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THE UTILITY OF AN ETHNIC SPANISH TRANSLATION OF
THE IOWA TEST OF BASIC SKILLS WITH SECOND
GRADE MEXICAN-AMERICAN CHILDREN

DISSERTATION

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Fulfillment of the Requirements

For the Degree of

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By

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JEF

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The purpose of this study was to examine the utility of an ethnic Spanish translation of portions of the Iowa Test of Basic Skills, Level 7, Form 5, with second-grade Mexican-American children to measure growth in the fundamental skills of listening, vocabulary, word analysis, reading, and mathematics.

From a large urban school district in the Southwest, a sample population of 346 second-grade Mexican-American students was randomly selected from five low socioeconomic elementary school campuses which had a 45 per cent or greater Mexican-American student enrollment. An ethnic Spanish translation of the Iowa Test of Basic Skills was administered by the classroom teacher via cassette audio-tape to an experimental population consisting of 50 bilinguals, 29 Spanish-dominants and 29 English-dominants. The English Iowa Test of Basic Skills was also administered by the classroom teacher via cassette audio-tape to a control group of 76 bilinguals, 33 Spanish-dominants and 129 English-dominants.

Based upon a one-by-six analysis of variance and the subsequent application of the t-test for independent samples,

findings for each of the five hypotheses measured at the .05 level of significance were as follows:

1. The 50 experimental bilinguals performed at a higher level of achievement on the Spanish Iowa Test of Basic Skills as compared to the achievement of the 76 control bilinguals on the English Iowa Test of Basic Skills;

2. On the Spanish Iowa Test of Basic Skills, the 50 experimental bilinguals and the 29 experimental Spanish-dominants performed at the same level of achievement on the vocabulary subtest; however, the 50 experimental bilinguals performed at a lower level of achievement as compared to the achievement level of the 29 experimental Spanish-dominants on the pictures subtest;

3. The 29 experimental Spanish-dominants performed at a higher level of achievement on the Spanish Iowa Test of Basic Skills as compared to the achievement level of the 33 control Spanish-dominants on the English Iowa Test of Basic Skills;

4. The 29 experimental Spanish-dominants performed at a higher level of achievement on the Spanish Iowa Test of Basic Skills as compared to the achievement level of the 129 control English-dominants on the English Iowa Test of Basic Skills;

5. The 29 experimental English-dominants performed at a higher level of achievement on the Spanish Iowa Test of

Basic Skills as compared to the achievement level of the 129 control English dominants on the English Iowa Test of Basic Skills.

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CHAPTER I

INTRODUCTION

The area of educational assessment and the bilingual child is one in which researchers have demonstrated a continuing interest in recent years. The areas that have been researched in the past have been mostly centered on the overall educational neglect of the public schools towards the Spanish-speaking child by not providing the proper curricular materials nor the proper staff to instruct the bilingual child.

The federal government responded to the educational neglect of the Spanish-speaking child by providing large sums of money to local education agencies. This financial assistance was to be used by the local school districts in planning and operating special programs for educationally deprived children. It was to be a supplementary program designed to upgrade the educational opportunities of children from disadvantaged backgrounds, and not a general aid program (1). While it is generally felt that bilingual education has been well received by students, teachers, and parents and has affected an organizational climate more conducive to the individualization of instruction, there is a need to gather specific facts and descriptive information to assess the

validity and reliability of tests for monolinguals as applied to bilinguals.

Statement of the Problem

The problem of this study was to investigate the usefulness of the administration of an ethnic Spanish translation of portions of the Iowa Test of Basic Skills, Level 7, Form 5, Basic Edition with second-grade Mexican-American children.

Purpose of the Study

The purpose of this study was to examine the utility of an ethnic Spanish translation of portions of the Iowa Test of Basic Skills with Spanish-speaking children to measure growth in the fundamental skills of listening, vocabulary, word analysis, reading, and mathematics. Specifically, it attempts to answer the following questions.

1. Is an estimate of the bilingual children's total receptive vocabulary achieved by comparing the raw test scores of both the Spanish version and English version of the Iowa Test of Basic Skills?

2. On which version of the Iowa Test of Basic Skills will the bilingual children show a significantly better raw score?

3. Is an estimate of the Spanish-dominant children's total receptive vocabulary achieved by comparing the raw test scores of both the Spanish version and the English version of the Iowa Test of Basic Skills?

4. On which version of the Iowa Test of Basic Skills will the Spanish-dominant children show a significantly different raw score?

Hypotheses

To carry out the purposes of this study, the following hypotheses were formulated.

1. There will be no significant difference between the mean raw scores of the experimental bilingual children on the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the control bilingual group of children on the English Iowa Test of Basic Skills.

2. The mean raw scores of the experimental bilingual children will be significantly higher on the vocabulary subtest, on the pictures subtest, and on the reading subtest of the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the experimental Spanish-dominant children on the same subtests of the Spanish Iowa Test of Basic Skills.

3. The mean raw scores of the experimental Spanish-dominant children will be significantly higher on the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the control Spanish-dominant children on the English Iowa Test of Basic Skills.

4. There will be no significant difference between the mean raw scores of the experimental Spanish-dominant children on the Spanish Iowa Test of Basic Skills when compared to the

mean raw scores of the control group of English-dominant children on the English Iowa Test of Basic Skills.

5. The mean raw scores of the experimental English-dominant children will be significantly lower on the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the control English-dominant children on the English Iowa Test of Basic Skills.

Background and Significance of the Study

Numerous recent studies have documented the continuing failure of public schools in the area of bilingual education (9). The Mexican-American Education Study conducted by the United States Commission on Civil Rights shows a 40 per cent Mexican-American dropout rate from the first grade through high school (11), and academic achievement scores for Mexican-American students listed in the 1966 Coleman Report indicate a lag of over three years behind the national norm in reading, math achievement, and verbal ability by the twelfth grade (9). Language difficulties among Mexican-American students in the five Southwestern states which include Arizona, California, Colorado, New Mexico, and Texas are rated as "severe" in the Mexican-American Education Study (11). The recommendation for improved efficiency in teaching English to Spanish-speaking children is a common one.

The Commission's Mexican-American Education Study also lists teacher training as an area where severe problems exist

in the Southwest for Mexican-American boys and girls (11). This has resulted in a critical shortage of qualified bilingual teachers which is substantiated by recent experiences of a large urban school district in the Southwest in attempting to find and hire qualified teachers for its bilingual program.

In an address to the tenth anniversary conference of the Teacher Corps in Washington, D. C., Massachusetts Senator Edward Kennedy recently noted a "significant demand" for handicapped and bilingual teachers, saying he has heard testimony that 84,000 bilingual teachers are now needed in Spanish, 7,000 in American Indian languages, and 3,000 for Oriental bilingual programs (5).

In the midst of these problems in meeting the needs of Mexican-American students enrolled in the public schools, the number of Spanish-speaking persons in the United States continues to grow. Increased immigration from Latin America has been the main factor in the substantial growth of this segment of the population since 1940 (9). By 1973, Spanish-origin persons numbered over nine million and constituted the second largest minority group in the United States (9).

In a large urban school district in the Southwest, Mexican-American enrollment in the elementary schools in the district represents over 11,300 students for the 1975-76 school year, or 15 per cent of the total elementary enrollment (13). A recent research report projecting enrollment

for the district indicates that this can be expected to increase to 20 per cent, or over 12,000 students by 1981 (13).

Once Mexican-American students have left school, they may encounter acute problems obtaining employment.

Unlike earlier non-English speaking children in this country, these Mexican-American children face an increasingly technical, skill-oriented society. There has been a shift in jobs from manual labor to skilled occupations. Although there is no direct correlation between years of schooling and ability to perform many jobs, educational level has become one frequently employed means of differentiating job applicants from one another (9, p. 14).

Thousands of these students leave school each year with less than a "basic survival threshold" (7), i.e., without the basic reading ability required for most skilled jobs, or for such tasks as filling out applications for driver's licenses, bank loans, and social security.

Approaches up to the present have failed to remove the barrier to education imposed on many Mexican-American students by their ethnic background.

That public education continued to neglect the needs of language minority students for another twenty years is evident in the fact that recommendations of the 1964 Orange County Conference on the Education of Spanish-Speaking Children and Youth were almost identical to those developed eighteen years before (3, p. 13).

Nearly three decades after the First Regional Conference on the Education of Spanish-speaking people compiled information on the difficulties experienced by Mexican-American students, the U. S. Commission on Civil Rights conducted a 5-year Mexican-American education study. It revealed that problems of segregation, teacher training, and language difficulty are still severe for Mexican-American students in five Southwestern states (10, p. 11).

. . . these studies document the continuing failure of public schools to provide language minority children with a meaningful education (9, p. 17).

Currently, in a major urban school district in the Southwest, the Mexican-American students, on the average, have not achieved at levels comparable to their Anglo peers. Currently, the Mexican-American children are more than thirty percentile points behind their Anglo peers (9). The cause for this educational deficit on the part of the Mexican-American students in the public schools of the Southwest is one that warrants further investigation.

Definition of Terms

For purposes of this study, the following definitions were formulated.

1. Bilingual is used to identify any child who has the ability to speak two languages fluently. For purposes of this study, those languages will be ethnic Spanish and English and will be identified by teacher judgement.
2. Ethnic Spanish is the non-standard variety of Spanish communication often spoken only in a certain locale, and frequently identified as "local colloquial" or "Tex-Mex," and is a form of communication in Spanish that is heavily influenced by borrowings from the English language, i.e. the English word baby becomes bebe (niño).
3. First Language is the initial receptive language taught to the child by the parents and by the initial environment.

4. Low socioeconomic status (SES) is defined by the United States Department of Health, Education, and Welfare as "the low income factor used in determining the allocation of funds under Title I is theoretically \$4,000 per family; however, for practical purposes \$2,000 per family is used because appropriations do not yet equal the maximum amount authorized using the lower factor" (12, p. 5).

