
- Visual Decoding
- Auditory-Vocal Association
- Motor Encoding
- Auditory-Vocal Sequencing
- Auditory Decoding
- Visual-Motor Sequencing

The final and third question raised in Chapter I (With knowledge about the ITPA, can it be used with children from culturally deprived homes as a diagnostic tool

to design a school program in language to meet their needs?) may be considered, now, in the light of the above results. It appears to the writer the ITPA could be and should be used as a diagnostic tool to determine the needs of culturally deprived children in the area of language. The results of the ITPA testing administered to a group of culturally deprived children in a classroom would show areas of greatest weakness in language and these results could be used to plan a remedial program in language to be administered to these children before they enter school. Work in the area of psycholinguistics in pre-school programs, such as Operation Headstart, would help a culturally deprived child to be more ready to adjust to the classroom situation upon entering kindergarten.

CHAPTER V

SUMMARY, CONCLUSION, AND IMPLICATIONS FOR FUTURE RESEARCH

Summary

Children of different socio-economic backgrounds have been compared in relation to their language development including length of sentence response, frequency of parts of speech used, and vocabulary. They have also been compared to each other in relation to certain psychological factors. But the combination of these two growth areas-- language and psychological (psycholinguistics), has not been studied previously. With the development of the ITPA in 1961, this type of comparison is now possible.

The purpose of this study has been to determine whether a difference exists in the area of psycholinguistics between thirty children from culturally deprived homes and thirty children from non-culturally deprived homes, as evidenced by the results of their performance on the ITPA.

Comparisons were made of the mean raw scores of the nine subtests and the mean raw scores of the ITPA total score. These data were treated in a statistical manner and were analyzed accordingly. The composition of the two groups was controlled on the basis of sex, age, and minority

group, although individuals were not matched on a one-to-one basis.

Conclusions

A comparison of the mean raw scores indicated that the control group had a higher score than did the experimental group on the total ITPA test score. Statistical treatment indicated that the difference was significant. A comparison of the mean raw scores on each of the nine subtests indicated that the subjects in the control group were superior in each area. Statistical treatment of these data proved the differences in raw scores to be significant and allowed the ranking of the nine subtests in order of greatest variation.

On the basis of the results the following conclusions can be drawn:

1. The ITPA, when used to compare the psycholinguistic ability of children from culturally deprived homes to the same ability in children from non-culturally deprived homes, indicates a significant difference between the two groups.

2. When comparing the same two groups on the individual subtests, there is a significant difference in the performance on each subtest, with some subtests pointing out a greater degree of variation than other subtests.

Implications for Future Research

This study has been limited to the analysis of the performance of all children in the culturally deprived group to the performance of all children in the non-culturally deprived group on the basis of test results obtained on the ITPA. It has been suggested in a previous discussion that the ITPA might be used with children from culturally deprived homes as a diagnostic tool to design a remedial program in language. Designing a program based on the results of this study would be a natural area for further research.

It would be interesting to study the relationship of race or minority group to psycholinguistic ability. In this study the influence of race and minority group was controlled, and the comparison of control and experimental group performance in each of the three groups (Negroid, Mexican, and Caucasian) was presented in Chapter IV in tables three through eight on the basis of raw scores alone. Since the groups were so small (only ten in each) further statistical treatment was not pursued. In reviewing the tables, it is evident that in each instance the control group did better than the experimental group on the basis of raw score. But an analysis on a larger scale between racial and minority groups might bring further light into psycholinguistic areas which could be pinpointed in a remedial program based on the composition of the group involved.

