A COMPARISON OF THE PSYCHOLINGUISTIC ABILITIES OF ANGLO-AMERICAN, NEGRO, AND LATIN-AMERICAN LOWER-CLASS PRESCHOOL CHILDREN

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A COMPARISON OF THE PSYCHOLINGUISTIC ABILITIES OF
ANGLO-AMERICAN, NEGRO, AND LATIN-AMERICAN
LOWER-CLASS PRESCHOOL CHILDREN

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By

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CHAPTER I

INTRODUCTION

One of the most crucial problems facing educators today is that of facilitating the growth of children from the economically and socially marginal segments of our society. A review of investigations focused on early environmental factors common to these disadvantaged children indicates that the limitation of experiential variety has adversely affected their ability to conceptualize (7, 21). This conceptual deficit, the qualitative inadequacy of available verbal models, and the lack of adult-child interactions have resulted in marked restriction of language development (21). With ever-mounting evidence on the influence of background variables on the patterns of language and cognitive development, it is evident that "planned intervention" can be most meaningfully introduced during the more malleable preschool years (1, 7, 12).

An effective preventative program must be based on the findings of definitive research. At the preschool level, more descriptive studies of receptive, integrational, and expressive aspects of language are needed. Also necessary in the planning of profitable preschool language experiences is an extended knowledge of the linguistic patterns peculiar to particular ethnic or cultural groups. Deutsch's conclusion
that "... racial differences are associated with more divergent environmental conditions than those covered by standard socio-economic indices" provides a succinct statement of the causative bases of these differences (2, p. 347).

Two of the largest minority groups in the nation are the Negro and the Latin-American. Each has special linguistic problems. The Negro child's lack of verbal facility, documented in the many comparative studies of intellectual functioning (9), is not basically a quantitative deficit; but rather, the Negro child's verbalizations are rich in words unique to his own culture (23). His language development is further hampered by dialectal characteristics which may render some word forms used in school vague or even incomprehensible to him (23). For the Latin-American child, the extended family both facilitates and inhibits language development. While the frequent presence of adult relatives in the household increases the number of adult-child interactions, these close filial ties often limit the child's social contacts outside the family circle (11). Since verbalization in English is a criterion for success in school, the child's lack of facility in comprehension and expression in this second language limits his academic progress.

Since these initial linguistic deficiencies exert a retarding influence on school achievement and may result in an accumulation of failure experiences, maladaptive behavior,
and lowered self-esteem, there is a great need for comparative analytical studies of differentiated linguistic abilities.

Statement of the Problem

The problem of this research is to determine the similarities and differences related to the psycholinguistic abilities of Anglo-American, Negro, and Latin-American preschool children. The sub-problems involved in this study are:

1. To determine if the language proficiency level for these children will differ significantly from that of the normative group and if the profile configurations for the three groups are similar or different.

2. To determine if differentiations in the functional level of certain psycholinguistic abilities exist among the children of the three cultural groups (Anglo-American, Negro, and Latin-American).

3. To determine if the sex variable is related to differences in level of proficiency in psycholinguistic abilities.

Hypotheses

The following hypotheses were tested:

1. Among lower-class culturally deprived Anglo-American preschool children, the total language facility score mean will be significantly lower than the total language facility score mean for the respective normative group.

2. Among lower-class culturally deprived Negro preschool children, the total language facility score mean will be
significantly lower than the total language facility score mean for the respective normative group.

3. Among lower-class culturally deprived Latin-American preschool children, the total language facility score mean will be significantly lower than the total language facility score mean for the respective normative group.

4. Among lower-class culturally deprived preschoolers, Anglo-American children will demonstrate a significantly higher language facility score than will Latin-American children.

5. Among lower-class culturally deprived preschoolers, Anglo-American children will demonstrate a significantly higher total language facility score than will Negro children.


8. Among lower-class culturally deprived preschoolers, there will be no significant difference in total language facility scores between male and female subjects.

9. Among lower-class culturally deprived preschoolers, there will be no significant difference in auditory discrimination between male and female subjects.
Significance of the Study

The proposed study is unique in that it involves the comparison of the differentiated linguistic abilities of three ethnic groups. A survey of the available studies indicates a definite paucity of definitive language analyses of lower-class children at the kindergarten level despite the fact that great expenditures are being made by both federal and state agencies for preschool education of these students. Much of the comparative material relating to ethnic groups is dated. Furthermore, virtually no linguistic comparisons between Anglo-Americans and Latin-Americans and between Latin-Americans and Negroes at the preschool level have yet been reported in the literature.

Definitions of Terms

1. Lower-class for the purposes of this study is determined by a rating of 5, 6, or 7 on Warner's "Revised Scale for Rating Occupation" (25, pp. 141-142).

2. Psycholinguistic abilities are the acquired auditory, vocal, visual, and motor habits necessary for normal comprehension and usage of language.

3. Levels of organization refer to the degree of complexity involved in the execution of a given psycholinguistic activity. Two levels are
a. The representational level, which is sufficiently organized to mediate activities requiring the meaning of significance of linguistic symbols; and,
b. The automatic-sequential level, which mediates activities requiring the retention of linguistic symbol sequences and the execution of automatic habit-chains (18, p. 3).

4. Psycholinguistic processes are:
   a. Decoding, the sum total of those habits required to ultimately obtain meaning from either visual or auditory linguistic stimuli;
   b. Association, the sum total of those abilities required to manipulate linguistic symbols internally; and
   c. Encoding, the sum total of those habits required to ultimately express oneself in words and gestures (18, p. 3).

5. Channels of communication are the sensory-motor paths over which linguistic symbols are received. A channel is specified mode of reception and by mode of response (18, p. 3).

Limitations of the Study

1. This study was limited to those psycholinguistic functions measured by the instruments chosen for this investigation.

2. This study was limited to Anglo-American, Negro, and Latin-American children between the ages of five and six years residing in a North Texas metropolitan area.

3. Generalization of the findings of this study should be limited to situations in which geographic region, ethnic composition, and socio-economic class are similar to those of this investigation.
Assumptions

1. The Illinois Test of Psycholinguistic Abilities (ITPA) is a valid instrument for measuring the psycholinguistic development of preschool children for the purposes of this study.

2. Warner's Index of Status Characteristics is a valid instrument for determining socio-economic status for the purposes of this study.

3. The Wepman Auditory Discrimination Test is a valid instrument for determining development in auditory discrimination for the purposes of this study.

Procedures for Collecting Data

Subjects

Sixty children between the ages of five and six years were used as subjects, twenty Anglo-Americans, twenty Negroes, and twenty Latin-Americans, equally divided with respect to sex. All subjects were from the lower-class as determined by a rating of 5, 6, or 7 on Warner's "Revised Scale for Rating Occupation" (25, pp. 141-142). These children were selected by a table of random numbers from the population of the different nursery schools which comprise a publicly supported day nursery system, and from a denominationally supported day nursery center in a metropolitan area in northern Texas.
Description of the Instruments

The *Illinois Test of Psycholinguistic Abilities* is an instrument used to determine language facility in subjects from 2.5 to 9.0 years of age. It is an individually administered battery consisting of nine subtests. They are:

- **Test 1. Auditory decoding**, the ability to comprehend the spoken word.
- **Test 2. Visual decoding**, the ability to comprehend pictures and the spoken word.
- **Test 3. Auditory-vocal association**, the ability to relate spoken words in a meaningful way.
- **Test 4. Visual-motor association**, the ability to relate meaningful visual symbols.
- **Test 5. Vocal encoding**, the ability to express one's ideas in spoken words.
- **Test 6. Motor encoding**, the ability to express one's ideas in gestures.
- **Test 7. Auditory-vocal automatic**, the ability to predict future linguistic events from past experience (grammar facility).
- **Test 8. Auditory-vocal sequencing**, the ability to correctly repeat a sequence of symbols previously heard.
- **Test 9. Visual-motor sequencing**, the ability to correctly repeat a sequence of symbols previously seen (13, pp. 4-7).

Investigations of reliability and validity have yielded the following results. Test-retest reliability of .97 (total battery), .73 to .96 (individual subtests), and split-half reliability of .99 (total battery), .90 to .96 (subtests) were reported (17, pp. 32, 33). Content validity of the
subtests is indicated by internal consistency coefficients of .89 to .95 and by the heterogeneity within the battery evidenced by low to moderate subtest intercorrelations (19, pp. 26-27). Concurrent and predictive validity were studied through comparisons between ITPA scores and scores from the Revised Stanford Binet, three subtests of the Stanford Achievement Test, two subtests of the Durrell-Sullivan Achievement Test, Raven's Progressive Matrices A, Ab, and B, and the Peabody Picture Vocabulary Test, which yielded coefficients of correlation significant at the .01 level.

The Wepman Auditory Discrimination Test is individually administered and consists of forty pairs of words. Thirty of these pairs differ only in either the initial or final sound, and ten pairs are alike. The words were chosen from the Lorge-Thorndike Word Book. Within phonetic categories, every possible match of phonemes used in English was made. The following evaluation of the test is taken from The Sixth Mental Measurements Yearbook:

A test-retest coefficient of reliability . . . is reported as .91 . . . for a quick, inexpensive, easy to score, and accurate test of auditory discrimination, the Auditory Discrimination Test is highly recommended (3, p. 1024).

In order to determine the class level of the sample, the "Revised Scale for Rating Occupation" from Warner's Index of Status Characteristics was used. Details and sample classifications are listed in the Warner reference (25, Part 3).
Procedures for Obtaining Data

In order to measure the level of proficiency in each of ten psycholinguistic areas, the ITPA and the Wepman Auditory Discrimination Test were administered individually to each of the sixty subjects selected for this study. Since about one hour and fifteen minutes were required to administer the entire battery, the testing was divided into three periods of about twenty-five minutes each. Three subtests were presented during the first period, four subtests during the second period, and two subtests and the Wepman test during the third period.

Procedures for Treating Data

Hypotheses 1, 2, and 3 were tested by comparing the mean of each respective group's total ITPA score with the mean total ITPA score for the respective normative group through a test of significance for the difference between means.