5. Receptive language is an individual's ability to understand verbal symbols spoken by others (4, p. 15; 6, pp. 9-16).

6. Second language refers solely to the learning of a second language as a student's academic effort.

7. Spanish-dominant refers to an individual whose first and only language is Spanish.

8. A Title I school is so categorized if 80 per cent or more of its student population is economically and educationally deprived. To be economically deprived, the student must come from a family with an annual income factor in the range from \$2,000 to \$4,000. To be educationally deprived, a student is performing below the expected grade level for his age group.

9. A large urban school district is one having a student enrollment of 140,000 or more.

Limitations

This study is limited to second-grade low socioeconomic Mexican-American children residing within the boundaries of a major urban school district in the Southwest. Additionally, this study is limited by the assumption that the teacher questionnaire was reliable in measuring the language abilities of the subjects under investigation.

Instruments

This study utilized the following instruments for the collection of data.

1. Cassette tapes,--A test tape was used to transcribe ninety-minute Ampex cassette tapes at a speed of 1 7/8 ips and the frequency response was \pm 2 dB from 125 Hz to 4,000 Hz and +2 from 125 Hz to 6,000 Hz.
2. Test tape narrator,--The cassette tapes were narrated by a female news-media commentator/announcer who had specialized training in verbal speech communication in both Spanish and English.
3. Teacher questionnaires,--The teacher of each student in this investigation was required to complete a questionnaire that would assess the student's language preference and ability when he entered school. (See Appendix B for a copy of the questionnaire.) The teacher's responses were limited to the following three categories: (1) this child spoke only Spanish upon entering my class, (2) this child spoke Spanish

approximately one-half of the time and English the other half of the time upon entering my class, and (3) this child spoke little or limited Spanish upon entering my class.

4. Vocabulary list.--An English vocabulary list was compiled from those words that appeared in print in items S1 (sample 1) through 17 of the vocabulary subtest and in items S1 through 16 of the pictures subtest of the Iowa Test of Basic Skills, Level 7, Form 5, Basic Edition. From the Teacher's Guide of this same test which has the oral directions that are to be read to the students by the teacher, those words which played the role of subject, direct object, indirect object or predicate of the sentence were selected to become part of the 293-word vocabulary list. (See Appendix C for a copy of the vocabulary list.)

5. Parental surveys.--A parental survey of 293 English words was administered to the 289 parents of the sample population who were present at a specially called community meeting at each of the five schools that participated in this study. The group of parents was asked to orally respond to each of the 293 English words by orally citing their preferred Spanish translation which was in turn recorded on a blackboard. After all the preferred translations had been recorded, a vote was elicited by a show of hands to identify the most popular translation by the majority of the audience. This procedure was utilized in translating each of the 293 English words at each of the five schools under investigation.

Description of Instruments

Iowa Test of Basic Skills

Virgil E. Herrick, Professor of Education, at the University of Wisconsin, in a review of the Iowa Test of Basic Skills in the Fifth Mental Measurements Yearbook writes the following:

These tests are devised to test functional skills of children in grades 1-9 in the areas of vocabulary, reading comprehension, language skills, work-study skills, and arithmetic. These areas and their subdivisions are common to every elementary school curriculum and represent important and common objectives of every elementary school teacher.

The reliability coefficients range from .84 to .96 for the major tests and from .70 to .93 for the subtests. The composite reliabilities for the whole test range from .97 to .98 for the different grades. Intercorrelations among the various subtests have an average range of .60 to .70 (2, p. 16).

Spanish Iowa Test of Basic Skills

This test is a duplication of the English Iowa Test of Basic Skills, Level 7, Form 5, (see Appendix D for a copy of the test battery), with the exception of utilizing ethnic Spanish words in the following areas of the test: (1) all oral directions to the students by the teacher found in the Teacher's Guide manual, (2) in subtest Word Analysis (WA), all phrases, except the English word being measured phonetically and English proper names, were translated, (3) in subtest Vocabulary (V), items 1 through 17 were translated and were printed in standard Spanish for the students to read

for themselves; (4) in subtest Pictures (R-1), items 1 through 16 were translated and appeared in standard Spanish print for the students to read for themselves; (5) in subtest Spelling (1-1), all phrases and sentences were translated into ethnic Spanish except the word being measured and all English proper names; (6) in subtest Mathematics Problems (M-2) and Mathematics Concepts (M-1), all phrases and sentences were translated into ethnic Spanish except English proper names.

Procedures for Collecting Data

The Population

The population consisted of all the second-grade Mexican-American children enrolled in the fifty Title I elementary schools of a large urban school district in the Southwest.

Sample Population

The sample of 346 students was randomly selected as second-grade class units from five of the thirteen Title I Elementary School campuses which had a 45 per cent enrollment of Mexican-American students.

Test Administration

Both the Spanish and the English versions of the Iowa Test of Basic Skills were administered in accordance with the instructions provided in the Teacher's Guide of Level 7, Form 5. (See Appendix H for a copy of the instructions.)

However, all sections in the Teacher's Guide which were required to be read orally to the students by the teacher were substituted with cassette audio-tapes that provided the narration for the teacher.

The cassette tapes were made available in English and Spanish for the teacher to select for her class. The teacher was provided with specific instructions on the proper procedure for administering the test. (See Appendix F for a copy of the instructions.) The emphasis on the test administration was that at no time was any student permitted to remain in the classroom if he was not scheduled to take that version of the test.

Procedures for Analysis of Data

Data pertaining to the hypotheses were collected. The F-test for homogeneity of variance was applied and subsequent analyses were made as appropriate using the t-test for independent samples.

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CHAPTER II

SURVEY OF RELATED LITERATURE

A survey of the literature reveals many research studies related to education and the bilingual Mexican-American child. However, valid studies of the validity and reliability of tests for monolinguals as applied to bilinguals are limited.

This chapter, in an effort to develop a significant background, includes summaries of literature relating to four topics: (1) History of the Educational Neglect of the Mexican-American Spanish-Speaking Child, (2) Language Development in the Bilingual Child, (3) Assessment of Various Bilingual Programs, and (4) Need for Additional Research into the Testing of Bilingual Children.

History of the Educational Neglect of the Mexican-American Spanish-Speaking Child

The most acute educational problem in the Southwest is that which involves Mexican-American children. In the public schools of five states in that region--Arizona, California, Colorado, New Mexico, and Texas--there are millions of children with Spanish surnames. Many of these young people experience academic failure in school. At best, they have limited success. A large percentage become school dropouts.

Moore's study (26, p. 22) of the five million Spanish-surname persons in the Southwest revealed that in Texas the education of the Mexican-American was markedly inferior to that of the other four southwestern states.

Throughout the Southwest, Mexican-Americans average 7.1 median years of schooling against 12.1 for Anglos and 9.0 for non-whites, but in Texas the median educational achievement level is 4.8 years, a tiny fraction above the four-year cut-off for functional illiteracy (26, p. 23).

Coleman defined the basis upon which the United States has formed its concept of educational opportunity centered around equality which includes the following.

- (1) Providing a free education up to a given level which constituted the principal entry point to the labor force.
- (2) Providing a common curriculum for all children, regardless of background.
- (3) Partly by design and partly because of low population density, providing that children from diverse backgrounds attend the same school.
- (4) Providing equality within a given locality, since local taxes provided the source of support for schools (9, p. 11).

The second point in this definition assumes that exposure to a common curriculum affords opportunity to the school child but if Carter's statistics are true that 80 per cent of the Mexican-American students who begin school in Texas do not finish, the need for a reevaluation of the concept of equal opportunity is evident (32). In addition, the provision of only a common curriculum has enhanced the failure of the schools to educate the Mexican-American student because he is forced out of the school through social disaffection,

cultural assault, and enforced assimilation. Cordasco describes it in the following terms:

In its efforts to assimilate all of its charges, the American school assaulted (and, in consequence very often destroyed) the cultural identity of the child; it forced him to leave his ancestral language at the schoolhouse door; it developed in the child a haunting ambivalence of language, of culture, of ethnicity, and of personal self-affirmation. It held up to its children mirrors in which they saw not themselves, but the stereotype middle-class, white, English-speaking child, who embodied the essences of what the American child was (or ought) to be. For the minority child, the images which the school fashioned were cruel deceptions. In the enforced acculturations there was bitterness and confusion, but tragically too, there was the rejection of the wellsprings of identity and, more often than not, the failure of achievement (11, p. 198).

That the latter statement by Cordasco is factual is supported by Rosenthal and Moore in their studies of the assault of minority children in the classrooms of American schools (32, 26) and by the National Institute of Education which discovered in its study that "thousands of these students leave school each year with less than a basic survival threshold" (7, p. 3).

Approaches to date have failed to remove the barrier to education imposed on many Mexican-American students. This is evidenced by the 1964 Orange County Conference on the Education of Spanish-Speaking Children and Youth recommendations that were almost identical to those developed eighteen years before (7). It is further evidenced by the United States Commission on Civil Rights five-year Mexican-American

Education Study in 1974 that revealed that problems of segregation, teacher training, and language difficulty are still severe for Mexican-American students in the five Southwestern states (39).

Language Development in the Bilingual Child

The language of the Mexican-American in the Southwest has also been the basis for several studies through the years. However, the very topic of language and the language of the bilingual is one that needs further study and according to Cornejo, "one of the most basic is the exact meaning of the term 'bilingual'" (12, p. 68). Bilingualism has varied in its definitions by researchers from "the subjecting of the child to the influence of two or more languages before he has arrived at a fair degree of proficiency in one" (4, pp. 34-38) to "the use of two languages at the same time" (39, p. 44) or the ability to use two languages as defined by Webster's Dictionary (41). According to Cornejo, "when reference is made to the bilingual individual, we do not really know the extent of the bilingual's knowledge of either of the languages he speaks or his facility and fluency in them" (12, p. 68).