BIBLIOGRAPHY

BIBLIOGRAPHY

Books

- Berry, Mildred F., and Eisenson, Jon. Speech Disorders: Principles and Practices of Therapy. New York: Appleton-Century-Crofts, Inc., 1956.
- Blalock, Hubert M. Social Statistics. New York: McGraw-Hill Book Co., Inc., 1960.
- Bloom, Benjamin S., et. at. Compensatory Education for Cultural Deprivation. New York: Holt, Rinehart and Winston, Inc., 1965.
- Eisenson, Jon. The Psychology of Speech. New York: F. S. Crofts, and Co., 1938.
- Ford, Donald. The Deprived Child and the Community. London: Constable Publishers, 1955.
- Goodenough, F., and Anderson, J. E. Exceptional Child Study. New York: Century Co., 1931.
- Kawin, Ethel. Children of Preschool Age: Studies in Socio-Economic Status, Social Adjustment and Mental Ability, with Illustrative Cases. Chicago: University of Chicago Press, 1934.
- Lewis, Hilda. Deprived Children. London: Oxford University Press, 1954.
- Lewis, M. M. How Children Learn to Speak. London: George G. Harrop & Co., Ltd., 1957.
- McCarthy, Dorothea. The Language Development of the Pre-school Child. Minneapolis: University of Minnesota Press, 1930.
- Terman, L. M., et. al. Genetic Studies of Genius. Vol I. Stanford University Press, 1926.
- Watts, A. F. The Language and Mental Development of Children. London: D. C. Heath and Company, 1948.

Articles and Periodicals

- Atkins, R. E. "The Measurement of the Intelligence of Young Children by An Object-Fitting Test," University of Minnesota Institute of Child Welfare, Monograph Series, No. 5 (1930).
- Dennis, Wayne. "Infant Development Under Conditions of Restricted Practice and of Minimum Social Stimulation," Genetic Psychology Monographs, XXIII (1941), 145-189.
- _____. and Najarian, Pergrouhi. "Infant Development Under Environmental Handicap," Psychological Monographs: General and Applied, LXXI, No. 7 (1957), 1-13.
- Goodenough, Florence L. "The Kuhlmann-Binet Tests for Children of Preschool Age: A Critical Study and Evaluation," University of Minnesota, Institute of Child Welfare, Monograph Series, No. 2 (1928).
- _____. and Shapiro, G. "The Performance of Preschool Children of Different Social Groups on the Kuhlmann-Binet Tests," Journal of Educational Research, XVIII (1928), 356-362.
- Hollister, William G. "Homes That Nurture Intellect," The PTA Magazine, LVII (May, 1963), 8-10.
- Irwin, O. C. "The Infant Speech: The Effect of Family Occupational Status and of Age on Sound Frequency," Journal of Speech and Hearing Disorders, XIII, No. 4 (1948), 320-323.
- Krugman, Morris. "The Culturally Deprived Child in School," NEA Journal, L (April, 1961), 23-24.
- McHugh, Gelolo. "Changes in I. Q. at the Public School Kindergarten Level," Psychological Monographs, LV, No. 2, Whole No. 250 (1943), 1-34.
- Riessman, Frank. "Teaching the Culturally Deprived," NEA Journal, LII (April, 1963), 20-22.
- Smith, James Otto. "Group Language Development for Educable Mental Retardates," Exceptional Children, XXIX (October, 1962), 95-101.
- Smith, M. E. "An Investigation of the Development of Sentence and Extent of Vocabulary in Young Children," University of Iowa Studies in Child Welfare, III, No. 5 (1926).

- Utter, Lawrence W. "Helping Our Culturally Impoverished Children," NEA Journal, LII (November, 1963), 28-30.
- Wellman, Beth L. "The Intelligence of Preschool Children As Measured by the Merrill-Palmer Scale of Performance Tests," Iowa University, Studies in Child Welfare, XV, No. 3 (1938), 1-149.
- Young, Florence M. "An Analysis of Certain Variables in a Developmental Study of Language," Genetic Psychology Monographs, XXIII (1941), 3-141.

Reports

- McCarthy, James and Kirk, Samuel. The Construction, Standardization, and Statistical Characteristics of the Illinois Test of Psycholinguistic Abilities. Urbana, Illinois: University of Illinois Press, 1963.
- Sievers, Doroty, et. al. Selected Studies on the Illinois Test of Psycholinguistic Abilities. Madison, Wisconsin: Photo Press, Inc., Xer-Lite Service, 1963.

Unpublished Material

- Kinstle, Janet Stash. "A Comparison of the Performance of Children with Functional Articulation Defects to Children with Normal Speech on the Illinois Test of Psycholinguistic Abilities." Unpublished Master's dissertation, Department of Speech, Michigan State University, 1964.

Other

- Dunn, Lloyd M. Peabody Picture Vocabulary Test. Minneapolis, Minnesota: American Guidance Service, 1965.