A two-dimensional analysis of variance was used to test Hypotheses 4 through 9. Factor A represented the three ethnic groups, and factor B represented the sex of the subjects. The F test was used to determine the possible significance of main effects and interaction effects. Comparisons of pairs of mean differences were accomplished by t tests. The criterion measure for testing Hypotheses 4, 5, and 8 was the mean of the total ITPA scores for each group. For the remaining
hypotheses (6, 7, and 9) the criterion measure was the Wepman Auditory Discrimination Test mean for each group.

The Wilks' lambda multivariant analysis of variance, a statistical design for comparison of profiles, was used for further treatment of subtest data. Two profile analyses were made, one with respect to ethnic group membership, and a second involving sex. For all computations, a significance level of $P = .05$ was required for the rejection of the null hypothesis.
CHAPTER BIBLIOGRAPHY


The empirical data pertinent to this research are presented in five sections: (1) theoretical background of the problem, (2) studies related to social class as a variable in language development, (3) investigations of ethnic differences and language proficiency, (4) studies pertaining to sex differences, and (5) a synthesis of the various sections.

Theoretical Background

Why do so many culturally deprived lower-class children face frustration and failure during their initial school experiences? Through a brief investigation of the theoretical formulations of several developmental psychologists some insight may be gained. Hunt contends that readiness for an experience depends on the "match" between the child's internal mental processes and his environmental encounters at a given time (24, pp. 267-288). In making this assumption, he relies heavily on Piaget's epigenetic theory of mental development.

Three elements from Piaget's theory may be pertinent to an understanding of school readiness. First, Piaget perceives
intelligence as a dynamic process of progressive change (epigenesis) rather than a quantitative entity (49, p. 33). Hence paucity or richness of experiential background are deemed vital to the development of mental processes. Second, Piaget believes that there is a hierarchical organization or fixed order in which the successive structures appear (24, p. 356). Thus undeveloped stages may not be skipped. Finally, Piaget views the process as one of accommodation and assimilation whereby new schemata are constantly growing out of older behavioral forms and serving as "tools" for progressively more effective interaction with the environment (49, p. 33). On the basis of such a theory, the existing differentiation of the mental processes at any given time is, to some extent, a function of the richness and diversity to which the child has been exposed. For the lower-class child, experiential deficits are likely to result in a schemata insufficiently developed for successful assimilation of typical first grade encounters.

The importance of early learning is also stressed by Hebb (21, 22) who describes learning as a two-stage process. The first stage, designated as early learning, involves such skills as the ability to discriminate and identify stimuli. Until such elementary learning occurs, the organism is not capable of more complex operations. Perhaps the most significant aspect of Hebb's theory is that this early learning, as compared to the second or later learning stage, takes place
very slowly (51, pp. 277-280). Hebb's theory provides one explanation for both the controversial "irreversible" effects of deprivation and the "cumulative deficit" phenomenon. If initial development is restricted, the early learning stage could still take place at a later age. However, the individual's circumstances at that time would probably be such as to preclude a sufficiency of time for such prolonged training as would be necessary. The culturally deprived child who comes to the learning situation without this necessary backlog of experience will be learning at such a comparatively decelerated rate that he will fall progressively further behind.

A final theoretical consideration is that of the affective aspect of discrepancies between developmental schemata and the requirements of the environment. Hunt's summation is:

Any discrepancy between central processes and circumstance beyond the limits of an organism's capacity for accommodation evokes distress and avoidance, while any discrepancy within the limit of an organism's capacity for accommodation is a source of pleasurable interest or curiosity (24, p. 269).

In summary, Piaget views the development of mental facility as an evolving process by which an organism adds new activities to its repertoire, and through modification becomes increasingly capable of handling more complex operations. Hebb's two-stage theory involving an early learning period that transpires at a very slow pace helps to explain the observation
that the culturally deprived child falls progressively further behind and seldom is able to compensate for this early deficit. Finally, the affective result of significant discrepancies between the requirements of the environment and the organism's capacity to assimilate is that of tension, frustration, and withdrawal.

Social Class Studies

Conspicuous verbal deficits are often characteristic of the culturally deprived child. A comprehensive analysis of the literature concerning the language development of lower-class children should include characteristics of their language deficiencies, relevant antecedent conditions, and comparative studies of middle and lower-class children.

Bernstein (5), after extensive linguistic research, developed a model representing the essential differences between the "restricted" language code of the lower-class and the "elaborated" system of the middle class. The restricted code is characterized by exclamations, imperatives, and sentence fragments which provide insufficient feedback for the development of normative labeling and identification of the environment. By contrast, the elaborated code is more varied in syntactical structure, provides the speaker a wider choice of verbal alternatives, and is believed to increase the differentiation of cognitive processes.
Bernstein concluded that the lower-class child suffers from a "... culturally induced backwardness transmitted and sustained through the effects of linguistic processing" (5, p. 240). He further hypothesized that several deleterious effects on a child's learning facility would result from the use of the restricted code. Transfer of learning may be hindered in that the child might tend to associate a given set of operations with a particular context rather than being able to generalize the operations to a wider range of circumstances (5). Concept building may also be attenuated by the child's inability to organize the detailed and sequential thought processes necessary in the development of a "matrix of relationships" (5, p. 228). Finally, the child is apt to profit most from concrete operations involving little ambiguity in direction and content (5).

Raph (43) reviewed thirty-five research studies related to the language development of socially disadvantaged children conducted during the last decade. She identified four major causative factors antecedent to the language disabilities of this group. First, differential stimulation of infant vocalization and its relationship to language development was studied in several investigations. Rheingold, Gewirtz, and Ross (45) found that at as early an age as three months, output of infant vocalization could be increased through conditioning. Similarly, Irwin (26) found that beginning at
about eighteen months, systematic reading to and talking with infants resulted in significantly greater phonetic production.

A second area of deficiency cited by Raph was a paucity of verbal interaction between lower-class children and adults (43). Both John and Goldstein (29) and Walter, Connor, and Zujich (54) found that the lower-class child has fewer opportunities to converse and interact with adults than do his middle-class counterparts. The importance of this lessened availability of adult models is emphasized by the findings of McCarthy (8) and Milner (34) that there is a positive relationship between parental contact, particularly with the mother, and a child's verbal skills. Further support for adult-child interaction as a facilitating factor in language development is Nisbet's (19) finding that large families are negatively related to language proficiency.

Raph also concluded that the lower-class child suffered severe limitations in experiences that could facilitate cognitive development (43). In a comparative study, Mitchell (35) found that verbal meaning and fluency scores were lower for children of low status than for those of higher status. John (28) and John and Goldstein (29), in investigating relationships between social class and cognitive and linguistic behavior, discovered deficits among lower-class children in the ability to label, discriminate, categorize, and generalize. Finally, Raph found that negative emotional encounters with significant adults
restrict rather than encourage lower-class children's verbalizations (5, 43).

As distinctive qualities of their language, Raph found a greater deficiency in the auditory-vocal modality than in the visual-motor area (55), a meagerness in both quantity and quality of speech (5, 12, 52), and a depressed rate and level of articulatory maturation (39).

An analysis of Raph's survey reveals that (a) the greater part of the research studies involved infants or school-age children rather than kindergarteners; (b) most of the work related to minority groups is dated and recent changes in social conditions may have invalidated the findings; (c) Latin-American children were not the subjects of any of studies reported; (d) the only study in which auditory discrimination was investigated used only school-age subjects.

A micro-analysis of the relationship of social class and ethnic membership to language development and cognition is contained in Deutsch's four-year "Verbal Survey" (13) conducted at the Institute for Developmental Studies in New York. The subjects were 127 first graders and 165 fifth graders, stratified by race and by social class. Over 100 identifiable variables related to home background, language functioning, conceptual behavior, intelligence test performance, reading, general orientation, self-systems, various sub-components of language, and assorted related factors were investigated.
Deutsch found that at the first grade level children of the lower-class status perform less adequately on all intelligence measures used (Lorge-Thorndike Intelligence Test, the vocabulary subtest of the Wechsler Intelligence Scale for Children (WISC), and the Peabody Picture Vocabulary Test) on verbal identification involving more abstract conceptualizations, and on verbal explanations on a concept and verbal fluency test. In addition, the Wepman Auditory Discrimination Test showed that deficiencies were related to both socioeconomic status and race. Although these measured deficiencies were significant at the first grade level, they were more marked after five years in school. This Deutsch labeled as a "Cumulative deficit phenomenon." He concluded that this deficit resulted from inadequacies in both home background and school environment.

Mitchell (35) investigated the factorial organization of mental abilities of middle and lower-class children. He administered a battery of eighteen tests to over 300 eleven and twelve-year-old subjects and compared the resulting factor patterns by means of Thurston's complete centroid method. He found that the factors extracted were significantly more highly intercorrelated in the lower-class group. His conclusion was that because of the lower-class subject's lack of verbal competence, even supposedly "nonverbal" and special abilities tests are verbally weighted for these children.
Further exploration of the verbal and nonverbal aspects of conceptualization was reported in a study by Siller (48). Using middle and lower-class sixth-grade students in New York City as subjects, he administered two classification tests (one verbal and one nonverbal), two analogies tests (verbal and nonverbal), and a multiple-choice abstract-concrete similarities test in which the definitions to vocabulary words were scaled for degree of abstraction. Siller found that on all tests of conceptual ability, the middle-class student exceeded the lower-class subject, that there were significant differences between the two groups on verbal tests but not on nonverbal measures, and that the middle-class children selected more definitions of an abstract type than did the lower-class group.

In summary, the less elaborated linguistic code (5) of the lower-class child may have a deleterious effect upon conceptualization and thus serve as a detriment to his educational progress. Such psycholinguistic deficits may stem from inadequate vocal stimulation during infancy (25, 26), insufficient verbal exchanges with adults (8, 19, 29, 34, 54), lack of experiential variety necessary for conceptual development (28, 29, 35), and discouragement of vocal expression (5, 43).

There is much evidence to support the thesis that the middle-class child exceeds his lower-class counterpart in a variety of verbal skills (12, 28, 29, 35, 52, 55). This
discrepancy between the two social groups appears to increase with age (12). The finding that lower-class children are more proficient at nonverbal than at verbal tasks (55) is further indicated by the report that significant differences were noted between the two groups on verbal tasks but not on nonverbal operations. However, according to one investigator (35), even the nonverbal performance of the lower-class child is adversely affected by a lack of linguistic facility.