Some authors in this field have found that the language of the bilingual Mexican-American is going to vary in accordance with the influence of local dialect and with the degree of linguistic borrowings from the English vocabulary. Chavez (8) mentions differences in sounds and in concepts between

the two languages. For instance, the short "i" in miss may be pronounced by the Spanish-speaker as the "ee" in meet, since "i" carries the sound of "ee" in Spanish (8). Perales (31) mentions one problem area which the Spanish-speaking individual may face when speaking his own language is that of a limited Spanish vocabulary which requires borrowing from an equally limited English vocabulary to complete his expressions. Some examples are, "Yo le dije que I wouldn't do it" (I said to him that I wouldn't do it) and "El fue, but I stayed in la casa" (He went, but I stayed in the house). Holland (18) explains that these linguistic borrowings are due to environment factors because Mexican-American children develop only a small basic vocabulary of Spanish words and concepts which are directly related to restrictive in-group experiences.

Holland (18), studying a group of thirty-six Spanish-English-speaking children, utilized both languages to test each child with a special adaptation of the Wechsler Intelligence Scale for Children. The results showed all but three of the children to be deficient in language skills. Of the remaining thirty-three subjects, eight showed very serious language delay, seven showed serious language delay, and eighteen demonstrated moderate language delay. Over 40 per cent did not comprehend English well, a barrier which proved to be detrimental to their educational adjustment. The language barrier seemed to decrease with added schooling;

however, it was still apparent as late as the fifth grade. Holland (18, p. 48) described the children's language patterns as "a complex mixture of both languages and seldom exclusively one or the other." He concluded that these Spanish-English-speaking children were actually "substandard" speakers of both languages.

The NEA-Tucson Survey (28) found in their study of Spanish-speaking children in Tucson, Arizona, that even if a child does speak both English and Spanish, he may be only nominally bilingual.

Stemmler (36) identified the mixture of both Spanish and English in conversational speech as "Spanglish" or "Tex-Mex" (36). On the other hand, Perales identified a second type of language mixture whereby English words are given a Spanish pronunciation and cites this example,

The native speaker of Spanish in an English-speaking environment may give an English word a Spanish pronunciation and meaning when speaking his own native language, for instance, the Spanish-speaker may use the word huachar (from the English verb to watch) instead of the correct Spanish word mirar, or chuzar (from the English verb to choose) instead of the correct Spanish word escoger (31, p. 100).

Cornejo's 1969 study (12) of five-year olds in Texas further substantiated the presence of language mixture in the Mexican-American pre-school children.

The NEA-Tucson Survey group indicated that the Mexican-American enters school having some knowledge of the English language but has had little opportunity to use it and that

the dominant language in his childhood that shaped his personality and controlled his experiences was Spanish but upon entering school where the language of instruction is English, the child finds himself in a strange and threatening environment (28). The survey group commented as follows:

He (the Spanish-speaking child) suddenly finds himself not only with the pressing need to master an alien tongue, but also at the same time, to make immediate use of it in order to function as a pupil. His parents, to whom he has always looked for protection and aid, can be of no help at all to him in his perplexity. Moreover, as a result of cultural and economic differences between the English-speaking and the Spanish-speaking segments of his community, many of the objects, social relationships and cultural attitudes presented to him in lessons, though perfectly familiar to an Anglo youngster, lie without the Latin American's home experience. Accordingly, the problem of learning English is, for him, enormously increased by his unfamiliarity with what objects and situations the no less unfamiliar words and phrases are used for (28, p. 8).

On the same topic, Sanchez (34) states that the public school environment with its English monolingual staff and with its English monolingual curriculum forces the Spanish-speaking child to submit to rote learning and to parroting English words. To this child, school life is artificial because absolutely nothing at school relates to his home environment or his language. Therefore, of course, the child learns English and the school subjects imperfectly.

Thompson at the conclusion of his discussion of the topic of bilingualism concluded:

There can be no doubt that the child reared in a bilingual environment is handicapped in his language growth. One can debate the issue as to whether speech facility in two languages is worth the consequent retardation in the common language of the realm (37, p. 385).

However, several other authors (2, 12, 16, 17, 25, 36, 39) note that those children who encounter two conflicting language systems in their preschool years are more likely to manifest a delay in their development of both languages than those children who must learn a single language.

From the research studies cited, it would be factual to conclude that to be a bilingual individual brings many problems linguistically, socially, and emotionally and need for further study is evidenced.

Assessment of Various Bilingual Programs

The extent of aid the federal government has provided to various local education agencies to resolve the educational neglect of the Mexican-American has been a controversial topic of many research studies. Gaarder's study (15) of the first seventy-six bilingual education projects funded under the National Elementary and Secondary Education Act of 1965 found the programs to be lacking in organization and in meeting the needs of the children it was intended to serve.

In a more recent study that surveyed all the bilingual programs in operation in 1970, Kjolseth (23) described two types of bilingual education programs--assimilation and pluralistic.

According to Kjolseth (23), the assimilation type of model promotes ethnic language shift. Since this program is initiated by the administration and conducted in traditional ways by non-ethnic and supra-ethnic middle class interests and forces, the program is likely to discourage ethnic community organization among the large majority of citizens. Also, this program emphasizes the superiority of different non-ethnic kinds of language and culture and demands restricting use to correct language usage as prescribed by the school's curriculum.

On the other hand, Kjolseth (23) affirms that the pluralistic model promotes ethnic language maintenance by encouraging community involvement in an effort to create a setting which permits the resolution of conflicts and differing interests within and between the ethnic and non-ethnic communities. The program emphasizes the coordination of different varieties of situationally appropriate culture and language and encourages the student to become active in a variety of settings, use a number of linguistic varieties, and become experienced in switching between them. Kjolseth (23) states, "language skills and cultural perspectives are added without progressively destroying his home language and culture" (23, p. 11).

Contrary to their usual statements of program goals, Kjolseth's analysis reveals that well over 90 per cent of the bilingual education programs in the United States in

1970 were of the assimilation type and encouraged the loss of ethnic mother tongue (23). One can conclude from past research that the bilingual education programs are not presently meeting the needs of the Mexican-American children.

Need for Additional Research into the Testing of Bilingual Children

A review of the literature reveals an apparent lack of studies concerned with the measurement of intellectual functioning of pre-school and young Spanish-speaking children. However, there are a number of studies that deal with older Spanish-speaking children. Cook (10) tested 97 Mexican-American children ranging in mean ages from 12 years, 7 months to 6 years, 7 months on a verbal intelligence test, the Stanford-Binet. He also tested the same group of children on a non-verbal intelligence test, the Point Scale of Performance Tests, Form I. On analysis of the data, Cook found that on the Binet there was a mean IQ for the children of 84 while on the PSPT the mean was 101. Cook concluded that the educational guidance of children should be based upon the results of non-verbal tests because the non-verbal PSPT produced a higher potential which the Binet failed to do. Since the Binet test was administered in English, Cook further concluded that the subjects appeared to be handicapped by lack of language facility on the Binet.

Altus (1) investigated the effects of bilingualism on intelligence test scores using the Wechsler Intelligence

Scale for Children. His premise was since the WISC had both a Verbal scale and a Performance scale, that bilingualism handicaps would be controlled by the self-explanatory items of the Performance scale. He administered the test to two groups of eleven-year old children, Spanish-speaking, and unilingual. The average difference in Verbal IQ turned out to be seventeen points in favor of the unilingual group with the greatest discrepancies between the two groups appearing on the Vocabulary, Information, and Similarities subtests of the Verbal scale. There was no significant difference between the Performance IQ of the two groups so the author concluded that the Spanish-speaking group's retardation on the Verbal scale was linguistic.

Johnson (21) also studied the relationship between bilingualism and intelligence test scores. The Goodenough Draw a Man Test, non-verbal, the Otis Self-Administering Test of Mental Ability, and a Reaction-Time Test of Bilingualism was administered to thirty Spanish-speaking boys ranging in ages from nine through twelve. The Reaction-Time Test of Bilingualism required the subjects to recall as many English words in five minutes as they could and then as many Spanish words as they could in the same length of time. He found, at a high level of significance, that the higher the Otis IQ, the less knowledge the child had of Spanish in comparison to English. On the Goodenough, a greater knowledge of Spanish was found, although the relationship was not statistically

significant, to be associated with superior performance. The author concluded that an intelligence test employing the English language was probably not a valid measuring instrument when used with subjects deficient in the assimilation of the culture of which English is reflective and that measuring the intelligence of bilingual subjects presented complex problems which possibly render both performance and linguistic tests invalid.

Keston and Jimenez (22) explored the feasibility of administering a test in Spanish to Spanish-speaking children and comparing the resulting scores to the same group of children taking an English version of the test. The Form M of the Stanford-Binet Intelligence Test was administered on a pre-test/post-test statistical arrangement to fifty fourth-grade Mexican-American children with a thirty-day interval between test dates. The mean IQ of these children on the English version was 86 and 72 on the Spanish version. Since Terman and Merrill had reported a correlation between the scores obtained on the two forms of the test as .93 when both were administered in English, the authors concluded that factors other than the effects of translation were operating to lower the correlation. One factor that they pointed out was that probably the children tested had a higher level of development in English than in Spanish. The examiners had noted that in their Spanish conversation these children had speech habits similar to pre-school children.

They also manifested limitations in vocabulary and complexity of expression when using Spanish.

Keston and Jimenez (22) also concluded that future development in the usage of the Spanish language came to a virtual standstill when these children entered grade school and began their formal education in English. However, many of the English expressions of common usage in the earliest grades had not yet been mastered by these children, indicating to the authors that there is some confusion in the language habits of children in a bilingual situation, and that even the English version of the test does injustice to these children when the resulting IQ scores derived from the tests are interpreted too liberally. However, the authors did not find the Spanish version a fair measure of the children's intellectual abilities either, since their variety of spoken Spanish contained many contaminations and Anglicisms.