APPENDICES

APPENDIX A

APPENDIX A

THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES

Development

In order to better understand the results of this study, which uses the ITPA as a basis for comparison between two groups, the author feels that some background information on the ITPA is essential. The following information is taken from a supplementary booklet by the authors of the test, James J. McCarthy and Samuel A. Kirk entitled: The Construction, Standardization and Statistical Characteristics of the Illinois Test of Psycholinguistic Abilities.

The ITPA is the result of a work begun over a decade ago. It was designed to meet the need for one comprehensive instrument for the assessment of psycholinguistic development in children. The only tests available for linguistic assessment before the development of the ITPA were tests of the picture identification type and normative surveys of language development.

A psychological theory of language acquisition and use had to be developed previous to the development of a diagnostic test. This was accomplished in 1952, by Professor C. E. Osgood of the University of Illinois.

As with the development of any new test, the ITPA has gone through several stages. The first test battery

was constructed in 1955. In 1957, after experimental work with the Differential Language Facilities Test, James J. McCarthy developed a new approach with individual tests, each to assess a discrete psycholinguistic function.

Several years of work were required to develop a suitable test battery. In 1959 and 1960 the present test battery was standardized on seven hundred children between the ages of two and one-half and nine years of age. The authors point out that the present ITPA is an experimental edition in recognition of the probability that subsequent clinical and theoretical work will point up needs for future revision.

A Model of Psycholinguistic Abilities

The nine tests used in the battery of the ITPA were generated from Osgood's communication model which defines three major dimensions of psycholinguistics which are (1) Channels of Communication, (2) Levels of Organization, and (3) Processes

I. Channels of Communication

This channel refers to various combinations of stimulus input and response output. The three major divisions of modes of input are auditory, visual, and tactual and the major modes of output are vocal and motor. The channels include various combinations of these.

II. Levels of Organization

- A. The Representation Level mediates activities requiring the meaning or significance of linguistic symbols.
- B. The Integration Level mediates activities of a more automatic or habitual nature including the acquisition of linguistic symbol sequences and response chains.
- C. The Projection Level deals primarily with innate physiological processes and since it cannot be altered through learning, it is dropped from further consideration.

III. Processes includes the acquisition and use of habits required for normal language usage. The three main sets of habits considered are:

- A. Decoding or the sum total of habits required to ultimately obtain meaning from either auditory or visual linguistic stimuli.
- B. Encoding or the sum total of those habits required to express oneself in words or gestures.
- C. Association or the sum total of those habits required to manipulate linguistic symbols.

An Outline of Psycholinguistic Abilities in the ITPA

The nine psycholinguistic abilities assessed in the ITPA are defined below. (Numbers 1, 2, etc., correspond to Figure 1, page 51).

I. Tests at the Representational Level

A. Decoding Tests.

Test 1, Auditory Decoding.--This ability, to comprehend the spoken word, is assessed by questions of object function, such as, "Do bananas telephone?"

Test 2, Visual Decoding.--This test assesses the ability to comprehend pictures and written words. After exposure to a stimulus, the subject identifies one from four others which is semantically, not physically, identical.

B. Association Tests

Test 3, Auditory-Vocal Association.--The ability to relate spoken words in a meaningful way is tested by using familiar analogies which the subject must complete such as, "A red light says stop, a green light says ____."

Test 4, Visual-Motor Association tests the ability to relate meaningful visual symbols by having the subject select from among a set of pictures one which most meaningfully relates to a given stimulus picture.

C. Encoding Tests

Test 5, Vocal Encoding.--This is the ability to express one's ideas verbally, and is assessed by asking the subject to "tell me all about" an object such as a ball, block, etc.

Test 6, Motor Encoding.--This ability, to express one's ideas by gestures, is tested by asking the subject to supply the appropriate motion for an object shown to him.

II. Tests at the Automatic-Sequential Level

A. The Automatic Tests

Test 7, Auditory-Vocal Automatic.--This ability permits one to predict future linguistic events from past experience. It is assessed by asking the subject to supply the last word to a test statement and is basically a test of grammar.

B. The Sequencing Tests

Test 8, Auditory-Vocal Sequencing.--The ability to correctly repeat a sequence of symbols previously heard is tested by a modified digit repetition test.