Ethnic Group Studies

There is a definite need for additional studies differentiating the levels of verbal fluency among ethnic groups within this global category of the culturally deprived, particularly at the preschool level. Although Dreger and Miller (15) contributed one of the most comprehensive reviews of research dealing with Negro-white differences and involving a number of psychological variables, this research team reported finding only five studies involving preschoolers. The basic conclusions based on these investigations were (a) young Negro children generally score lower than white children; (b) differences are very much less in younger groups than among older subjects; and (c) Negroes' average measured intelligence levels are well within the normal range for white children. The argument has been advanced that these ethnic differences are artifacts of verbally loaded testing procedures. The findings of seven studies in which the intellectual
factors of Negro and white subjects are compared on "culture-fair" tests are reported in Table II of the Dreger and Miller survey. Seven different tests were used, and social class status, geographic location, and age of subject were among the variables manipulated. In six out of seven investigations, white subjects exceeded the Negros even on these "culture fair" tests of a nonverbal nature. Dreger and Miller do not interpret these findings as indicative of innate inferiority of the Negro but rather stress the need for further investigations into environmental factors that may account for such differences.

In the previously cited "Verbal Survey" by Deutsch, several enlightening observations related to ethnic group membership were reported (13, 14). In a three-way analysis of variance using Lorge-Thorndike Intelligence Test scores as the dependent variable, it was found that (a) Negro children at each socio-economic level score lower than do white children, and (b) Negro-white differences increase at each higher socio-economic level (14). In addition to the Lorge-Thorndike Intelligence Test, over thirty other measures were administered. At the first-grade level only eight measures correlated significantly with race while at the fifth-grade level significant correlations with race were found in eighteen comparisons. Deutsch contended that the ethnic differences observed at each social class level resulted from the
fact that social experiences are so different for the two ethnic groups that it is extremely difficult to meaningfully match the groups at status levels (14). The "cumulative deficit" associated both with age and with higher social status may be accounted for by the fact that older children and children of higher status have increasing opportunities for social participation. For the Negro, because of his caste status, these contacts are abridged. Therefore increasing developmental differences between the Negro and his white counterpart may occur.

A key study illustrating the environmental aspects of racial differences is that of Carson and Rabin (9). In this investigation comparisons of verbal comprehension and communication were made among Northern and Southern Negro and Northern white children. The age range for the subjects was 9.5 to 11.5 years. Comprehension was determined by the Full-Range Picture Vocabulary Test, and verbal communication was measured by the vocabulary subtest of the WISC, and a vocabulary test requiring oral definition adapted from the Full-Range Vocabulary Test. As predicted, when subjects were paired for age, grade placement, sex, and level of verbal comprehension, white ranked first, Northern Negroes second, and Southern Negroes third in verbal communication.

A definitive investigation of oral language sentence structure and vocabulary involving kindergarten children of
the lower-class was reported by Thomas (52). His subjects were fifty Negro and fifty white children residing in the Detroit area. The subjects' conversations in answer to structured questions were recorded on tape and analyzed by the McCarthy method. Thomas analyzed these in terms of sentence length and structure, grammatical errors, parts of speech, and vocabulary. He also compared the spoken vocabulary of the children in his sample with that of standard primary grade word lists and the controlled vocabulary lists found in current first grade readers. Thomas found that Negroes tend to be deficient in amount, maturity, and accuracy of oral expression and that 20 to 50 per cent of the words used by these children differed from standard first grade word lists.

One of the most pertinent studies involving the investigation of the patterning of psycholinguistic abilities was conducted by Weaver. His purposes were to analyze the profiles of three groups of culturally deprived Negro children and to determine the effects of a preschool training program conducted for them. In this longitudinal study, one group was given two ten-week summer sessions of training, one group was given one ten-week session, and the control group was given no special training. The Illinois Test of Psycholinguistic Abilities was used for pretesting and posttesting, and mental age determined by the administration of the Revised Stanford Binet. The major findings of this study were
(1) the profiles of the two experimental groups were higher than that of the control group for most variables, but the configurations maintained the same basic shape; (2) the subjects were more proficient in visual and motor channels than in auditory and vocal channels; (3) all groups were significantly lower in automatic grammar skills; (4) for all groups language age was significantly lower than mental age.

The basic educational problem of the Latin American child is that of entering a school where virtually all of the instruction is offered in a language of which he has only rudimentary knowledge. The magnitude of the consequences of this situation is reported by Pryor.

... 52 per cent of all Mexican-Americans in Texas over 25 years of age have completed no more than four years of school, and only 11.7 per cent have gone to high school ... . The Mexican-Americans maintain the highest rate of illiteracy, the highest dropout rate, the highest unemployment rate, and the lowest educational attainment rate of any minority group (42, p. 3).

Compensatory action was taken by the Texas legislature in 1963 in the setting up of the Texas Project for the Education of Migrant Children, which operates in forty districts of the state (57). The project emphasizes oral language development and multisensory approaches for instruction and provides pertinent data for school districts setting up Title I programs. In Edinburg, Texas, at the first grade level, reading readiness activities are conducted
in Spanish. In Harlandale one first grade class in each of four elementary schools was selected to participate in an experiment in bilingual teaching. Measures of both academic achievement and personal adjustment justified the continuance and expansion of this program. While reading instruments were used to measure language gains in these projects, none reported the use of a measure of differentiated oral language abilities. While there has been much expository writing related to the problems of the Spanish-speaking child, relatively few comparative experimental studies involving preschool and first grade children have been reported in the literature.

Holland (23) examined the language barrier as an educational problem of Spanish-speaking children through the bilingual measurement of thirty-six Mexican-American children with a special Spanish-English adaptation of the WISC. The discrepancy between Spanish language scores and English language scores was defined as the language barrier. Holland found that all but three had some language barrier. This deficit was moderate in eighteen cases. Over 40 per cent were seriously handicapped in English comprehension, and although the barrier decreased as years in school increased it still presented a problem at the fifth-grade level in this study.

In Lesser's cross-cultural study of the mental abilities of six- and seven-year-olds (31), he investigated both the absolute levels and the patterns of four mental abilities—verbal, reasoning, numerical, and spatial. His subjects were
320 Chinese, Jewish, Negro, and Puerto Rican children divided into sixteen subgroups in a 4 x 2 x 2 analysis-of-covariance design according to ethnic group, social-class, and sex. He found that differences in social class do produce significant differences in the absolute level of each mental ability but do not produce significant variations in the patterns. By contrast, differences in ethnic group membership result in significant differences in both the absolute level and the patterns of these abilities. Another finding germane to this study was that the total language score mean for the Negro children was significantly higher than that of the Spanish-speaking Puerto Ricans.

In Manuel's review of literature (32, pp. 62-64) related to the language development of Spanish-speaking children, he cited three studies particularly pertinent to the linguistic problems of younger children. In Ratliff's study, reported in this review, the conceptual development and mental maturity of a group of Spanish-speaking children were compared with that of a group of Anglo-American subjects. Although the Spanish first-graders were an average of eight months older than their English-speaking counterparts, their level of development as measured by the nonverbal Goodenough test was four months lower than that of the Anglo children.

A second study reported by Manuel (32, pp. 65-66) involved the use of the Inter-American Tests of General Ability,
which are constructed in parallel English and Spanish editions. When groups of first graders in a city in Texas were tested in their native languages, it was found that fewer than 10 per cent of the Spanish-speaking students exceeded the mean of the English-speaking children. When the same tests were repeated in a city in Colorado, however, slightly more than 25 per cent of the Spanish-speaking children exceeded the mean of the English-speaking subjects. The importance of this finding is that degree of language impediment appears to vary with geographic location as well as with ethnic group.

An intensive investigation of the language proficiency of primary grade children conducted by the Arizona State University was also discussed by Manuel (32, pp. 66-67). This study involved the administration of numerous psychological and educational tests and the collection of extensive observational data. This research team reported

By and large, these children are older in a given grade than are children from other groups, and they perform less well on tests of all sorts. The median performances on most tests of mental ability were about one standard deviation below the average of Anglo groups. On achievement tests these children show progressive retardation in reading with advancing grade (32, pp. 66-67).

The inherent danger related to the Spanish-speaking child's lack of verbal facility is that he may come to be judged as a retardate. Jensen (27) reported that his study was prompted by the observation that Mexican-American children in special
education classes appeared to be more alert than did the Anglo-American children in the same groups. He compared Anglo-American and Mexican-American children with matched intelligence quotients on learning tasks consisting of immediate recall, serial learning, and paired-associates learning of familiar and abstract objects. Jensen concluded that Mexican-American children who had scored low on intelligence measures learned more rapidly than did Anglo-American children of the same quotient level.

In summary, the findings related to ethnic differences indicate that both Negro (9, 13, 14, 15) and Latin-American (23, 27, 31, 32, 42) children suffer significant psycholinguistic deficits. For the Negro child, these differences include skills related to verbal (9, 14) and nonverbal (9, 14, 15) intelligence test proficiency, verbal encoding fluency (9, 15, 52, 55), and verbal comprehension or decoding (9, 15, 55). The one definitive profile (55) using Negro subjects yielded the additional finding that such deficits are amenable to training, although in this case there was no alteration of the original configuration of abilities.

The Latin-American child's problem stems from the fact that his bilingual background results in insufficient development of verbal fluency in the English language (23, 32, 42). One investigator (23) defines the problem as a discrepancy between the child's facility in Spanish and in English, while
two (32, 42) found that even when the Spanish-speaking children are tested by a Spanish-speaking clinician in their native tongue, their verbal output is still deficient in comparison with that of Anglo-American children tested on parallel forms. Although Lesser (31) investigated the patterns of mental abilities for Spanish-speaking Puerto Ricans, no detailed analysis of the strengths and weaknesses of the Latin-American child's linguistic processes has yet been reported.