Jensen (19) developed a test to assess the intellectual abilities of Spanish-speaking children by attempting to measure the educational potentialities of the children by using subtests that provided direct measures of present learning abilities. His intent was to measure non-verbal intelligence rather than verbal intelligence which tended to discriminate against bilingual children (20). However, there was no significant difference between his experimental group of Mexican-American children and his control group of

Anglo children on their composite responses to familiar objects versus abstract objects. The author concluded that non-verbal intelligence tests probably discriminate against Mexican-American children as much as verbal intelligence tests since non-verbal performance tasks actually require verbal mediation.

Holland (18) in a study of a group of thirty-six Spanish-English bilingual children utilized both languages to test the group with the Wechsler Intelligence Scale for Children. The results showed that thirty-three children were deficient in language skills, eight showed very serious language delay, seven showed serious language delay, and eighteen demonstrated moderate language delay. Over 40 per cent did not comprehend English well, a barrier which proved to be detrimental to their educational adjustment. There were also indications that the language barrier seemed to decrease with added schooling; however, it was still apparent as late as the fifth grade. Holland described the children's language patterns as "a complex mixture of both languages and seldom exclusively one or the other, and that these bilingual children were actually 'sub-standard' speakers of both languages" (18, p. 48).

Carrow (6) and Bean (3) in research studies reviewing oral language skills versus silent language skills found that the bilingual children's scores were comparable to the scores of the monolingual children; however, the bilingual

children were noted to make more articulation and grammar errors.

Corwin (13) administered the English Peabody Picture Vocabulary Test and the Wechsler Intelligence Scale for Children to her experimental group of fourth, fifth, and sixth grade bilingual children and to a matched control group of monolingual children in the same grades. The bilingual group were lower in mean IQ scores than were the monoglots on both tests. The bilingual group received their lowest mean IQ scores in the verbal and vocabulary sections.

Additional vocabulary studies by Norman and Mead (29), using a Spanish-English bilingual population, also demonstrated lower-than-average scores for the bilingual group.

The effectiveness of test adaptation based on item selection and reordering of a Spanish version of the Peabody Picture Vocabulary Test was examined by Simon and Joiner (35). Translated forms were administered to a sample of Mexican-American students. One item from each pair (A and B) was selected and reorded using a priori rules. The revised instrument was then administered to a new cross-validation sample. Findings confirmed the cost effectiveness of this technique over simple translation or the creation of completely new items for populations of different culture and language. However, in another study of the Peabody Picture Vocabulary Test by Jensen (20), the author concluded that the PPVT is culturally biased and the Raven's Progressive

Matrices Test was a better culturally free test for Mexican-Americans.

Flaugher's study (14) of Black students and Mexican-American students from two urban cities showed small but consistent tendencies to perform better relative to white groups on three nontraditional measures: tests of inductive reasoning, spatial scanning, and associative memory.

In their analysis of intelligence testing of minority group children, Meeker and Meeker (24) investigated the implications of inadequate testing practices. Several aspects of test design were examined: deficiencies in intelligence testing, cultural bias, construct validity, and diagnostic utility. A sample set of the results derived from a Stanford-Binet Test administered to 257 respondents was examined and from the statistical data derived thereof, the authors concluded that investigations of cultural biases in intelligence testing have established the fact the most widely used test procedures are "penalizing" for non-Anglo, lower socioeconomic groups.

The educational handicaps of Mexican-American children are extensive and complicated to say the least. Historically, the Mexican-American children have endured educational neglect in the American school as a result of their cultural heritage and have suffered social, emotional, and psychological maladjustments attributed to the monolingual English educational programs that they are expected to assimilate in

spite of their language barrier. Efforts have been made mainly by government to alleviate the plight the Mexican-American child faces in the American classroom but supportive research into this effort has shown that the problem still prevails. However, the area of testing and evaluation of the Mexican-American is one that needs further investigation as the following authors point out:

The linguistic situation of the Mexican-American community is complex, involving multiglossia and multilingualism. Various language codes and different blendings of English and Spanish are in use within the community. Educators should decide which code they will use in their planning. Research is needed to consider the various codes and their roles and relationships to improve the educational system for the Mexican-American (30, p. 1).

The study, it is held, basically showed that individuals who have not mastered certain standard pronunciation and grammatical conventions may remain seriously handicapped in their chances for socioeconomic and cultural advancement. Therefore, it is suggested that . . . greater emphasis should be given to nature of usage and study of social dialects in the educational program (5, p. 11).

The research studies reviewed have traced the plight of the Mexican-American child through the classrooms of the American educational programs. The Mexican-American child has long endured the labeling-effect by the American public school as being an "underachiever." On the sociological perspective, research studies have indicated that the Mexican-American child's cultural needs are different and that his bilingualism is bound to impair his achievement in an English monolingual school setting. That the Mexican-

American child has a definite language deficit which impairs his learning is certainly well documented. Therefore, it is significantly warranted to study the extent to which an achievement test administered in the Mexican-American child's native language affects his level of achievement.

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CHAPTER III

PROCEDURES FOR COLLECTING AND PREPARING THE DATA

The first portion of this chapter devotes itself to the systematic step-by-step procedure which was applied in collecting the necessary data to conduct this study. The second portion of this chapter addressed itself to the procedures that were applied to the collected data to prepare it for statistical analysis.

Collecting the Data

Matching the Sample Population

The 346 second-grade subjects for this study were selected from five matched Title I elementary schools of a large urban school district in the Southwest. The district has a total of fifty Title I elementary schools; however, thirty-seven of these were deleted because they did not meet the criteria of having at least 45 per cent or more Mexican-American student enrollment on their campus. Of the remaining thirteen schools, only five were chosen in order to avoid a very large sample population and to avoid the duplication of representation from specific sections of the city where two or more schools were located. The following criteria were used to match the five schools from which the sample population was randomly drawn for this study:

1. Similarity of the basic instructional program,
2. Ethnicity of the student bodies, and
3. Socioeconomic status of the school communities.

Similarity of the Basic Instructional Program

The schools in the study utilized the basic instructional program for the second grade as outlined in the district's curriculum guide entitled Baseline Level Two (1). All schools involved in the study used the Houghton Mifflin basal reading series as the key basal reading program with the Economy series as the co-basal reading program and with the B.R.L. Sullivan series as the enrichment reading program for those students reading below grade level. The basal readers serve as the medium through which the basic reading skills such as word attack, phonetic analysis, structural analysis, comprehension, and listening are taught. The Baseline Level Two (1), which provides detailed instructions for the teachers implementing this basal program, was utilized in all the schools. Patterns of Language by the American Book Publishing Company which emphasizes discovery and inquiry in helping children to think for themselves was the basal language textbook used. Creative Growth in Handwriting by Zaner Bloser Publishing Company, the state-adopted handwriting text, was used in all of the schools involved in the study. Basic Goals in Spelling by McGraw-Hill Publishing Company was the basal spelling text used. Mathematics instruction centered

around the state-adopted basal series, Elementary School Mathematics, Book II by Addison Wesley Publishing Company.

To assure proper implementation of this basic instructional program, the district specifies in the Baseline Level Two (1), in addition to the basal textbooks listed above, the instructional aids, permanent equipment, and consumable supplies necessary to successfully effect the program. The Operations Division of the district then takes steps to ascertain that each school requisitions, receives, and properly uses the necessary items.

The instructional time schedules for all of the schools involved in the study were approved by the district and certified to meet the time requirements as mandated by Bulletins 617 and 560 of the Texas Education Agency. All schools had the necessary aids, equipment, and supplies and were conducting comparable instructional programs as directed by the policies and procedures of the school district and the Texas Education Agency.

Ethnicity of the student bodies.--All the schools in the study were matched using group means. The enrollment information used to match the sample population was obtained from the District's Pupil Accounting Department which indicated that all five schools had a mean enrollment of approximately 9 per cent Blacks, 17 per cent Anglos, and 73 per cent Mexican-Americans (6).

Socioeconomic status of the school communities.--Data necessary to match the five schools on the basis of socioeconomic status were extracted from the United States census tract information compiled in Research Report 74-243 (6) of the District's Research and Evaluation Department. The data indicated that the five school communities had a yearly per capita mean income of \$7,000 and 9.7 mean years of schooling.

Instruments Used to Collect the Data

Teacher questionnaires.--The teacher of each of the 346 subjects completed a questionnaire that required her to categorize each subject. (See Appendix B.) The teacher was limited to the following three categories in categorizing her students: (1) this child spoke only Spanish upon entering my class, (2) this child spoke Spanish approximately one-half of the time and English the other half of the time upon entering my class, and (3) this child spoke little or limited Spanish upon entering my class.

Vocabulary list.--The English vocabulary list (see Appendix C) was compiled from those words which appeared in print in statements S1 (sample 1) through 17 of the vocabulary subtest and in statements S1 through 16 of the picture's section of the reading subtest of the Iowa Test of Basic Skills, Level 7, Form 5, Basic Edition. From the Teacher's Guide of the latter test which has the oral directions that are to be read to the students during the test administration,

only those words which played the role of subject, direct object, indirect object or predicate of the sentence were selected to become part of the vocabulary which was to be used in the translation of the test into ethnic Spanish.

Parental surveys.--A parental survey of 293 vocabulary words was administered to 289 parents of the sample population who were present at a specially called community meeting at each of the five school campuses which participated in the study. The group of parents was asked to orally respond to each of the 293 vocabulary words by citing their preferred Spanish translation. Their responses were recorded on a blackboard. After all possible translations had been cited, a vote was taken by show of hands to determine which was the most popular translation of the word by the majority of the audience. This process of word translation was utilized for each of the 293 words at each of the five school campuses.

Iowa Test of Basic Skills.--This test is devised to test functional skills of children in the areas of vocabulary, reading comprehension, language skills, work-study skills, and arithmetic. Level 7, Form 5 of the Basic Edition of this test was administered via cassette audio-tape to 76 bilingual subjects, 33 Spanish-dominant subjects, and to 129 English-dominant subjects by the teachers.