Test 9, Visual-Motor Sequencing.--This is the ability to correctly reproduce a sequence of symbols previously seen. It is tested by

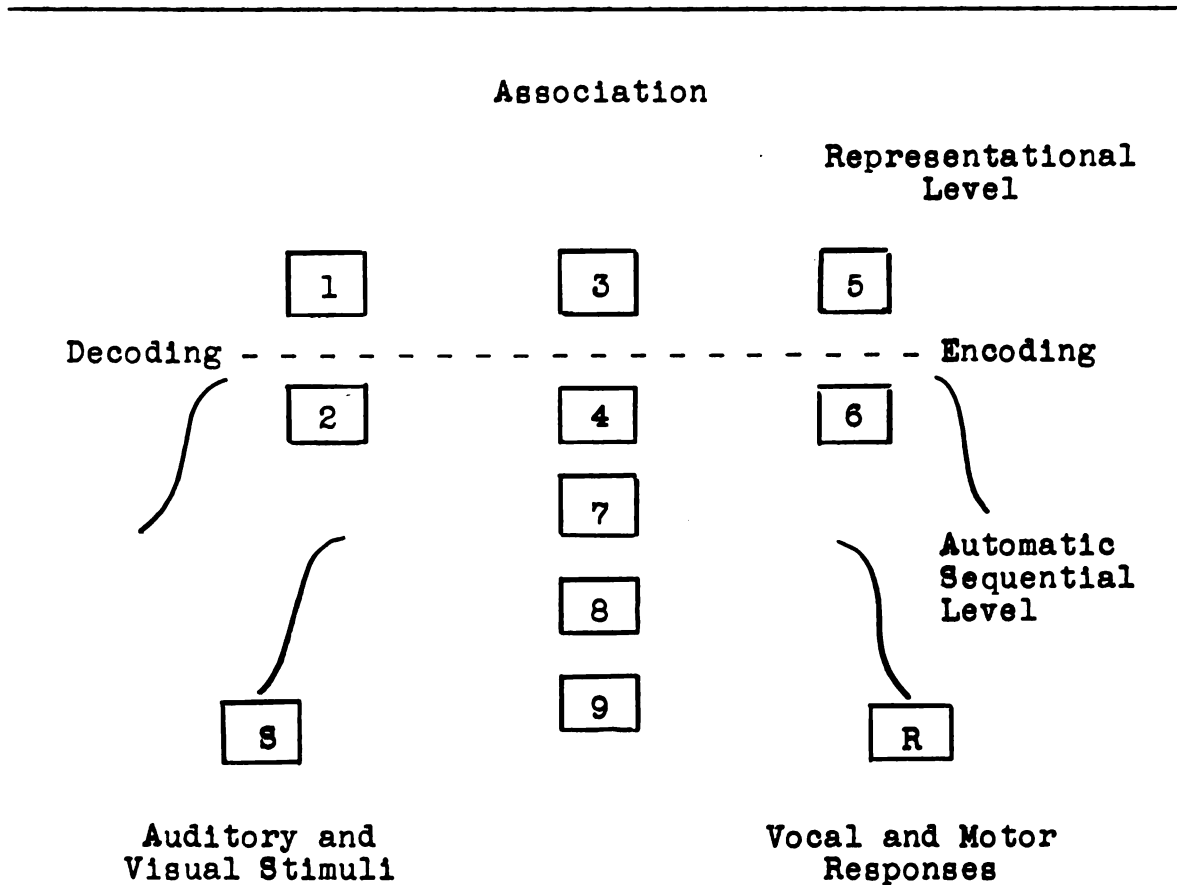
requiring the subject to duplicate the order of a sequence of pictures or designs from memory.