Sex and Language Development

Although the belief that girls significantly exceed boys in verbal facility is widely held, the findings of current research are somewhat equivocal. Edmonds (16) summarized three prevailing points of view: (a) differences result from differential rates of maturation, (b) child-rearing practices encourage accelerated verbal development in females, (c) because of changes in environmental factors, sex differences reported in earlier studies no longer exist.

When the instrument used to measure language skill is reading achievement battery, the evidence usually favors the girls (9, p. 577; 25, p. 174). Gates (18) reported an extensive survey involving 6,468 girls and 6,656 boys in twenty-one groups in grades two through eight. These groups were scattered throughout twelve school systems in ten states. The mean raw scores for the girls were significantly higher than those for
the boys, and the differences tended to increase with grade level. Gates attributed such differences to cultural expectations and reinforcement.

Perhaps the most comprehensive study of sex differences in language facility was the nation-wide survey conducted by Clark (10). His sample of seventy-five boys and seventy-five girls at grades three, five, and eight were drawn from a pool of 69,354 pupils from 341 school systems in forty-eight states. Five areas of mental processes were measured by the California Test of Mental Maturity and basic reading, arithmetic, and language skills were evaluated through the use of the California Achievement Test. He concluded that (a) sex differences in mental abilities do not exist, (b) differences in basic reading skills were not found, and (c) girls exceed boys in mechanics of English and in spelling. Of particular interest is his hypothesis that sex differences noted in the literature may result from the fact that at each grade level girls are frequently younger and brighter as a group than the boys, as a result of promotion policies. The difference noted, therefore, is not actually one of sex but rather the comparison of a younger-brighter group with older-less talented peers.

Edmonds (16) used the SCAT Verbal Abilities Test to measure the verbal fluency of 482 males and 757 females stratified into high and low social class groups. He
concluded that there were no significant sex differences in verbal ability at any level when socio-economic class was held constant. He also found that the differences between the sexes were no greater among lower class students than among more affluent groups.

In several of the previously cited studies relating to social class and ethnic affiliation the sex variable was investigated. In Thomas's research involving fifty Negro and fifty white children equally divided as to sex, he found no significant difference in verbal proficiency related to sex among white children. Among Negroes, however, boys were more accurate and girls made longer sentences. Concurring with this finding of no significant sex differences is the work of Weaver (55), in which nine measures of psycholinguistic abilities were administered to Negro four and five-year-old children. In the Lessar study (31) which involved a comparison of four ethnic groups of six and seven-year-olds, the finding was that boys exceeded girls on picture vocabulary decoding, but that no significant differences relating to sex were found for the whole test battery.

In summary, in most current comparative studies, no significant sex differences in verbal ability were found (10, 16, 31, 52, 55). When the investigation is limited to reading rather than other forms of linguistic expression, the findings are less clear-cut. Gates (18) found girls to be significantly
superior in boys in reading achievement while Clark (10) did not. Differences in patterns of ability by sex reveal that boys may exceed girls in picture vocabulary decoding (31), and that Negro girls tend to make longer sentences than do Negro boys (52).

Synthesis

Theoretical considerations provide some insight into the problems of the culturally deprived child. When the development of mental processes is visualized as the constant evolving of new structures which in turn are used as tools for more effective coping with the environment, the qualitative aspects of the environment become of paramount importance. Hebb's thesis that early learning takes place at a very slow pace serves as an explanation for the fact that the child with an insufficient experiential background may find it difficult or virtually impossible to compensate for this early developmental lag (22). Finally, discrepancy theories stress that too great a difference between the demands of the environment and the capabilities of the individual may result in self-defeating affective responses.

It is Bernstein's (5) contention that complexity or elaboration of linguistic functions is necessary to conceptual development. Possible educational limitations related to such conceptual deficits are the inability to perceive relationships sufficiently for transfer and an overdependence on concrete
demonstrations. All evidence from comparative studies confirms the thesis that lower-class children will be deficient in linguistic skills and that such disabilities will increase with age. Most investigators concur that these children perform better on nonverbal tasks, although there is some evidence that even nonverbal tasks are verbally weighted for these children. Possible etiology of these difficulties stems from lack of initial vocal stimulation, insufficient verbal interaction with adult models, severely limited experiential backgrounds, and negative adult reaction toward the child's verbalizations.

When compared with the Anglo-American child, both the Negro and the Latin-American are deficient in psycholinguistic skills. For the Negro child, these limitations are in both verbal and nonverbal areas and have been found to involve encoding, comprehension, and decoding. The results of a training program indicated that significant progress could be made by these children, but that the basic configuration of their linguistic processes remained unchanged. There is evidence that environmental factors discriminate against the Negro at each class level so that it is difficult to meaningfully compare him with Anglo-Americans. The basic problem of the Latin-American child is that he comes to first grade with such a lack of facility in the English language that his learning is greatly impeded. While the Latin-American child's
Ineptness in English is commonly recognized, there is also some evidence from two studies that even when tested on parallel forms in his mother tongue, he is still not as vocal as his Anglo-American counterpart. One grave danger substantiated by research is that these verbally handicapped children may be misclassified as mentally deficient.

In contrast to earlier studies, most current research indicates that there are no significant differences in verbal ability between boys and girls. Findings from research in reading ability are more equivocal; some studies show girls to be significantly superior and others indicate that no differences exist. Some insight into the problem may be gained from the observation that even when no significant total differences are found, subtest score differences may be observed. There may be certain areas of linguistic functioning in which strengths and weaknesses may be sex-linked, and an analytical study of psycholinguistic abilities might identify areas of language development in which vital differences between the sexes do exist.

After reviewing all the foregoing research closely related to the psycholinguistic proficiencies of Anglo-American, Negro, and Latin-American children, there was a clear indication that further data were needed for the following reasons: (1) there were no studies reported which involved a comparison of the language abilities of Anglo-American, Negro, and Latin-American children simultaneously,
(2) few language studies had been conducted at the preschool level, (3) much of the data related to ethnic comparisons were dated, (4) relative abilities in auditory discrimination among preschoolers had not been investigated, and (5) further research concerning the strengths and weaknesses in pattern of linguistic ability among lower-class children was needed. The study now described was designed to yield pertinent data in these areas.
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57. Yoes, Deck, "Reading Programs for Mexican-American Children of Texas," The Reading Teacher, XX (January, 1967), 313-318.
CHAPTER III

PROCEDURES FOR OBTAINING AND TREATING DATA CONCERNING
THE PSYCHOLINGUISTIC ABILITIES OF THREE
ETHNIC GROUPS

This chapter presents in detail a description of the subjects, the statistical procedures, a theoretical model of communication, the instruments used to determine levels of proficiency, and the procedures involved in obtaining and processing data.

Description of the Subjects

The subjects used in this study were sixty children of the lower class between the ages of five and six years. These children were stratified by both ethnic group and by sex. There were twenty Anglo-American, twenty Negro, and twenty Latin-American subjects with an equal distribution of boys and girls. The data concerning mean age and age range by both sex and ethnic affiliation are presented in Table I.

A United Fund supported day nursery system and a day care center operated by a religious organization provided the population from which the sample was drawn. Six different schools were involved. Inclusion of the denominational school, located in a Latin-American community, was necessitated
TABLE I
DISTRIBUTION OF AGE MEANS AND RANGES BY ETHNIC GROUP AND SEX.

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Range</td>
</tr>
<tr>
<td>Anglo-American</td>
<td>5-8</td>
<td>5-1 to 5-11</td>
</tr>
<tr>
<td>Negro</td>
<td>5-8</td>
<td>5-2 to 6-0</td>
</tr>
<tr>
<td>Latin-American</td>
<td>5-7</td>
<td>5-2 to 6-0</td>
</tr>
</tbody>
</table>

by the significantly smaller enrollment of Latin-American children in the publicly supported nurseries. All the schools were located in lower class neighborhoods; one was adjacent to a public housing project. The fee charged by the nursery system was based on the net combined income from all sources received by the adults in the household. Most of the children were from broken homes, and many were at least partially supported by public funds. The fee charged at the private school was nominal, since basic support for that institution was drawn from the denomination.

Although the nursery system was integrated, two of the schools were predominantly Anglo-American, two Negro, one (private) Latin-American, and one Negro and Latin-American. In order to gain a better city-wide distribution in the sample, ten subjects (five boys and five girls) were drawn
from each of the two predominantly Anglo-American schools and from each of the two predominantly Negro schools. In each school a master list was compiled of all children between five and six years of age. For each child, the occupational status of the head of the household was computed, and any child whose parent or guardian was not rated 5, 6, or 7 on the Warner scale or whose status was questionable was not included. Separate lists for boys and girls were made, and using a table of random numbers, the samples were drawn. Since the Latin-American population was scattered throughout the system, one master list was compiled which included children from both the public system and the private school, and from this list ten boys and ten girls were selected.

Statistical Procedures

In order to compare the linguistic development of the sample involved in this research with that of the normative group on which the ITPA was standardized (Hypotheses 1, 2, and 3), a comparison of the mean total ITPA score for each ethnic group with that of the standardization sample was made through individual Fisher's $t$ tests.

A two-dimensional analysis of variance was selected as a means of determining relative levels of psycholinguistic proficiency among ethnic groups and between sexes. Through the use of this technique it was also possible to check for
interaction between ethnic affiliation and sex. In this 2 x 3 factorial design factor A represented the three ethnic groups, and factor B represented the sex of the subjects. A schematic presentation of the design is represented in Figure 1. The numbers in the cells indicate the number of subjects in each combination.

<table>
<thead>
<tr>
<th>Ethnic Groups</th>
<th>Anglo-American</th>
<th>Negro</th>
<th>Latin-American</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Female</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Fig. 1—Experimental design model

The mean total ITPA scores for each group were used to determine comparative total language facility (Hypotheses 4, 5, and 8). To collate auditory discrimination, the Wepman Auditory Discrimination Test error score mean for each group was used (Hypotheses 6, 7, and 9).

In order to gain more detailed information concerning likenesses and differences in configurations of psycholinguistic abilities related to ethnic group and sex, the Wilks' lambda multivariant analysis of variance was used to compare the profiles. Two profiles, ethnic group membership and sex, were constructed. The P = .05 level of significance
was required for the rejection of the null hypothesis for all computations.