Spanish Iowa Test of Basic Skills.--This test is a duplication of the English Iowa Test of Basic Skills with the exception of utilizing ethnic Spanish words in the

following portions of the test: (1) all oral directions to students by the examiner (teacher) found in the Teacher's Guide; (2) in the subtest Word Analysis, all phrases, except the English word being measured phonetically and English proper names, were translated; (3) in subtest Vocabulary, items 1 through 17 were translated and were also printed in standard Spanish for the students to read for themselves; (4) in subtest Pictures, items 1 through 16 were translated and were also printed in standard Spanish for the students to read for themselves; (5) in subtest Spelling, all phrases and sentences were translated into ethnic Spanish except the word being measured and all English proper names; and (6) in subtest Mathematics Problems and Mathematics Concepts, all phrases and sentences were translated into ethnic Spanish except English proper names. The translated test was administered to fifty bilingual subjects, to twenty-nine Spanish-dominant subjects, and to twenty-nine English-dominant subjects via cassette audio-tapes by the teachers.

Preparing the Data

Data used in the process of matching the schools were contained in the District's Performance Profiles Reports (3, 4, 5), Socioeconomic Profiles (6), and the Elementary and Secondary School Indicies Report (2). From these data, statistical tables were readily available for the extraction of group means, which were formulated from the application

of the F-test for the homogeneity of variance, to match the five schools on the criteria of similarity of the basic instructional program, ethnicity of the student bodies, and socioeconomic status of the school community.

The teacher questionnaires were collected from each of the five schools. Through the application of item analysis, the data from the questionnaires was used to group the subjects into 126 bilinguals, 62 Spanish-dominants, and 158 English-dominants.

The vocabulary lists from each of the five school communities were collected. Each of the 293 responses from each of the five school communities was matched with its counterpart to create a composite word list that reflected the preferred usage of words for the five school communities. This composite word list was utilized in the conceptual translation of the test into ethnic Spanish. The translated test was sent to a professional narrator for transcription on cassette audio-tape.

The completed test booklets and answer sheets for both versions of the test were collected from each of the five schools and sent to an educational service center for machine scoring. The six groups of subjects and their scores were entered on an eighty-column form for the keypunch operator. A coding system was devised to assure systematic entry of the data into the proper column of the card. The data were key punched into IBM cards and submitted to a

Computer Center for scoring and interpretation using a one by six analysis of variance and Fisher's t -test for group means.

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CHAPTER IV

ANALYSIS OF THE DATA

The purpose of this study was to determine the utility of an ethnic translation of portions of the Iowa Test of Basic Skills with second-grade Mexican-American children. This chapter presents the statistical results of the data. The analysis will be presented in two sections. The first section will present the data used to match the five schools which formed the sample population for the study. The second section will present the procedures that were applied to analyze the data collected from both versions of the Iowa Test of Basic Skills which pertained to the hypotheses. The hypotheses will be restated and the findings which are related to each hypothesis will be presented.

Analysis of the Data Used to Match the Schools

Before measuring the performance of the six groups of subjects--three control and three experimental--on the Spanish and the English versions of the Iowa Test of Basic Skills, the following steps were taken to insure that the sample had not been drawn in such a fashion that it would be a biased representation of the population under study:

1. Similarity of the instructional program.--All groups were found to be using the district's instructional program which included instruction in the five disciplines of reading, arithmetic, language, spelling, and handwriting. All groups were also using the same instructional textbooks as follows: reading--Houghton Mifflin basal readers; reading--B.R.L. Sullivan Company's enrichment readers; arithmetic--Elementary Mathematics II by Addison Wesley Company; language--Patterns of Language by American Book Company; spelling--Basic Goals in Spelling by McGraw Hill Company; handwriting--Creative Handwriting by Zaner Bloser Company. All the materials were coordinated with the five disciplines of instruction by the Baseline Level Two (2) teacher handbook produced by the district.

2. Similarity of student body ethnicity.--Enrollment information compiled by the district's public accounting department as recorded in Table I revealed a mean average of 73 per cent Mexican-American students in attendance at the five schools under investigation. All five schools met the criteria established for the sample population of having a minimum of 45 per cent Mexican-American student school campus enrollment.

3. Socioeconomic status.--Researchers in the field of education have long been aware of the positive correlation that exists, in most cases, between socioeconomic status and measured academic ability and achievement (1, 3, 4, 5).

TABLE I
STUDENT BODY ETHNICITY**

| School | % Black | % Anglo | % Mexican-American | %Other* |
|--------|---------|---------|--------------------|---------|
| 1 | 4.72 | 8.44 | 86.75 | 0.09 |
| 2 | 8.22 | 37.40 | 51.51 | 2.87 |
| 3 | 11.27 | 16.18 | 69.42 | 3.13 |
| 4 | 11.38 | 18.74 | 68.65 | 1.23 |
| 5 | 10.78 | 1.75 | 86.97 | 0.50 |
| Mean | 9.27 | 16.50 | 72.66 | 7.82 |

*Any ethnic group not having a minimum of 5 per cent representation.

**Source: C56-3 Enrollment Report, Dallas Independent School District, February, 1976.

Such research warranted the necessity of matching the environmental backgrounds of the six groups of subjects involved in the study. Table II compiled by the research department of the district from which the sample population was drawn indicates that all six groups were drawn from communities with a mean income of \$7,000 and a mean academic achievement of 9.7.

The one way analysis of variance was used to analyze the scores derived from each variable. Bartlett's Chi Square probability levels were found to be insignificant, indicating no significant variance within score distributions for the groups compared.

TABLE II
 MEAN FAMILY INCOME AND EDUCATION
 BY SCHOOL COMMUNITY*

| School Community | Income | Education |
|------------------|---------|-------------------|
| 1 | \$6,601 | 6.1 |
| 2 | 8,966 | 11.4 ¹ |
| 3 | 7,314 | 10.6 ¹ |
| 4 | 7,334 | 10.7 ¹ |
| 5 | 6,849 | 9.1 |
| Mean | \$7,412 | 9.7 |

*Source: Research Report No. 74-243, Dallas Independent School District, Research and Evaluation Department, 1974.

Analysis of the Tests of the Hypotheses

Working within the constraints of the null hypothesis, the one way analysis of variance was used to analyze the scores derived from each variable. Fisher's t test for independent samples was applied. The results were as follows:

Hypothesis 1.--There will be no significant difference between the mean raw scores of the experimental bilingual children on the Spanish Iowa Test of Basic Skills when

¹A discussion with the building principals of these school communities revealed that there was a sector of the community, mainly composed of Anglos, that were of middle-class status.

compared to the mean raw scores of the control bilingual group of children on the English Iowa Test of Basic Skills.

The results of the test for significance of the difference between arithmetic score means as recorded in Table III revealed a t ratio of 6.12 which was significant at the accepted level of confidence ($p = .05$). The null hypothesis was rejected.

TABLE III
SIGNIFICANCE OF DIFFERENCE BETWEEN ARITHMETIC MEAN
SCORES OF EXPERIMENTAL BILINGUAL GROUP AND
CONTROL BILINGUAL GROUP

| ITBS Test | Spanish Version (n = 50) | | English Version (n = 76) | | t | p |
|-----------|-----------------------------|--------|-----------------------------|-------|-------|------|
| | Means | SD | Means | SD | | |
| Composite | 141.76 | 106.11 | 92.28 | 18.84 | 61.12 | .001 |

Hypothesis 2.--The mean raw scores of the experimental bilingual children will be significantly higher on the vocabulary and pictures subtests of the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the experimental Spanish-dominant children on the same subtests of the Spanish Iowa Test of Basic Skills.

The results of the test for significance of the difference between arithmetic score means as recorded in Table IV revealed a t ratio of 1.00 for the vocabulary subtest which

was not significant at the accepted level of confidence ($p. = .05$). The null hypothesis was accepted.

The results of the test for significance of the difference between the arithmetic score means as recorded in Table IV revealed a t ratio of 2.11 for the pictures subtest which was significant at the accepted level of confidence ($p. = .05$). The null hypothesis was rejected.

TABLE IV

SIGNIFICANCE OF DIFFERENCE BETWEEN ARITHMETIC MEAN SCORES OF EXPERIMENTAL BILINGUAL GROUP AND EXPERIMENTAL SPANISH-DOMINANT GROUP

| Spanish ITBS Test | Bilingual (n = 50) | | Spanish Dominant (n = 29) | | t | p |
|----------------------|-----------------------|------|------------------------------|------|------|-----|
| | Means | SD | Means | SD | | |
| Vocabulary | 10.18 | 4.16 | 11.03 | 2.65 | 1.00 | . . |
| Pictures | 8.7 | 2.79 | 10.27 | 4.13 | 2.11 | .05 |

Hypothesis 3.--The mean raw scores of the experimental Spanish-dominant children will be significantly higher on the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the control Spanish-dominant children on the English Iowa Test of Basic Skills.

The results of the test for significance of the difference between the arithmetic score means as recorded in Table V revealed a t ratio of 3.30 which was significant at

the accepted level of confidence ($p = .05$). The null hypothesis was rejected.

TABLE V

SIGNIFICANCE OF DIFFERENCE BETWEEN ARITHMETIC MEAN SCORES OF EXPERIMENTAL SPANISH-DOMINANT GROUP AND CONTROL SPANISH-DOMINANT GROUP

| ITBS Test | Spanish Version (n = 29) | | English Version (n = 60) | | t | p |
|-----------|-----------------------------|-------|-----------------------------|-------|------|-----|
| | Means | SD | Means | SD | | |
| Composite | 121.00 | 29.18 | 83.66 | 13.34 | 3.30 | .01 |

Hypothesis 4.--There will be no significant difference between the mean raw scores of the experimental Spanish-dominant children on the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the control group of English-dominant children on the English Iowa Test of Basic Skills.