APPENDIX B

APPENDIX B

FIGURE 1

The Clinical Model for the Illinois Test
of Psycholinguistic Abilities



Representational Level

1. Auditory Decoding
2. Visual Decoding
3. Auditory-Vocal Assoc.
4. Visual-Motor Assoc.
5. Vocal Encoding
6. Motor Encoding

Automatic-Sequential Level

7. Auditory-Vocal Automatic
8. Auditory-Vocal Sequen-
tial
9. Visual-Motor Sequential

APPENDIX C

APPENDIX C

RAW DATA

Raw Scores for Non-culturally Deprived

Subtest	AD	VD	AVAs	VMA _s	VE	ME	AVA	AVS	VMS	TOT.
<u>Subject</u>										
1	19	13	13	8	23	17	11	10	13	127
2	24	14	19	17	24	17	12	21	16	164
3	26	14	17	19	28	19	12	24	9	168
4	25	16	22	17	23	13	14	22	11	163
5	25	13	20	18	28	19	13	20	14	170
6	19	14	18	12	23	17	15	23	17	158
7	19	13	18	16	24	22	14	32	13	171
8	28	17	21	17	27	17	14	32	14	187
9	23	19	15	18	19	15	11	19	13	152
10	28	15	18	22	19	22	10	29	13	176
11	5	11	6	18	11	8	6	12	12	89
12	16	18	11	13	9	13	6	21	13	120
13	16	13	14	18	13	19	10	19	12	134
14	15	15	12	10	16	13	9	15	10	115
15	28	8	18	18	20	13	11	31	15	162
16	16	14	8	14	15	10	3	14	9	103
17	28	17	14	17	14	13	12	22	11	148
18	25	14	17	16	25	12	13	23	16	161
19	14	17	13	19	13	5	6	15	12	114
20	17	16	20	13	17	15	13	21	16	148
21	16	13	12	20	12	11	3	27	12	126
22	22	13	15	15	15	10	7	21	13	131
23	15	17	13	25	20	13	5	25	15	148
24	21	15	17	10	20	10	12	24	13	142
25	22	17	18	12	20	17	13	18	12	149
26	22	14	17	19	17	14	11	28	16	158
27	25	16	19	18	17	17	12	32	12	168
28	20	14	19	18	16	15	11	19	17	150
29	17	14	15	24	16	20	9	20	15	150
30	19	19	15	22	21	20	13	23	13	165

Raw Scores for Culturally Deprived Children

Subtest	AD	VD	AVAs	VMAs	VE	ME	AVA	AVS	VMS	TOT.
<u>Subject</u>										
1	20	11	6	4	11	13	3	14	11	93
2	18	15	16	8	16	14	6	16	13	122
3	19	13	13	12	12	11	8	21	12	121
4	12	10	10	14	11	6	10	10	11	94
5	17	12	9	12	14	7	6	18	7	102
6	26	17	15	12	19	17	3	19	13	141
7	30	14	15	13	18	13	8	15	15	141
8	15	12	17	10	14	16	12	18	11	125
9	19	14	15	14	14	10	11	19	12	128
10	19	10	16	18	17	13	15	17	10	135
11	13	12	10	10	16	16	5	24	12	118
12	19	8	12	12	11	11	4	17	11	105
13	15	9	14	11	12	9	6	17	14	107
14	17	16	8	9	9	9	4	11	14	97
15	21	15	14	9	18	12	11	22	16	138
16	17	12	8	14	10	12	3	5	6	87
17	16	15	10	15	13	14	5	18	13	119
18	18	14	12	11	17	10	6	15	13	116
19	19	13	14	11	11	13	7	10	10	108
20	14	12	14	14	17	13	10	19	11	124
21	14	6	10	12	5	9	4	22	9	91
22	10	2	10	10	10	9	12	19	19	101
23	15	11	14	14	12	7	4	22	9	108
24	15	13	13	13	11	8	2	23	10	108
25	19	11	16	10	12	13	7	21	12	121
26	10	13	9	1	16	8	3	18	9	87
27	21	15	14	8	8	9	9	20	10	114
28	12	11	14	6	9	11	7	21	11	102
29	15	14	17	16	12	14	7	22	12	129
30	13	14	13	10	13	22	7	25	8	125