Communication Model

The communication model on which the Illinois Test of Psycholinguistic Abilities is based was first postulated by Osgood, then revised and adapted by McCarthy (1, pp. 1-13). This model is presented in Figure 2. In order to comprehensively examine the model, certain technical terms require amplification. "Level" refers to complexity of function. Certain psycholinguistic processes seem to require higher levels of organization than do others. In the ITPA two levels are distinguished, the representational and the automatic-sequential. To function at the representational level, the subject must perceive the meaning of a spoken word or visual image and through the use of his repertoire of past experiences relate such symbols with other stimuli in the given situation. Auditory and visual memory are mediated at the automatic-sequential level, and degree of development is demonstrated through the subject's ability to replicate a given auditory or visual sequence.

The processes delineated in the model are (1) decoding—the ability to derive meaning from visual and auditory stimuli, (2) association—the ability to integrate linguistic symbols internally, and (3) encoding—the ability to express oneself in words or gestures.
Representational Level

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

Automatic-Sequential Level

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

Visual and Auditory Stimuli

Vocal and Motor Responses

Fig. 2—Model of psycholinguistic abilities
"Channels of communication" refers to various combinations of stimulus input and response output. Since the major modes of input are auditory, visual, and tactual and the major modes of output are vocal and motor, possible channel combinations are auditory-vocal, auditory-motor, visual vocal, visual-motor, tactual-vocal, and tactual-motor. In the ITPA battery, only tests of auditory-vocal and visual-motor channels were included. According to the authors of the ITPA, a psycholinguistic ability is "... a given process at a given level via a given channel" (1, p. 2).

Description of the Instruments

The Illinois Test of Psycholinguistic Abilities was designed to provide information concerning psycholinguistic abilities and disabilities in children between the ages of two and one-half and nine. It is individually administered and consists of nine subtests (1, pp. 6-13).

Test 1, auditory decoding.--Auditory decoding involves the ability to comprehend the spoken word and provides information concerning the subject's vocabulary and store of information. Since the subject merely answers "yes" or "no" to such a question as "Do cars sleep?" encoding is minimized.

Test 2, visual decoding.--Visual decoding is the ability to comprehend word and picture symbols. The subject selects related pictures, such as rectangular table and a round coffee table.
Test 3, auditory-vocal association.—Auditory-vocal association involves the ability to relate words meaningfully. Facility in this area is tapped through the use of verbal analogies.

Test 4, visual-motor association.—Visual-motor association is the ability to comprehend relationships among visual stimuli. In this subtest the child selects one of four pictures that "goes with" the stimulus picture.

Test 5, vocal encoding.—Vocal encoding is the ability to express oneself in words. The child is asked to "tell all about" a stimulus object. This test reveals verbal fluency and indicates the number of concepts the child can utilize.

Test 6, motor encoding.—Motor encoding is the ability to express ideas through movement and gesture. The child is asked to make gestures related to use of an object represented in a stimulus picture (e.g., a telephone).

Test 7, auditory-vocal automatic.—This ability involves the use of auditory symbols automatically as a result of imitative memory. The test measures the child's ability to use correct grammar. The child is shown a stimulus picture, and the investigator says, "Here is a bed; here are two ____."

Test 8, auditory-vocal sequencing.—Auditory-vocal sequencing involves auditory memory and is measured through repetition of a series of digits.
Test 9, visual-motor sequencing.—Visual-motor sequencing involves visual memory. The child is asked to reproduce a sequence by correct ordering of chips on which pictures or geometric shapes are printed.

The Wepman Auditory Discrimination Test was used to determine the child's ability to make minute differentiations between similar sounds. The test is comprised of forty pairs of words, thirty differing either in initial or final sound, and ten identical. The words were chosen from the Lorge-Thornéike Word Book. Within phonemic categories, every possible match of phonemes used in English is made.

The "Revised Scale for Rating Occupation" from Warner's Index of Status Characteristics was used to determine the social class of the children in this study. According to Warner (4, p. 168), occupation of the head of the household is the best single predictor if the entire Index of Social Characteristics is not computed. He reports that the correlation of occupation to the entire index is .91. For the purposes of this study, a rating of 5, 6, or 7 on the occupation rating scale was designated as constituting lower class status.

Collecting and Processing Data

The children in each kindergarten were tested individually in a small room containing a table and two chairs. The child
was seated facing the investigator and told that he was going to play some games. Each ITPA subtest and the Wepman Auditory Discrimination Test was preceded by a training period to determine the subject's understanding of the task. Approximately one hour and fifteen minutes was spent testing each child. There were three testing periods, each of about twenty-five minutes duration. The ITPA subtests were presented in the sequence specified in the Examiner’s Manual (2, p. 24)—three subtests first period, four subtests second period, and two subtests and the Wepman third period. Each test was administered according to manual instructions. A magnetic tape recorder was used to present the Wepman words in order to insure uniformity of presentation.

Each ITPA subtest was scored according to the manual of instructions. A total ITPA raw score for each child was computed. Total ITPA scores were used for comparing each group with the normative sample and for determining ethnic group differences by means of the analysis of variance.

Since language age was the criterion measure for the Wilks' lambda profile analysis, each subtest raw score was converted to a language age score through the use of Table A (2, pp. 109-110). Since this table lists language age in years and months, it was then necessary to transform these into total months (e.g., 3-11 to 47 months).
The Wepman Auditory Discrimination Test was also scored according to the manual of instructions, and the total error score was used for group comparisons through the analysis of variance technique. Tables revealing total raw score, individual subtest scores (in months), and Wepman error score for each subject are included in Appendices A and B.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

ANALYSIS OF RESULTS PERTAINING TO THE
PSYCHOLINGUISTIC PROFICIENCIES OF
THREE ETHNIC GROUPS

The basic purposes of this study were (1) to determine if the level of language facility for lower-class children differed significantly from that of a normative sample, (2) to determine if variations in proficiency level of designated psycholinguistic abilities exist among Anglo-American, Negro, and Latin-American children, and (3) to determine if there are sex differences related to particular psycholinguistic functions. This chapter contains the presentation and analysis of data germane to these purposes.

Comparisons of the total raw score ITPA means between the standardization sample (SS) and each ethnic group were made through the use of individual Fisher's t tests. Table II reveals the number of subjects in each sample, the means, the standard deviations, and the t ratios. It may be observed that in language facility as measured by the ITPA the standardization sample exceeded each of the lower-class groups examined in this research (SS > A-A, t = 2.36; SS > N, t = 5.82; SS > L-A, t = 10.73). The difference between the standardization sample and the Anglo-American group was statistically
TABLE II
SUMMARY OF STATISTICAL DATA
FOR THE FOUR GROUPS

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardization sample</td>
<td>25</td>
<td>131.58</td>
<td>20.320</td>
<td></td>
</tr>
<tr>
<td>Anglo-American sample</td>
<td>20</td>
<td>117.80</td>
<td>17.223</td>
<td>2.36*</td>
</tr>
<tr>
<td>Negro sample</td>
<td>20</td>
<td>95.35</td>
<td>20.179</td>
<td>5.82**</td>
</tr>
<tr>
<td>Latin-American sample</td>
<td>20</td>
<td>68.80</td>
<td>17.368</td>
<td>10.73**</td>
</tr>
</tbody>
</table>

*Statistically significant at $P > .05$.

**Statistically significant at $P > .001$.

significant at the .05 level of significance; the difference between the standardization sample and both the Negro and the Latin-American groups was significant at greater than the .001 level of significance. A difference as great as $P > .001$ is unlikely to occur by chance.

Hypothesis 1 stated that among lower-class culturally deprived Anglo-American preschool children, the total language facility score mean would be significantly lower than the total language facility score mean for the standardization group. Hypotheses 2 and 3 stated the same prediction concerning Negro and Latin-American children. On the basis of the level of significance related to the $t$ ratios listed in Table II, these three hypotheses were confirmed—Hypothesis 1
at the .05 level of significance, Hypotheses 2 and 3 at the .001 level of significance.

In order to render the data even more comprehensive in terms of functional linguistic ability, the ITPA raw score means for each group were converted into language age means, and the age differences in months are reported in Table III.

**TABLE III**

LANGUAGE AGE MEANS AND DIFFERENCES FOR THE FOUR GROUPS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Language Age Means</th>
<th>Language Age Differences in Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardization sample</td>
<td>5-6</td>
<td>SS &gt; A-A (4 months)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SS &gt; N (12 months)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SS &gt; L-A (26 months)</td>
</tr>
<tr>
<td>Anglo-American sample</td>
<td>5-2</td>
<td>A-A &gt; N (8 months)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A-A &gt; L-A (18 months)</td>
</tr>
<tr>
<td>Negro sample</td>
<td>4-6</td>
<td>N &gt; L-A (10 months)</td>
</tr>
<tr>
<td>Latin-American sample</td>
<td>3-8</td>
<td></td>
</tr>
</tbody>
</table>

It is of interest to note that while the Anglo-American group exhibits some deficit in language proficiency, the Negro children are functioning at about one year below the norms for this measure, and the Latin-American child's linguistic development is arrested by slightly more than two years. Despite the fact that the Negro is English speaking, his medial position is about half way between that of the Anglo-American and the Latin-American child.
While preceding discussion dealt with a comparison of each of three groups of lower-class children with a normative sample in terms of a global language score, it was also a purpose of the present investigation to determine the configuration or pattern of the individual linguistic skills that constitute verbal proficiency. For each of the nine psycholinguistic variables, the means of the three ethnic groups were combined, and a profile was drawn to depict graphically the patterning of abilities among this sample of lower-class preschool children. This profile is presented in Figure 3. Examination of this profile reveals that these children tend to be high in visual-motor proficiencies and deficient in auditory and vocal functions. The two areas of greatest weakness are vocal encoding (expressing ideas verbally) and in auditory-vocal automatic (using the grammatical structure of language automatically). The high point of their skill appears to lie in auditory-vocal sequencing (the ability to recall a series of digits presented auditorily).