The results of the test for significance of the difference between the arithmetic means as recorded in Table VI revealed a t ratio of 2.19 which was significant at the accepted level of confidence ($p = .05$). The null hypothesis was rejected.

TABLE VI

SIGNIFICANCE OF DIFFERENCE BETWEEN ARITHMETIC MEAN
SCORES OF EXPERIMENTAL SPANISH-DOMINANT GROUP
AND CONTROL ENGLISH-DOMINANT GROUP

| ITBS Test | Spanish Version (n = 29) | | English Version (n = 129) | | t | p |
|-----------|-----------------------------|-------|------------------------------|-------|------|-----|
| | Means | SD | Means | SD | | |
| Composite | 121.00 | 29.18 | 101.00 | 16.63 | 2.19 | .05 |

Hypothesis 5.--The mean raw scores of the experimental English-dominant children will be significantly lower on the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the control English-dominant children on the English Iowa Test of Basic Skills.

The results of the test for significance of the difference between the arithmetic means as recorded in Table VII revealed a t ratio of 4.06 which was significant at the accepted level of confidence ($p = .05$). The null hypothesis was rejected.

A complete summary of the findings of the one-by-six analysis of variance between the groups and the variables of the tests is available in Appendix I on page 78.

TABLE VII

SIGNIFICANCE OF DIFFERENCE BETWEEN ARITHMETIC MEAN
 SCORES OF EXPERIMENTAL ENGLISH-DOMINANT GROUP
 AND CONTROL ENGLISH-DOMINANT GROUP

| ITBS Test | Spanish Version (n = 29) | | English Version (n = 129) | | t | p |
|-----------|-----------------------------|-------|------------------------------|------|------|------|
| | Means | SD | Means | SD | | |
| Composite | 138.03 | 30.41 | 12.35 | 2.57 | 4.06 | .001 |

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CHAPTER V
SUMMARY, FINDINGS, CONCLUSIONS, AND
RECOMMENDATIONS

Summary

During the past decades, the nation's educational leaders faced many challenges. The increasing Mexican-American student population has prompted many changes in education. Educational programs aimed to meet the needs of the Spanish-speaking child have been the focal point of much of this change. This study was designed to examine that facet of the overall bilingual program dealing with tests and measurement of academic performance. Therefore, three experimental groups of second-grade Mexican-American children were matched with three control groups of second-grade Mexican-American children. Each experimental group received an ethnic Spanish version of the Iowa Test of Basic Skills whereas the control group received the English version of the same test.

The following hypotheses were formulated to carry out the purpose of the study:

Hypothesis 1.--There will be no significant difference between the mean raw scores of the experimental bilingual children on the Spanish Iowa Test of Basic Skills when

compared to the mean raw scores of the control bilingual group of children on the English Iowa Test of Basic Skills.

The results of the test for significance of the difference between arithmetic score means revealed a t ratio of 6.12 which was significant at the accepted level of confidence ($p. = .05$). The null hypothesis was rejected.

The findings indicated that the experimental bilingual children performed at a higher academic level of achievement on the Spanish version of the Iowa Test of Basic Skills as compared to the achievement of the bilingual control group on the English version of the Iowa Test of Basic Skills.

Hypothesis 2.--The mean raw scores of the experimental bilingual children will be significantly higher on the vocabulary and pictures subtests of the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the experimental Spanish-dominant children on the same subtests of the Spanish Iowa Test of Basic Skills.

The results of the test for significance of the difference between arithmetic score means revealed a t ratio of 1.00 for the vocabulary subtest which was not significant at the accepted level of confidence ($p. = .05$). The null hypothesis was accepted.

The findings indicated that the experimental bilingual children performed at the same level of academic achievement on the vocabulary subtest as compared to the achievement level

of the experimental Spanish-dominant children on the vocabulary subtest of the Spanish Iowa Test of Basic Skills.

The results of the test for significance of the difference between the arithmetic score means revealed a t ratio of 2.11 for the pictures subtest which was significant at the accepted level of confidence ($p. = .05$). The null hypothesis was rejected.

The findings indicated that the experimental bilingual children performed at a lower level of academic achievement on the pictures subtest as compared to the achievement level of the Spanish-dominant children on the pictures subtest of the Spanish Iowa Test of Basic Skills.

Hypothesis 3.--The mean raw scores of the experimental Spanish-dominant children will be significantly higher on the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the control Spanish-dominant children on the English Iowa Test of Basic Skills.

The results of the test for significance of the difference between the arithmetic score means revealed a t ratio of 3.30 which was significant at the accepted level of confidence ($p. = .05$). The null hypothesis was rejected.

The findings indicated that the experimental Spanish-dominant children performed at a higher level of academic achievement on the Spanish Iowa Test of Basic Skills as compared to the achievement level of the control Spanish-dominant children on the English Iowa Test of Basic Skills.

Hypothesis 4.--There will be no significant difference between the mean raw scores of the experimental Spanish-dominant children on the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the control group of English-dominant children on the English Iowa Test of Basic Skills.

The results of the test for significance of the difference between the arithmetic means revealed a t ratio of 2.19 which was significant at the accepted level of confidence ($p. = .05$). The null hypothesis was rejected.

The findings indicated that the experimental Spanish-dominant children performed at a higher level of academic achievement on the Spanish version of the Iowa Test of Basic Skills as compared to the achievement level of the control English-dominant children on the English version of the Iowa Test of Basic Skills.

Hypothesis 5.--The mean raw scores of the experimental English-dominant children will be significantly lower on the Spanish Iowa Test of Basic Skills when compared to the mean raw scores of the control English-dominant children on the English Iowa Test of Basic Skills.

The results of the test for significance of the difference between the arithmetic means revealed a t ratio of 4.06 which was significant at the accepted level of confidence ($p. = .05$). The null hypothesis was rejected.

The findings indicated that the experimental English-dominant children performed at a higher level of achievement on the Spanish Iowa Test of Basic Skills as compared to the achievement level of the control English-dominant children on the English Iowa Test of Basic Skills.

Conclusions

Based upon the findings of the study and the review of the literature, the following conclusions may be drawn:

1. Bilingual children's receptive language is ethnic Spanish.
2. Spanish-dominant children achieve a greater degree of achievement when tested in their native language of ethnic Spanish.
3. Mexican-American children who are considered to be English-dominant achieve a greater degree of achievement when tested in their native language of ethnic Spanish.
4. The bilingual child has only an oral knowledge of the Spanish language and that language is influenced with English borrowings; therefore, the bilingual child's language is an ethnic variety of standard Spanish.
5. The best medium for measuring the achievement of the Mexican-American child is orally in ethnic Spanish.
6. Tests developed and normed for Anglo-American children can be utilized to measure certain basic educational

skills of Mexican-American children if such tests are translated conceptually and administered orally in ethnic Spanish.

7. Tests developed and normed for Anglo-American children have certain cultural biases that will impair the successful performance of Mexican-American children.

Recommendations

1. Bilingual curriculum should be developed that reflects the needs of the local community being served both linguistically and culturally.

2. Bilingual curriculum writers should involve the local community in developing curriculum to insure that the sociolinguistics and ethnoinguistics are incorporated into the curriculum.

3. Greater emphasis on English as a second language in the initial stages of the program should be given close consideration.

4. Careful consideration should be given towards emphasizing ethnic Spanish as the home language and slow enrichment of the ethnic Spanish with standard Spanish.

5. Locally translated ethnic tests which depend upon an oral administration to the subjects should be administered by a professional narrator via cassette audio-tape in order to increase the test's reliability.

6. In the absence of standardized achievement tests which are normed with Mexican-American subjects, it is

recommended that the next best method of assessing the achievement of Mexican-American subjects is through locally translated ethnic tests which are administered orally.

Needed Research

1. Further investigation is needed in the area of language acquisition in bilinguals.
2. The preparation of a battery of tests especially designed for bilinguals is well warranted.
3. Further investigation is needed on the language aptitude of bilinguals.
4. A survey of the language situation in bilingual communities that are considered disadvantaged as compared to bilingual communities with a higher status is well warranted.

APPENDICES



APPENDIX A

January 13, 1976

Mr. Joe F. Granada
4800 Ross Avenue
Dallas, TX 75204

Dear Mr. Granada:

I regret the delay in responding to your letter of November 18, 1975 to Mr. Linden Penland in which you discussed the study which involved the translation of the Iowa Tests of Basic Skills into ethnic (Tex-Mex) Spanish.

Please proceed with the translation. However, we need to obtain additional information from you in order to provide you with specific permissions information. We need to know what form(s) of the test you plan to translate, which sub-tests you think are translatable, the number of booklets you plan to produce, how these booklets plan to be used, and what data you plan to obtain.

I would appreciate receiving this information at your earliest convenience.

Sincerely yours,

A handwritten signature in cursive script that reads "Ed Drahozal".

Edward C. Drahozal, Ph.D.
Editor-in-Chief, Tests
Department of Measurement
And Guidance

ECD/11b

cc: Mr. Linden Penland
Mr. Robert Janas
Mr. William Fox

APPENDIX B

TEACHER QUESTIONNAIRE

 (Teacher's name) (name of campus) (section)

Name: _____
 (last) (first) (birthdate) (sex)

- () This child spoke only Spanish upon entering my class.
- () This child spoke Spanish approximately one-half of the time and English the other half of the time upon entering my class.
- () This child spoke little or limited Spanish upon entering my class.

Name: _____
 (last) (first) (birthdate) (sex)

- () This child spoke only Spanish upon entering my class.
- () This child spoke Spanish approximately one-half of the time and English the other half of the time upon entering my class.
- () This child spoke little or limited Spanish upon entering my class.

Name: _____
 (last) (first) (birthdate) (sex)

- () This child spoke only Spanish upon entering my class.
- () This child spoke Spanish approximately one-half of the time and English the other half of the time upon entering my class.
- () This child spoke little or limited Spanish upon entering my class.