Standard Scores for Non-culturally Deprived

	AD	VD	AVAs	VMA's	VE	ME	AVA	AVS	VMS	TOT.
<u>Sub-</u> <u>ject</u>										
1 -	.52	.19	-1.30	-1.83	1.49	.59	-.31	-1.92	-.39	-.81
2	.50	.48	.59	.59	1.67	.58	.02	-.03	.53	1.29
3	.91	.48	-.04	1.12	2.39	1.10	.02	.48	-1.62	1.52
4	.70	1.05	1.54	.59	1.49	-.45	.67	.14	-1.00	1.23
5	.70	.19	.91	.86	2.39	1.10	.34	-.20	-.08	1.63
6 -	.52	.48	.28	-.76	1.49	.58	.99	.31	.84	.95
7 -	.52	.19	.28	.32	1.67	1.87	.67	1.86	-1.39	1.69
8	1.44	1.55	1.56	1.15	2.87	.79	.72	2.21	.33	2.71
9	.29	1.91	-.67	.86	.78	.07	-.31	-.37	-.39	.61
10	1.02	.59	-.15	1.23	.48	1.37	-1.04	1.01	-.62	1.26
11	-2.41	-.23	-2.80	1.45	-.70	-.99	-1.79	-1.37	-.20	-2.05
12 -	.57	1.84	-1.35	-.02	-1.14	.00	-1.79	.24	.07	-.54
13 -	.57	.36	.48	1.45	-.25	1.18	-.53	-.12	-.20	.13
14 -	.74	.95	-1.06	-.89	.42	.00	-.85	-.83	-.73	-.79
15	1.44	-.23	.69	1.45	1.31	.00	-.22	2.03	.60	1.49
16	-1.14	.48	-2.88	-.22	.06	-1.22	-2.91	-1.23	-1.62	-2.18
17	1.32	1.34	-.99	.59	-.12	-.45	.02	.14	-1.00	.38
18	.70	.48	-.04	.32	1.85	-.70	.34	.31	.53	1.12
19	-1.54	1.34	-1.30	1.12	-.30	-2.51	-1.94	-1.06	-.70	-1.55
20 -	.93	1.05	.91	-.49	.42	.07	.34	-.03	.12	.38
21	-1.71	-.02	-2.65	.77	-.88	-.98	N	.61	-.86	-1.85
22	.09	.19	-.67	.05	.06	-1.22	-1.61	-.03	-.39	-.59
23	-2.04	1.06	-1.57	1.61	.21	-1.26	-1.96	.21	-.37	-.79
24 -	.11	.76	-.04	-1.29	.96	-1.22	.02	.48	-.39	.04
25 -	.35	1.19	-.15	-1.08	.67	.31	-.15	-1.20	-.86	-.42
26	.09	.48	-.04	1.12	.42	-.19	-.31	1.17	.53	.95
27	.70	1.05	.59	.86	.42	.58	.02	1.86	-.70	1.52
28 -	.88	.02	.20	-.07	-.42	-.72	-.58	-.78	.15	-.70
29 -	.93	.48	-.67	2.47	.24	1.36	-.96	-.20	.23	.49
30	-1.03	1.80	-1.40	1.23	.86	.95	-.15	-.20	-.62	.58