After determining the mean differences between the normative sample and groups of Anglo-American, Negro, and Latin-American children, the comparison of these ethnic groups with each other was accomplished by a 2 x 3 analysis of variance. Through the use of this two-dimensional technique, it was possible to analyze ethnic and sex differences simultaneously.
Fig. 3--Profile of differentiated linguistic abilities of Anglo-American, Negro, and Latin-American groups combined, stated in language age (total months).
and also to determine whether there was a significant interaction between ethnic affiliation and the sex of the subject. The criterion measure chosen for this comparison was the total ITPA raw score.

Table IV depicts the means and standard deviations for each of the six cells of this analysis of variance. In addition to the individual means and standardizations, Table IV also reveals in the far right hand column and in

**TABLE IV**

**ITPA RAW SCORE MEANS AND STANDARD DEVIATIONS FOR SIX GROUPS**

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Male</th>
<th>Female</th>
<th>Combined Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglo-American</td>
<td>119.50</td>
<td>116.10</td>
<td>117.80</td>
</tr>
<tr>
<td>Negro</td>
<td>97.20</td>
<td>93.50</td>
<td>95.35</td>
</tr>
<tr>
<td>Latin-American</td>
<td>71.60</td>
<td>66.00</td>
<td>68.80</td>
</tr>
<tr>
<td><strong>Combined means</strong></td>
<td>96.10</td>
<td>91.87</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** N = 10 for each condition; N = 60 for all combined conditions.

the bottom row, the combined means for each of the main treatments exclusive of the other independent variable.

It may be observed from inspection of Table IV that the mean raw scores for male subjects exceed those of female
subjects in each group and that the descending rank order for language proficiency is Anglo-American, Negro, and Latin-American. A two factor (ethnic group x sex) analysis of variance was used to determine whether these observed differences reached the designated .05 level of significance. A summary of the results of the analysis of variance is presented in Table V.

**TABLE V**

**SUMMARY OF ANALYSIS OF VARIANCE OF ITPA SCORES FOR THREE GROUPS**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Sums of Squares</th>
<th>Mean Square</th>
<th>F Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>268.82</td>
<td>268.82</td>
<td>.732</td>
</tr>
<tr>
<td>Ethnic group (Anglo-American, Negro, Latin-American)</td>
<td>2</td>
<td>24066.04</td>
<td>12033.02</td>
<td>3.277*</td>
</tr>
<tr>
<td>Sex x ethnic group</td>
<td>2</td>
<td>14.23</td>
<td>7.12</td>
<td>.019</td>
</tr>
<tr>
<td>Within cells</td>
<td>54</td>
<td>19827.90</td>
<td>367.18</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>59</td>
<td>44176.99</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

*Statistically significant at P > .001.

Examination of the F ratio column discloses the fact that differences in performance related to the sex variable were not significant (F = .732; df = 1, 54). Differences of the magnitude observed in this research are likely to occur on the basis of chance. Hypothesis 8 states that among lower-class culturally deprived preschoolers, there will be no significant difference in total language facility scores.
between male and female subjects. According to the data presented in Table V, this hypothesis is verified. Also failing to reach the .05 level of significance was the interaction between sex and ethnic group (F = .019; df = 2, 54). Apparently ethnic group does not produce differential effects in language development related to the sex of the individual.

Perusal of data contained in Table V reveals that differences in language proficiency related to ethnic affiliation (Anglo-American, Negro, and Latin-American) were statistically significant at P > .001 level of significance (F = 32.771; df = 2, 54). In order to determine which ethnic groups differed significantly from each other and to what magnitude, individual t-tests between all possible pairs of means for the three ethnic groups were made. It was found that Anglo-American subjects exceeded Negro subjects at a difference significantly greater than the .001 level of confidence (t = 3.779; df = 38). Between Anglo-American and Latin-American subjects, a difference of 49.00 was observed. This difference was of sufficient size to yield a t ratio significant at greater than the .001 level of significance (t = 8.249; df = 38). Finally, it may be noted that a difference of 26.55 was found between Negro and Latin-American subjects. The t ratio for this difference (t = 4.469; df = 38) was also significant at P > .001. Therefore, the data reveal
that Anglo-American subjects exceed both Negro and Latin-American subjects in language proficiency, and that Negro subjects exceed the performance level of the Latin-Americans. Hypotheses 4 and 5 state that among lower-class culturally deprived preschoolers, Anglo-American children will demonstrate a significantly higher total language facility score than will Negro and Latin-American children. Both Hypotheses 4 and 5 were confirmed at significantly greater than the .001 level of confidence.

In order to gain further insight into ethnic group differences in psycholinguistic abilities, the means of the ITPA subtests were analyzed through the use of the Wilks' lambda multivariate analysis of variance, a technique developed for comparison of group profiles. Two Wilks' lambda analyses were utilized, one with respect to ethnic group membership and the other in relation to sex.

Table VI depicts the means and standard deviations for three ethnic groups (Anglo-American, Negro, and Latin-American) in each of nine psycholinguistic areas. Also included in Table VI are the Wilks' lambda value, the corresponding F ratio, the degrees of freedom, and the level at which the total variation among these means was significant.

Since the value yielded through the Wilks' lambda treatment of the data indicated a variation among the means of the three ethnic groups significant at greater than the
## TABLE VI
MEANS AND STANDARD DEVIATIONS FOR LANGUAGE FUNCTIONS OF THREE ETHNIC GROUPS

<table>
<thead>
<tr>
<th>Psycholinguistic Function</th>
<th>Ethnic Groups</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Anglo-American</td>
<td>Negro</td>
<td>Latin-American</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Auditory decoding</td>
<td>61.35</td>
<td>7.34</td>
<td>52.75</td>
<td>11.02</td>
</tr>
<tr>
<td>Visual decoding</td>
<td>65.85</td>
<td>13.95</td>
<td>59.55</td>
<td>16.79</td>
</tr>
<tr>
<td>Auditory-vocal association</td>
<td>59.65</td>
<td>11.16</td>
<td>49.90</td>
<td>13.67</td>
</tr>
<tr>
<td>Visual-motor association</td>
<td>78.40</td>
<td>12.80</td>
<td>60.50</td>
<td>12.90</td>
</tr>
<tr>
<td>Vocal encoding</td>
<td>57.70</td>
<td>10.93</td>
<td>44.80</td>
<td>9.56</td>
</tr>
<tr>
<td>Motor encoding</td>
<td>56.05</td>
<td>12.11</td>
<td>90.90</td>
<td>12.53</td>
</tr>
<tr>
<td>Auditory-vocal automatic</td>
<td>59.75</td>
<td>24.12</td>
<td>37.10</td>
<td>15.12</td>
</tr>
<tr>
<td>Auditory-vocal sequencing</td>
<td>66.00</td>
<td>16.81</td>
<td>73.15</td>
<td>20.13</td>
</tr>
<tr>
<td>Visual-motor sequencing</td>
<td>62.05</td>
<td>11.02</td>
<td>49.45</td>
<td>7.53</td>
</tr>
</tbody>
</table>

Wilks' lambda = .19161; F = 6.99; df = 18, 98; P > .001

Note: N = 20 for each condition; N = 60 for all combined conditions.

At the .001 level of confidence, simultaneous confidence intervals were set up for each of the nine variables to determine between which pairs of means the differences existed and at what level such individual differences were significant.

Table VII depicts the differences between all possible pairs of means for the three ethnic groups. Also included are the B values (related to the combined within variations
## TABLE VII
MEAN DIFFERENCES, B VALUES, AND CONFIDENCE INTERVALS RELATED TO LANGUAGE VARIABLES FOR THREE ETHNIC GROUPS

<table>
<thead>
<tr>
<th>Psycholinguistic Variables</th>
<th>Mean Difference and Confidence Interval for Ethnic Groups</th>
<th>B Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A-A &amp; N</td>
<td>A-A &amp; L-A</td>
</tr>
<tr>
<td>Auditory decoding</td>
<td>8.60</td>
<td>19.40</td>
</tr>
<tr>
<td>(-5.18)</td>
<td>(5.62)*</td>
<td>(2.98)</td>
</tr>
<tr>
<td>Visual decoding</td>
<td>6.30</td>
<td>10.55</td>
</tr>
<tr>
<td>(-19.44)</td>
<td>(-15.19)</td>
<td>(-21.49)</td>
</tr>
<tr>
<td>Auditory-vocal association</td>
<td>9.75</td>
<td>24.60</td>
</tr>
<tr>
<td>(-10.31)</td>
<td>(4.54)*</td>
<td>(-5.21)</td>
</tr>
<tr>
<td>Visual-motor association</td>
<td>17.90</td>
<td>40.05</td>
</tr>
<tr>
<td>(-5.17)</td>
<td>(16.98)*</td>
<td>(-.92)</td>
</tr>
<tr>
<td>Vocal encoding</td>
<td>12.90</td>
<td>36.05</td>
</tr>
<tr>
<td>(-6.83)</td>
<td>(16.32)*</td>
<td>(3.42)*</td>
</tr>
<tr>
<td>Motor encoding</td>
<td>5.15</td>
<td>9.50</td>
</tr>
<tr>
<td>(-12.86)</td>
<td>(-8.51)</td>
<td>(-13.66)</td>
</tr>
<tr>
<td>Auditory-vocal automatic</td>
<td>22.65</td>
<td>31.50</td>
</tr>
<tr>
<td>(-6.37)</td>
<td>(2.48)*</td>
<td>(-10.17)</td>
</tr>
<tr>
<td>Auditory-vocal sequencing</td>
<td>7.15</td>
<td>9.35</td>
</tr>
<tr>
<td>(-18.02)</td>
<td>(-15.82)</td>
<td>(-8.67)</td>
</tr>
<tr>
<td>Visual-motor sequencing</td>
<td>12.60</td>
<td>9.80</td>
</tr>
<tr>
<td>(-.88)</td>
<td>(-3.68)</td>
<td>(-10.68)</td>
</tr>
</tbody>
</table>

*Simultaneous confidence interval statistically significant at $P > .05$ level of significance.

Note: $N = 20$ for each condition; $N = 60$ for all combined conditions.
of the three groups, the size of the groups, and the specified level of significance), and the simultaneous confidence interval ratios.