APPENDIX C

PARENT SURVEY VOCABULARY LIST

- | | | |
|------------------|-----------------------|---------------|
| 1. Across | 23. Begins | 45. Bandit |
| 2. About | 24. Booklets | 46. Brand |
| 3. At | 25. Bottom | 47. Bandage |
| 4. After | 26. Beside | 48. Bedtime |
| 5. Another | 27. Baby | 49. Cartoon |
| 6. Away | 28. Break | 50. Carry |
| 7. Answer | 29. Bridge | 51. Carton |
| 8. Afternoon | 30. Bank (of a river) | 52. Case |
| 9. Arrow | 31. Boat | 53. Catch |
| 10. Already | 32. Boy | 54. Cars |
| 11. Asks | 33. Below | 55. Can |
| 12. Again | 34. Blocks | 56. Column |
| 13. Art | 35. Balls | 57. Cup |
| 14. Airplanes | 36. Bird | 58. Children |
| 15. At this rate | 37. Brothers | 59. Completes |
| 16. Applies | 38. Ballon | 60. Coins |
| 17. Allow | 39. Book | 61. Corners |
| 18. Always | 40. Berries | 62. Cat |
| 19. Alley | 41. Borrows | 63. Counting |
| 20. Box | 42. Black | 64. Clocks |
| 21. Best | 43. Bigger | 65. Chair |
| 22. Belongs | 44. Baggage | 66. Clown |

- | | | |
|---------------|---------------------------|-------------------|
| 67. Circles | 93. Damp | 119. Gum |
| 68. Cookies | 94. Bump | 120. Glue |
| 69. Carefully | 95. Each | 121. How |
| 70. Cents | 96. Exercise | 122. Has |
| 71. Chair | 97. Eight | 123. Home |
| 72. Colors | 98. Ends | 124. Horses |
| 73. Candy | 99. Equal | 125. Happen |
| 74. Crayons | 100. Empty | 126. Hump |
| 75. Checkers | 101. Eraser | 127. In |
| 76. Cap | 102. Errors | 128. Is |
| 77. Cut | 103. Earn | 129. Its |
| 78. Class | 104. Fill | 130. It |
| 79. Club | 105. Front | 131. Inside |
| 80. Cloud | 106. First | 132. Iron (steam) |
| 81. Decide | 107. Find | 133. Inner |
| 82. Do | 108. Further (Directions) | 134. Kind |
| 83. Different | 109. Figures | 135. Know |
| 84. Dime | 110. Foot | 136. Look |
| 85. Dots | 111. Fewer | 137. Letters |
| 86. Divided | 112. Frog | 138. Lion |
| 87. Drawings | 113. Fence | 139. Laugh |
| 88. Digit | 114. Far | 140. Little |
| 89. Doll | 115. Floor | 141. Like |
| 90. Drive-by | 116. Get | 142. Lamp |
| 91. Dishes | 117. Go | 143. Large |
| 92. Dump | 118. Group | 144. Less |

- | | | |
|---------------------|-----------------|----------------------|
| 145. Left-hand side | 171. Melt | 197. Playing |
| 146. Line | 172. Malt | 198. Parts |
| 147. Lamp | 173. Mark | 199. Put |
| 148. Last | 174. Message | 200. Pennies |
| 149. Listen | 175. Measure | 201. Pencils |
| 150. Lollipop | 176. Notice | 202. Picture puzzles |
| 151. Lacking | 177. Now | 203. Pane |
| 152. Laughing | 178. Name | 204. Party |
| 153. Lasting | 179. Not | 205. Path |
| 154. Launching | 180. Much-like | 206. Questions |
| 155. Littler | 181. No | 207. Read |
| 156. Longer | 182. Next | 208. Row |
| 157. Mean | 183. Nearest | 209. Rabbitt |
| 158. Missing | 184. Nickel | 210. Real |
| 159. Mark | 185. "N" | 211. Rhymes |
| 160. Make | 186. Near | 212. Rest |
| 161. Me | 187. Open | 213. Reach (a point) |
| 162. Mathematics | 188. One | 214. Red |
| 163. Many | 189. Oval | 215. River |
| 164. Money | 190. Oldest | 216. Sitting |
| 165. More | 191. Older than | 217. Steam |
| 166. Model cars | 192. Oranges | 218. Store |
| 167. Marbles | 193. Page | 219. Stove |
| 168. Minutes | 194. Picture | 220. Shove |
| 169. Marrow | 195. Place | 221. Swings |
| 170. Mirror | 196. Printed | 222. Springs |

- | | | |
|------------------------|----------------------|----------------|
| 223. Skates | 249. Square | 275. Valentine |
| 224. Scales | 250. Sign | 276. Well |
| 225. Send | 251. Subtract | 277. Whose |
| 226. Slip | 252. Sides | 278. What |
| 227. Stamp | 253. Sisters | 279. When |
| 228. Seal | 254. Scratch paper | 280. Wagon |
| 229. Sweep | 255. Sticks (of gum) | 281. We |
| 230. Sweet | 256. This | 282. Words |
| 231. Swing | 257. Then | 283. Which |
| 232. Sleep | 258. Top | 284. Way |
| 233. Same | 259. They | 285. Whether |
| 234. Sample | 260. Think | 286. Wait |
| 235. Second | 261. Test | 287. Wrong |
| 236. Sentences | 262. There | 288. Whistle |
| 237. Some | 263. That | 289. Washes |
| 238. Stop | 264. Together | 290. Wear |
| 239. Stand | 265. Take | 291. Weld |
| 240. Swimming | 266. Time | 292. Weigh |
| 241. Sounds | 267. Triangle | 293. Water |
| 242. Silent | 268. Truck | |
| 243. Several | 269. Trunk | |
| 244. Show | 270. Trick | |
| 245. Sheets (of paper) | 271. Track | |
| 246. Something | 272. Understand | |
| 247. Short story | 273. Under | |
| 248. Stars | 274. Upper | |

APPENDIX D

IOWA TESTS OF BASIC SKILLS

PRIMARY BATTERY

LEVEL 7 FORM 5

BASIC EDITION

| Test | No. Items | Approx. Time (Minutes) |
|----------------------------|-----------|---------------------------|
| V: Vocabulary | 30 | 14 |
| WA: Word Analysis* | 49 | 20 |
| R: Reading Comprehension | | |
| R-1: Pictures | 27 | 12 |
| R-2: Sentences | 16 | 7 |
| R-3: Stories | 23 | 15 |
| L: Language Skills | | |
| L-1: Spelling* | 27 | 13 |
| M: Mathematics Skills | | |
| M-1: Mathematics Concepts* | 33 | 15 |
| M-2: Mathematics Problems* | 22 | 17 |

* Administered orally.

APPENDIX E

LETTER TO THE PRINCIPALS

TO THE PRINCIPAL:

Your school has been selected to participate in a study of the utility of using an ethnic Spanish version of the Iowa Test of Basic Skills for second-grade Mexican-American children in certain Title I schools of this district.

Would you please have your second-grade teachers complete the enclosed survey on each Mexican-American student in her class. Most of the information needed by the teacher to complete the survey form can be found on the C-49 form. Please inform the teachers that they are to categorize (based upon their day-to-day observations of the children) the Mexican-American children into one of the following three categories: 1) category one will identify a child who speaks mostly Spanish even though he may know some English words or phrases, 2) category two will identify a child who is bilingual and can converse equally well in either Spanish or English, and 3) category three will identify a child who speaks mostly in English and may know some Spanish words or phrases but cannot conduct a conversation in Spanish.

You will be receiving a telephone call in the near future from me in order to select a date during the periods March 15-26 for a meeting of all the Mexican-American parents in your community who have children in the second grade.

Sincerely,

Joe Granada

APPENDIX F

INSTRUCTIONS TO THE TEACHERS

To: Second Grade Teachers

Subject: Spanish Iowa Test of Basic Skills

To facilitate the administration of the Spanish and the English ITBS, a demonstration will be conducted for you at the Joe Blow Elementary School campus on April 22, 1976 at 3:05 p.m.

To facilitate the speedy return of your test results, we request that you give priority to the following items regarding test data that must be completed by teachers and/or students:

1. Bubble in all spaces indicated on the test booklet or answer sheet, particularly school, grade, test level, ID number and name.
2. When completing the birthdate, make sure that it includes six digits:

| | | |
|-------------|---------|------------------|
| May 5, 1965 | - - - - | October 15, 1965 |
| 05 05 65 | | 10 15 65 |
3. Be sure the student's name is written in this order: Last Name First Name, Middle Initial.
4. Test the first week, if possible. The majority of completed test booklets and answer sheets should not be delayed for make-ups.
5. PLEASE REMEMBER TO:
 - use pencils only to complete group headers, booklets, and answer sheets. No ink should be used on any form.
 - handle answer sheets with care. Attempt to remove all stray marks.
 - remove all scratch paper from between the pages of booklets.

To insure proper test administration, we request that you give priority to the following items:

1. TAPE PLAYER- make sure that the volume is loud enough so that the child or children sitting the furthest from the tape player can hear it clearly.

2. CASSETTE TAPES- the tapes have been color-coded to assist you in a quick identification. The Spanish ITBS has a red jacket and the English ITBS has a white jacket.

- there is only a three-second pause between each question and/or statement made by the narrator; therefore, you may find it necessary to allow additional time for the students to mark their answers by briefly stopping the cassette player at the end of each question or statement.