Standard Scores for Culturally Deprived Children

	AD	VD	AVAs	VMAs	VE	ME	AVA	AVS	VMS	TOT.
<u>Sub-</u> <u>ject</u>										
1	-.32	-.23	-3.00	-2.91	-.66	-.45	-2.91	-1.23	-1.00	-2.75
2	.05	1.07	.99	-.84	.92	.61	-1.00	-.58	.34	.38
3	.07	.36	-.77	-.31	.47	.40	-1.16	.24	-.20	-.50
4	-1.24	-.53	-1.64	.28	.70	-1.39	-.53	-1.73	-.47	-1.81
5	-.40	.07	-1.93	-.31	.03	-1.19	-1.79	-.30	-1.53	-1.42
6	.91	1.34	-.67	-.76	.78	.58	-3.00	-.37	-.39	-.02
7	1.77	.66	-.18	-.02	.86	.00	-1.16	.83	.60	.47
8	-1.34	-.09	-.04	-1.29	-.12	.33	.02	-.54	-1.00	-.93
9	-.52	.48	.67	-.22	-.12	-1.22	-.31	-.37	-.70	-.76
10	-.07	-.53	.11	1.45	.64	.00	1.04	-.48	-.73	.18
11	-1.75	-.09	-2.25	-1.29	.24	.33	2.26	.48	-.70	-1.33
12	-.07	-1.12	-1.06	-.31	.70	.40	-2.41	-.48	-.47	-1.27
13	-1.34	-.95	-.99	-1.03	.48	-1.48	-1.94	-.72	-.08	-1.95
14	-.40	1.25	-2.22	-1.19	-1.14	.80	-2.41	-1.55	.33	-1.66
15	.27	.95	-.48	-1.19	.86	.20	-.22	.42	.86	.33
16	-.93	-.09	-2.88	-.22	.84	.70	-2.91	-2.77	-2.54	-3.00
17	-.57	.95	-1.64	.53	.25	.19	-2.10	-.30	.07	-.59
18	-.73	.48	-1.62	-1.03	.42	-1.22	-1.94	-1.06	-.39	-1.44
19	-.07	.36	-.48	-.89	.70	.00	-1.47	-1.73	-.73	-1.13
20	-.90	.07	-.48	.28	.64	.00	-.53	-.12	-.47	-.35
21	-1.54	-1.81	-2.25	-.76	-1.73	-1.48	-2.59	.14	-1.62	-2.86
22	-2.36	-2.96	-2.25	-1.29	.84	-1.48	.02	-.37	1.46	-2.29
23	-.74	-.23	-.48	.28	.47	-1.19	-2.41	.42	-1.00	-1.13
24	-1.34	.19	-1.30	-.49	.66	-1.74	-3.00	.31	-1.31	-1.90
25	-.07	-.23	.11	-.89	.47	.00	-1.47	.24	-.20	-.50
26	-1.66	.62	-1.12	-2.84	.92	-.99	-1.88	-.25	-.72	-1.53
27	-.11	.76	-.99	-1.83	-1.19	-1.48	-.96	-.20	-1.31	-1.55
28	-1.95	-.38	-.99	-2.37	-1.01	-.96	-1.61	-.03	-1.00	-2.24
29	-.74	.66	.40	.86	.47	.19	-1.47	.42	-.20	-.11
30	-1.07	.66	-.77	-.89	.25	1.78	-1.47	.96	-1.27	-.30

Language Age for Culturally Deprived Children

Subtest	AD	VD	AVAs	VMA _s	VE	ME	AVA	AVS	VMS	TOT.
<u>Subject</u>										
1	5-8	5-6	3-3	2-3	4-9	5-5	2-9	4-2	5-1	4-5
2	5-2	7-3	5-10	3-8	6-4	5-10	3-10	4-7	5-8	5-4
3	5-5	6-3	4-11	5-1	5-1	4-7	4-7	5-11	5-4	5-3
4	4-1	5-2	4-2	5-9	4-9	2-11	5-4	3-5	5-1	4-5
5	5-0	5-10	3-11	5-1	5-8	3-2	3-10	5-1	4-2	4-8
6	7-6	8-9	5-6	5-1	7-4	7-4	2-9	5-4	5-8	5-11
7	-N	6-8	5-6	5-5	6-11	5-5	4-7	4-4	6-4	5-11
8	4-7	5-10	6-1	4-4	5-8	6-10	6-1	5-1	5-1	5-5
9	5-5	6-8	5-6	5-9	5-8	4-2	5-9	5-4	5-4	5-6
10	5-5	5-2	5-10	7-2	6-7	5-5	7-3	4-10	4-10	5-9
11	4-3	5-10	4-2	4-4	6-4	6-10	3-6	7-0	5-4	5-2
12	5-5	4-5	4-8	5-1	4-9	4-7	3-1	4-10	5-1	4-9
13	4-7	4-9	5-3	4-8	5-1	3-10	3-10	4-10	6-0	4-10
14	5-0	7-10	3-8	4-0	4-1	3-10	3-1	3-7	6-0	4-6
15	5-11	7-3	5-3	4-0	6-11	5-0	5-9	6-3	6-9	5-10
16	5-0	5-10	3-8	5-9	4-5	5-0	2-9	2-7	3-11	4-3
17	4-9	7-3	4-2	6-1	5-4	5-10	3-6	5-1	5-8	5-3
18	5-2	6-8	4-8	4-8	6-7	4-2	3-10	4-4	5-8	5-2
19	5-5	6-3	5-3	4-8	4-9	5-5	4-3	3-5	4-10	4-10
20	4-5	5-10	5-3	5-9	6-7	5-5	5-4	5-4	5-1	5-4
21	4-5	3-8	4-2	5-1	2-10	3-10	3-1	6-3	4-7	4-4
22	3-8	-N	4-2	4-4	4-5	3-10	6-1	5-4	8-5	4-8
23	4-7	5-6	5-3	5-9	5-1	3-2	3-1	6-3	4-7	4-10
24	4-7	6-3	4-11	5-5	4-9	3-6	2-4	6-7	4-10	4-10
25	5-5	5-6	5-10	4-4	5-1	5-5	4-3	5-11	5-4	5-4
26	3-8	6-3	3-11	-N	6-4	3-6	2-9	5-1	4-7	4-3
27	5-11	7-3	5-3	3-8	3-10	3-10	5-0	5-7	4-10	5-1
28	4-1	5-6	5-3	2-11	4-1	4-7	4-3	5-11	5-1	4-8
29	4-7	6-8	6-1	6-6	5-1	5-10	4-3	6-3	5-4	5-6
30	4-3	6-8	4-11	4-4	5-4	-N	4-3	7-4	4-4	5-5