Examination of Table VII indicates that six of these intervals were significant at greater than the .05 level of confidence. These were in the areas of auditory decoding, auditory-vocal association, visual-motor association, vocal encoding, motor encoding, and auditory-vocal automatic. All of the significant differences occurred between Anglo-American and Latin-American groups. Although large mean differences between the Anglo-American and Negro groups existed in several areas, none reached the desired level of significance. This lack of significance appears to be related to the size of the within group variations for each of these language factors.

Figure 4, page 69, was included to provide a graphic representation of ethnic comparisons. Several interesting observations may be made. First, the Anglo-American group did not exceed significantly the Negro group in any particular area. The differences were rather a function of a general depression of the Negro's scores as compared to those of the Anglo-American child. By contrast, the Anglo-American child does significantly exceed the Latin-American child in six out of nine psycholinguistic functions. Several basic configuration variations among the three groups may be noted: (a) for the Anglo-American child vocal encoding ability
Fig. 4—Individual profiles of differentiated linguistic abilities of Anglo-American, Negro, and Latin-American groups, stated in language age (total months).
exceeds motor encoding skill while the reverse is true for the Negro and the Latin-American child, (b) the Anglo-American child does not exhibit a low point in the automatic grammar area that is evident for each of the other ethnic groups, and (c) only in auditory-vocal sequencing (the recalling of a series of digits auditorily) does the Negro child exceed the level of the Anglo-American child. In general, each of the three ethnic groups exhibits a greater proficiency in the visual-motor areas and reveals comparative deficits in auditory-vocal skills (except in automatic repetitions).

The second Wilks' lambda analysis was related to sex differences. Table VIII depicts the means, standard deviations, and mean differences for the two groups. Since the comparison involved only two groups, the simultaneous confidence interval method for determining the significance of differences between means was not appropriate, so t tests were made. While visual decoding approached the desired level of significance ($t = 1.977; df = 58$), only in the motor encoding was a significant difference noted ($t = 4.138; df = 58$). This variable was significant at the .001 level of confidence. Therefore, it may be observed that while no sex differences were confirmed in relation to total language scores, a significant variation did exist in the area of motor encoding.
### TABLE VIII
MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCES FOR LANGUAGE FUNCTIONS FOR MALE AND FEMALE SUBJECTS

<table>
<thead>
<tr>
<th>Psycholinguistic Function</th>
<th>Sex</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>SD</td>
<td>Female</td>
<td>SD</td>
<td>Mean Difference</td>
</tr>
<tr>
<td>Auditory decoding</td>
<td>51.20</td>
<td>11.79</td>
<td>52.83</td>
<td>12.00</td>
<td>1.63</td>
</tr>
<tr>
<td>Visual decoding</td>
<td>64.50</td>
<td>16.20</td>
<td>55.97</td>
<td>17.05</td>
<td>8.60</td>
</tr>
<tr>
<td>Auditory-vocal association</td>
<td>49.23</td>
<td>13.32</td>
<td>47.17</td>
<td>16.27</td>
<td>2.07</td>
</tr>
<tr>
<td>Visual-motor association</td>
<td>59.70</td>
<td>22.00</td>
<td>58.47</td>
<td>22.25</td>
<td>1.24</td>
</tr>
<tr>
<td>Vocal encoding</td>
<td>40.83</td>
<td>22.35</td>
<td>41.93</td>
<td>16.40</td>
<td>1.10</td>
</tr>
<tr>
<td>Motor encoding</td>
<td>57.00</td>
<td>10.70</td>
<td>45.33</td>
<td>10.86</td>
<td>11.67*</td>
</tr>
<tr>
<td>Auditory-vocal automatic</td>
<td>41.13</td>
<td>20.71</td>
<td>42.27</td>
<td>24.99</td>
<td>1.13</td>
</tr>
<tr>
<td>Auditory-vocal sequencing</td>
<td>64.97</td>
<td>16.99</td>
<td>65.57</td>
<td>18.17</td>
<td>.60</td>
</tr>
<tr>
<td>Visual-motor sequencing</td>
<td>54.43</td>
<td>9.68</td>
<td>54.73</td>
<td>10.78</td>
<td>.30</td>
</tr>
</tbody>
</table>

Wilks' lambda = .57193; F = 4.16; df = 9, 50; P > .001

*Statistically significant at P > .05.

Note: N = 30 for each condition; N = 60 for all combined conditions.

A graphic representation of sex differences in language proficiency is presented in Figure 5, page 72. The most striking aspect of this profile comparison is that the
Fig. 5—Sex differences in language profiles, stated in language age (total months).
configurations representing differentiated language abilities are so much alike for boys and girls. The only marked deviations are in visual decoding and motor encoding. With these exceptions, boys and girls achieved at approximately the same level in each skill and evidenced the same strengths and weaknesses.

A final facet of psycholinguistic ability tapped in this investigation was that of auditory discrimination. The error score of the Wepman Auditory Discrimination Test was used as the criterion measure. The means and standard deviations for each of the six treatment combinations is presented in Table IX. In the far right hand column and

**TABLE IX**

**WEPMAN MEANS AND STANDARD DEVIATIONS FOR THREE ETHNIC GROUPS**

<table>
<thead>
<tr>
<th>Ethnic Groups</th>
<th>Male</th>
<th>Female</th>
<th>Combined Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglo-American</td>
<td>10.5</td>
<td>8.5</td>
<td>9.5</td>
</tr>
<tr>
<td>Negroid</td>
<td>12.6</td>
<td>16.3</td>
<td>14.5</td>
</tr>
<tr>
<td>Latin-American</td>
<td>17.4</td>
<td>14.9</td>
<td>16.2</td>
</tr>
<tr>
<td>Combined Means</td>
<td>13.5</td>
<td>13.2</td>
<td></td>
</tr>
</tbody>
</table>

Note: N = 10 for each condition; N = 60 for all combined conditions.
in the bottom row, Table IX also includes the combined means for each of the main effects with the other independent variable collapsed.

A two-dimensional (sex x ethnic group) analysis of variance was performed on the basic statistics contained in Table IX. A summary of the results of this analysis of variance is presented in Table X.

TABLE X
SUMMARY OF ANALYSIS OF VARIANCE OF WERMEAN SCORES FOR THREE GROUPS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Sums of Squares</th>
<th>mean Square</th>
<th>F Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>1.067</td>
<td>1.067</td>
<td>.016</td>
</tr>
<tr>
<td>Ethnic group (Anglo-American, Negro, Latin-American)</td>
<td>2</td>
<td>477.434</td>
<td>238.717</td>
<td>3.636*</td>
</tr>
<tr>
<td>Sex x ethnic group</td>
<td>2</td>
<td>118.633</td>
<td>59.316</td>
<td>.903</td>
</tr>
<tr>
<td>Within cells</td>
<td>54</td>
<td>3544.800</td>
<td>65.644</td>
<td>...</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>4141.934</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

*Statistically significant at F > .05.

Inspection of the F ratio column reveals that the mean differences between the error scores for boys and girls fail to reach the desired level of significance (F = .016; df = 54). Hypothesis 9 stated that among lower-class culturally deprived preschoolers there would be no significant difference in auditory discrimination between male and female subjects. On the basis of the statistical data presented in Table X, this hypothesis is sustained.
While cursory examination of the means in Table IX revealed that in auditory discrimination there was an interaction between ethnic and sex, the results of the analysis of variance disclosed that this interaction was not significant \((F = .903; df = 54)\). The interaction here observed could have come about by chance.

According to the data presented in Table X, the differences in auditory discrimination among the three ethnic groups were statistically significant at greater than the .05 level of significance. Individual \(t\) tests were made between the various ethnic group main effect means. The mean differences between Anglo-American and Negro children \((t = .663; df = 38)\) failed to reach the desired level of significance. The mean differences between Latin-American and Anglo-American children, however, were significant at greater than the .05 level of confidence \((t = 2.595; df = 38)\).

Hypothesis 6 stated that among lower-class culturally deprived preschoolers, Anglo-American children would exceed Negro children in auditory discrimination. Since the mean difference was not great enough to be of significance at the specified .05 level of confidence \((t = 1.932; df = 38)\), Hypothesis 6 was rejected.

It was predicted in Hypothesis 7 that Anglo-American children would also statistically surpass Latin-American children in auditory discrimination. Group mean variation
between these two samples was of sufficient magnitude to yield a difference significant at the .05 level of significance ($t = 2.592; df = 38$); therefore, Hypothesis 7 was confirmed.

In summary, it was found that the mean total language score for Anglo-American, Negro, and Latin-American lower-class preschool children was significantly lower than that of the normative sample. It was further determined that the descending rank order for language facility was Anglo-American, Negro, and Latin-American. In auditory discrimination it was discovered that Anglo-American children do not significantly exceed Negro youngsters but do exceed significantly the Latin-Americans. Finally, it was found that there are no significant differences between the sexes in either total language proficiency or auditory discrimination.
CHAPTER BIBLIOGRAPHY


CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS,
AND RECOMMENDATIONS

The present research was an investigation of the psycholinguistic abilities of Anglo-American, Negro, and Latin-American children between five and six years of age. This chapter contains a discussion of the findings of this study with relation to previous research and the implications of these findings for educational practice. Included in this chapter are the following sections: (1) summary of method and procedure, (2) discussion of findings, (3) conclusions, and (4) recommendations for educational practice and future research.

Summary of Method and Procedure

There were sixty subjects used in this study—twenty Anglo-American, twenty Negro, and twenty Latin-American, equally divided with respect to sex. These children were drawn from schools in a publicly supported day nursery system and from a day care center supported by a religious denomination. All were classified as lower-class as determined by a rating of 5, 6, or 7 on Warner's "Revised Scale for Rating Occupation." A total of approximately one hour and
fifteen minutes was spent testing each child. There were three testing periods, and each of these lasted about twenty-five minutes. The child was asked if he would like to play some games, and a training period preceded each task to insure the subject's understanding of the activity. One of the instruments used to ascertain level of psycholinguistic function was the ITPA which evaluated proficiency in auditory decoding, visual decoding, auditory-vocal association, visual-motor association, vocal encoding, motor encoding, auditory-vocal automatic, auditory-vocal sequencing, and visual-motor sequencing. To determine degree of auditory discrimination, the Wepman Auditory Discrimination Test was administered and the results were evaluated.