Language Age for Non-culturally Deprived Children

Subtest	AD	VD	AVAs	VMA _s	VE	ME	AVA	AVS	VMS	TOT.
<u>Subject</u>										
1	5-5	6-3	4-11	3-8	+N	7-4	5-9	3-5	5-8	5-6
2	6-9	6-8	6-10	6-10	+N	7-4	6-1	5-11	6-9	6-10
3	7-6	6-8	6-1	7-6	+N	8-8	6-1	7-0	4-7	7-1
4	7-1	7-10	8-3	6-10	+N	5-5	6-10	6-3	5-1	6-10
5	7-1	6-3	7-3	7-2	+N	8-8	6-6	5-7	6-0	7-2
6	5-5	6-8	6-6	5-1	+N	7-4	7-3	6-7	7-4	6-7
7	5-5	6-3	6-6	6-6	+N	+N	6-10	+N	5-8	7-2
8	8-10	8-9	7-8	6-10	+N	7-4	6-10	+N	6-0	8-1
9	6-5	+N	5-6	7-2	7-4	6-4	5-9	5-4	5-8	6-4
10	8-10	7-3	6-6	8-7	7-4	+N	5-4	+N	5-8	7-6
11	2-9	5-6	3-3	7-2	4-9	3-6	3-10	3-9	5-4	4-3
12	4-9	+N	4-5	5-5	4-1	5-5	3-10	5-11	5-8	5-3
13	4-7	7-3	4-8	4-4	6-4	5-5	5-0	4-4	4-10	5-1
14	4-9	6-3	5-3	7-2	5-4	8-8	5-4	5-4	5-4	5-8
15	8-10	4-5	6-6	7-2	7-9	5-5	5-9	8-6	6-4	6-9
16	4-9	6-8	3-8	5-9	6-0	4-2	2-9	4-2	4-7	4-9
17	8-10	8-9	5-3	6-10	5-8	5-5	6-1	6-3	5-1	6-2
18	7-1	6-8	6-1	6-6	+N	5-0	6-6	6-7	6-9	6-9
19	4-5	8-9	4-11	7-6	5-4	2-9	3-10	4-4	5-4	5-1
20	5-0	7-10	7-3	5-5	6-7	6-4	6-6	5-11	6-9	6-2
21	4-9	6-3	4-8	7-10	5-1	4-7	2-9	8-6	5-4	5-5
22	6-2	6-3	5-6	6-1	6-0	4-2	4-3	5-11	5-8	5-7
23	4-7	8-9	4-11	+N	7-9	5-5	3-6	7-4	6-4	6-2
24	5-11	7-3	6-1	4-4	7-9	4-2	6-1	7-0	5-8	6-0
25	6-2	8-9	6-6	5-1	7-9	7-4	6-6	5-1	5-4	6-3
26	6-2	6-8	6-1	7-6	6-7	5-10	5-9	+N	6-9	6-7
27	7-1	7-10	6-10	7-2	7-4	6-7	6-1	+N	5-4	7-1
28	5-8	6-8	6-8	7-2	6-4	6-4	5-9	5-4	7-4	6-3
29	5-0	6-8	5-6	9-3	6-4	+N	5-0	5-7	6-4	6-3
30	5-5	+N	5-6	8-7	8-11	+N	6-6	6-7	5-8	6-11

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