Discussion of Findings

Psycholinguistic Development of Lower-Class Children

The theoretical background presented in Chapter II stressed the relationship between richness and diversity of environmental encounters and cognitive growth. It may be postulated that without the benefit of such experiential variety, the child will show marked deficits in linguistic comprehension and expression. Raph's survey documented the existence of environmental conditions that could serve as antecedents to language impediment. In Hypotheses 1, 2 and 3, it was stated that among lower-class culturally deprived
Anglo-American, Negro, and Latin-American preschool children, the total language facility score mean would be significantly lower than the total language facility score mean for the respective normative group. All three of these hypotheses were confirmed at or beyond the desired level of significance.

Several interesting observations may be made from the ITPA profile, Figure 3, p. 61. First it may be noted that these lower-class children showed particular weakness in auditory-vocal functions at the representational or meaningful level (Test 1, auditory decoding; Test 3, auditory vocal association; Test 5, vocal encoding). According to the theoretical formulations of both Piaget (7) and Bruner (2), the meaningful use of symbolic language arises at a later stage or time than do the more motor and concrete functions. Katz and Fodor (9) describe the acquisition of the "semantic function," that is, the learning of meanings, relationships and variety of context, as a slow basic type of cumulative process.

Empirical research also substantiates the finding that these children show greater proficiency in the visual-motor channel than in the auditory-vocal channel. Miller and Swanson (12) concluded after presenting a variety of tasks to working-class and middle-class boys, that the lower-class subject tended to be more motoric and less conceptually oriented than his middle-class counterpart. Also concurring
was Weaver (16) who found that with three groups of five-year-old Negro boys and girls to whom he had administered the ITPA, the mean for all the auditory and vocal subtests was significantly lower than the mean for all the visual and motor subtests.

Another observation that may be noted from Figure 3 is that these children are particularly low in auditory-vocal automatic skills (Test 7). There are two possible explanations for this fact. Lower-class children have been found to have fewer opportunities to converse and interact with adults than do middle-class children (8, 15). It is also probable that the adult models available to these children speak in what Bernstein (1) refers to as "restricted" language.

Finally, it should be noted that the profile indicates that these children appear to excel in auditory-vocal sequencing (Test 8), a test that involves repeating after the investigator. This facility might serve as an excellent avenue of learning, particularly in teaching the Latin-American child to speak English.

In summary, the findings related to the psycholinguistic development of lower-class children are

1. All three ethnic groups--Anglo-American, Negro, and Latin-American--were found to be deficient in linguistic
ability when the total language score mean for each of these groups was compared with that of the normative sample.

2. Examination of the profile for these children revealed that they tended to be lower in auditory and vocal functions than in visual-motor processes.

3. It was further determined that lower-class children were quite deficient in automatic grammar, and that their greatest asset appeared to be their ability to repeat after a model.

**Relationship of Ethnic Affiliation and Language Proficiency**

The review of research in Chapter II disclosed the fact that much of the comparative data related to ethnic groups was dated, that few studies had been conducted at the preschool level, and that there were no investigations involving Anglo-American, Negro, and Latin-American children simultaneously. Therefore, the need for further research was indicated.

In Hypotheses 4 and 5 it was stated that among culturally deprived lower-class subjects, Anglo-American children would demonstrate a significantly higher total language facility score than would either Negro or Latin-American children. Both these hypotheses were sustained. These findings concurred with those of previous studies (3, 5, 11).
While the difference among the global scores for the three groups was significant, it was interesting to note that no significant differences between subtest scores of Negro and Anglo-American children were found (see Figure 4). The language facility of the Negro children appears to be generally depressed rather than showing marked deficits in particular areas. The fact that the Negro showed greatest limitations in vocal encoding and in auditory-vocal automatic processes is in agreement with Thomas's findings that these children were deficient in amount and grammatical accuracy of oral expression (14).

The Latin-American children were found to perform at a significantly lower level than the Anglo-American subjects in auditory decoding, auditory-vocal association, vocal encoding, motor encoding, auditory-vocal automatic, and visual-motor association. Such vocal deficits were expected since these children come from Spanish-speaking homes. This finding of impediment in verbal processes concurs with the research by Lesser (10) and with the studies cited by Manuel (11). Of particular interest is the fact that the visual-motor association test, a measurement that requires that the child select from four alternatives the picture that "goes with" or is related to the stimulus picture, also reached the desired level of significance. Since this test is at the representational level and involves the making of categoric associations,
a considerable amount of abstract thought is required. Bruner has hypothesized that conceptual acuity occurs as language is internalized, and has demonstrated with an experiment involving the use of a matrix and glasses that the level of a child's ability to explain the physical differences among sizes of glasses was significantly related to a child's ability to perform the transposition involved in his study. In the present study there may be a relationship between lack of verbal facility and inability to perform on a relational task. More research would be needed to clearly indicate such a relationship.

Another psycholinguistic function measured in the present study was that of auditory discrimination. A search of current literature failed to yield any studies related to this ability in which the subjects were five-year-olds. Hypothesis 6 stated that among lower-class culturally deprived preschoolers, Anglo-American children would exceed Negro children in auditory discrimination. Although the Wepman error score mean for the Negro group exceeded that of the Anglo-American, the difference was not significant. Therefore, Hypothesis 6 was rejected.

Hypothesis 7 predicted that Anglo-American children would also exceed Latin-Americans in auditory discrimination. This hypothesis was confirmed. For five-year-old children, according to the Wepman manual, an error score of six or
below indicates adequate auditory discrimination, a score of seven through fifteen reveals inadequacy in this ability and an error score in excess of fifteen indicates that auditory discrimination is grossly inadequate. Inspection of Table X indicates that the means for all Anglo-American children, Negro boys, and Latin-American girls fall in the inadequate category, and that Latin-American boys and Negro girls were grossly inadequate.

In summary, the findings related to the relationship of ethnic affiliation and language proficiency are

1. Anglo-American children were found to exceed significantly both Negro and Latin-American children in total language facility.

2. When individual facets of linguistic development are considered, however, no significant differences between Anglo-American and Negro children were found.


4. When auditory discrimination was measured, Anglo-American children did not exceed significantly the Negro children but did surpass significantly the Latin-American subjects.
Sex Differences in Linguistic Facility

Because of the equivocal findings of previous investigations, more research is needed in the area of sex differences in linguistic functions. In the present study, it was hypothesized that among lower-class culturally deprived preschoolers, there would be no significant difference in total language facility scores between male and female subjects. Hypothesis 8 was confirmed. This finding of no significant difference in total language facility concurred with the results of a number of other investigations (4, 6, 10, 14, 16). When the individual subtest scores in the present study were subjected to analysis, however, it was noted that in one area, motor encoding, boys exceeded girls by about five months. Perhaps the greatest implication of differences between findings based on a global score and those drawn from subtests is that there is a great need for microanalyses of factors that comprise these total indices.

These findings concerning such great likenesses in pattern and level of linguistic abilities between boys and girls appear to be in conflict with the maturational theory of sex differences. Further research is needed to determine whether girls actually still exceed boys in a variety of psycholinguistic functions, or whether as a result of changing cultural patterns, the findings concerning differences between the sexes may be dated and no longer valid.
Another factor that would bear further investigation is whether or not this finding of no significant difference is a social-class linked situation. It could be that at the lower-class level none of the children receive special encouragement in language development, while at the middle-class level girls may receive more nurturance in verbal skills.

In summary, the findings related to sex differences in linguistic facility are

1. There were no significant differences in total language facility scores between male and female subjects.

2. On the motor encoding subtest, boys significantly exceeded girls by about five months.

Conclusions

On the basis of the findings discussed in the foregoing sections of this chapter, several broad conclusions seem warranted. These are

1. Culturally deprived, lower-class preschool children tend to exhibit marked deficits in psycholinguistic functions.

2. Ethnic affiliation contributes differentially to linguistic development in English.

3. Lower-class children as a group have inadequate auditory discrimination, and Latin-American children tend to be particularly deficient in this area.

4. Significant differences in psycholinguistic functions seldom exist between the sexes.
Recommendations for Educational Practice
and Future Research

What educational benefits may accrue from the findings concerning group differences embodied in the present study? Roberts expressed succinctly the value of such investigations when she wrote:

Groups of children do, in fact, differ as a result of the varied environments in which they are raised. Acceptance of this idea does not, in the long run, negate the principle of equality; rather, it allows us to make educational opportunities more nearly equal for all children by providing information that can help improve the learning of school children (13, p. 2).

Related to previously stated conclusions, the following recommendations are offered.

1. Since children from lower-class backgrounds appear to have marked linguistic deficits,
   a. more research is needed concerning elements which constitute cultural deprivation,
   b. programs should be designed to assist lower-status parents in child-rearing skills,
   c. teacher training institutes and seminars should provide special assistance for teachers who work with these students, and
   d. a variety of teaching methods and procedures related to specific linguistic problems should be tried and evaluated.
2. Since ethnic affiliation appears to contribute differentially to linguistic development,
   a. additional kindergarten experience should be offered by the public school systems to children whose ethnic membership results in linguistic deficiencies,
   b. further experimentation in bilingual first grades should be conducted, evaluated, and reported, and
   c. other affective factors such as self-concept, motivation, and caste status should be investigated to determine the extent to which they interact with experiential background to affect school success.

3. Since lower-class children as a group appear to have inadequate auditory discrimination,
   a. opportunities for a wide variety of well-designed listening activities should be planned for these lower-class children, and
   b. beginning reading methods based principally on phonics may be considered of dubious value.

4. Since significant differences in psycholinguistic functions exist between the sexes in very few areas, educators must search for other factors (content of reading materials, motivation, cultural expectations, effect of
predominantly female-oriented classroom) in order to account for noted differences in success in language related school activities.


APPENDIX A

A SUMMARY OF STUDENTS’ ITFA SCORES

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*Total ITPA score.

**Numbers 1-9 refer to the ITPA subtests scores in total months.
**APPENDIX B**

**A SUMMARY OF STUDENTS' WEMPAN SCORES**

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