-the sub-tests are arranged in the following sequence on the cassette tapes:

| TEST BATTERY | SPANISH VERSION | ENGLISH VERSION |
|-------------------------|---------------------|-----------------------------------------------------------|
| Vocabulary | Side I; Test No. 1 | Side I; Test No. 1 |
| Word Analysis | Side I; Test No. 2 | Side I; Test No. 2 |
| Pictures | Side I; Test No. 3 | Side I; Test No. 3 |
| Sentences | Side I; Test No. 4 | Side I; Test No. 4 |
| Spelling | Side I; Test No. 5 | Side I; Test No. 5 continued on Side II; Test No. 1 |
| Mathematics Concepts | Side II; Test No. 1 | Side II; Test No. 2 |
| Mathematics Problems | Side II; Test No. 2 | Side II; Test No. 3 |

3. DUAL TESTING- if your class' linguistic composition is such that you have two groups of children that requires having to administer both the English and Spanish versions, please insure that the two groups of children requiring the separate tests are separated during the testing; i.e., if you have 5 Spanish-dominant children that have to take the Spanish version of the test and 25 Bilingual children that are scheduled to take the English version of the test -- DO NOT permit the 5 Spanish-dominant children to remain in the room while you are administering the English version of the test to the 25 Bilingual children or vice versa.

Please send all your test materials to Mr. Joe Granado, Box 252, via School District Mail. Thank you for your usual cooperation.

Sincerely,

Joe Granado, Coordinator of ITBS Study

APPENDIX G

LETTER TO THE TEACHERS

Dear

You, along with your class, have been selected to participate in a pilot study of an ethnic Spanish translation of the Iowa Tests of Basic Skills which are scheduled to be administered during the weeks of April 26 - May 7, 1976, in accordance with the System-Wide Testing Schedule.

You are invited to attend a meeting on Thursday, April 22, 1976, at Fannin Elementary School, which has been planned to:

1. explain in detail the testing procedures,
2. familiarize you with the materials,
3. provide the actual "Test Packets", and
4. answer any questions you might have.

The meeting will begin at 3:05 p.m. in the second-grade portable on the Fannin campus. I am looking forward to meeting you.

Sincerely,

Joe Granado, Coordinator,
I.T.B.S. Level 7 - Spanish Version
Project

APPENDIX H

Part 2 Preparations for Testing

The administration of tests is an important professional responsibility. It requires the same seriousness of purpose and quality of preparation as any other important instructional activity. The potential usefulness of the tests depends on the accuracy of the scores, which in turn depends on the preparedness of the examiner, the rapport between examiner and pupils, and the motivation and attitudes of pupils toward the tests.

Uniformity — the Need and the Reason

The procedures spelled out here duplicate those followed in the standardization program. By observing the same procedures, you will insure that the validity of your local scores will not be impaired, nor their comparability to the established norms. The meaning of results for groups even within the same system may differ if uniformity is not exercised in the test administration. If directions to the pupils vary, some may receive too little assistance from the examiner, some too much — to their undue advantage or disadvantage.

These and more subtle influences on test performance are most fully controlled by specifying what to say and when to say it. The provision of a detailed manual eases the examiner's task, at the same time that it safeguards the value of the testing effort for pupils, teachers, and administrators. *Please follow these directions exactly!*

Before giving the test, familiarize yourself with the test booklet. Note the types of items in each test and the manner in which responses are to be recorded. Read Parts 2 and 3 of this manual carefully at least twice. Study each step in Part 3, so that there need be no hesitation in administering the tests later.

During administration of the tests, you will need to circulate about the room, watching to make sure the pupils are seriously considering the items before responding. No satisfactory method can ever be devised to "correct for guessing." To the extent that pupils guess blindly or mark responses randomly, they are not being measured. Hence, it is well to do everything you can to discourage guessing. Do not, under any circumstances, allow a pupil to mark his booklet in a random fashion.

Physical Arrangements

Seating. If there is a choice of rooms in which the tests are to be given, the principal determining factors should be *good lighting, freedom from crowding, and adequacy of writing space.* Remember that the pupil must have room to handle an open 8½" x 11" test booklet. Desks or tables should be used in preference to tablet armchairs whenever possible, and should be cleared of all other materials. During the testing, the pupils should be separated as much as possible. A seating arrangement that discourages copying is more effective than a warning against copying.

Pencils. If test booklets are to be machine scored, the pupils should be provided with two soft (no. 2) black lead pencils and an eraser. The electronic equipment used at Houghton Mifflin Scoring Service¹ will not score booklets accurately if they have been marked with pencils that are harder than no. 2, with colored pencils, or with ink.

¹ Measurement Research Center (MRC), a division of Westinghouse Learning Corporation, located in Iowa City, Iowa, is the processing agency for Houghton Mifflin Scoring Service.

You should have a supply of no. 2 pencils on hand, so that there need be no interruptions for pencil sharpening during a test period.

Proctors. If you are administering the tests to a large group, you will require the assistance of one adult proctor for every 30 pupils beyond the first 30. In this case, before the first testing period you should assign to each proctor a definite block of seats. He may then assist you by distributing and collecting the test materials for these seats. He should familiarize himself beforehand with the directions, so that he will be prepared to supervise closely the work of his assigned pupils to see that they are following instructions properly at all times.

Scheduling the Tests

Because the tests are untimed and local preferences and conditions vary, a rigid time schedule has not been provided.

It is suggested that testing periods be distributed over a period of approximately five days. The following schedules are intended for general guidance only, since time requirements are expected to vary with different examiners and groups of pupils. (The spaces at the right of the chart may be used to record the dates and times of the test sessions.)

Timing the Tests

The times listed in the tables below are only approximations. Enough time should be allowed for all but the slowest pupils to finish each test. It may be useful, however, to keep a record of the actual administration time for future reference.

Filling in the Name Block on Machine-Scorable Test Booklets

Before testing, the pupil information blanks on the front cover (*Name, School, Grade, City, State*) should be filled in. You will also have to complete the name block which will identify pupils' tests during scoring. This can be done either before or after testing. A soft, no. 2, black lead pencil should be used.

Begin the name block by printing the pupil's name, last name first, in the blank boxes below the alphabet columns. Print one letter in each box, filling in only as much of the last name as will fit without using the boxes provided for the first name. Then blacken the letters in the alphabet columns which correspond to the letters of the pupil's name. Be sure to blacken only one letter in each column. Mark any empty boxes by blackening the oval at the top of the column.

Indicate sex by filling in the appropriate oval. Then, print the pupil's date of birth (month and year) in the spaces provided at the bottom of the column. Fill in the appropriate oval to indicate the month of birth. Then, under *YEAR*, blacken one number in each column to indicate the last two digits of the year of birth.

If your testing program calls for further identifying information, your test director will provide instructions for completing other sections of the name block.

Responsibility for Proper Marking of Machine-Scorable Test Booklets

MRC machine-scorable test booklets processed by Houghton Mifflin Scoring Service will be scored with virtually complete accuracy only if they are properly marked. To insure this, the following steps are important.

1. Make sure that pupils use soft (no. 2) black lead pencils.
2. Be sure that you have properly filled in each name block.
3. Impress upon pupils the importance of making *heavy, glossy black marks* in the ovals.
4. Continue checking during the various testing periods to make sure pupils do not become careless.
5. Scan each of the test booklets for improper marking before sending them in for scoring.

Extensive study has shown that pupils experience no difficulty in marking the test booklets if the directions for administration are followed exactly.

The Scoring Service can take no responsibility for scoring test booklets that are incorrectly marked. *It is entirely the responsibility of the school to see that its test booklets are in good condition for scoring.*

Practice Test

The directions for the tests were developed after considerable experimentation. Most pupils have little or no difficulty in understanding what is required in each subtest. However, a *Practice Test* is available for use in situations in which pupils have had little experience with tests, to help build confidence and understanding. It is particularly useful in helping pupils who are especially anxious or immature.

The *Practice Test* may be used in an orientation session preceding the regular testing or administered in parts preceding the administration of the regular subtests in the battery.

Preparing the Pupils for the Tests

Pupils should know why they are taking the tests and what use will be made of the results. They must be stimulated to earnest effort if the potential values of the testing are to be realized.

To arouse such interest, schedule a short session a day or two before the testing to discuss with the pupils the nature and purposes of the tests. The pupils should not feel anxious about the testing situation. Explain to them that the tests will show how well they are doing, how much they have learned; that they will see many new pictures and read new stories; that the tests will help you, their teacher, to teach them new things.

The introductory parts of the *Practice Test* described above are particularly useful in conducting such a session.

APPENDIX I

ONE-BY-SIX ANALYSIS OF VARIANCE BETWEEN VARIABLES AND CONTROL AND EXPERIMENTAL GROUPS

| | B ¹ (m = 50) | | B ² (m = 76) | | SD ¹ (m = 29) | | SD ² (m = 33) | | ED ¹ (m = 29) | | ED ² (m = 129) | |
|---------------|----------------------------|-----------|----------------------------|-----------|-----------------------------|-----------|-----------------------------|-----------|-----------------------------|-----------|------------------------------|-----------|
| | S | \bar{x} | S | \bar{x} | S | \bar{x} | S | \bar{x} | S | \bar{x} | S | \bar{x} |
| Verbal | 5.13 | 15.96 | 7.02 | 15.15 | 4.58 | 16.65 | 6.52 | 12.06 | 6.05 | 13.93 | 6.91 | 18.36 |
| Word Analysis | 8.87 | 28.34 | 7.05 | 30.94 | 8.62 | 26.55 | 6.57 | 26.30 | 10.06 | 32.51 | 7.26 | 33.77 |
| Reading | 8.73 | 30.72 | 6.56 | 24.78 | 12.01 | 29.34 | 3.83 | 24.96 | 12.68 | 38.34 | 5.09 | 26.92 |
| Spelling | 4.75 | 12.06 | 2.65 | 9.00 | 5.37 | 12.89 | 2.13 | 8.48 | 6.15 | 16.58 | 2.10 | 9.65 |
| Math Concepts | 5.57 | 22.42 | 2.35 | 11.13 | 5.49 | 19.79 | 3.42 | 10.84 | 5.01 | 21.72 | 2.46 | 11.02 |
| Math Problems | 4.66 | 15.42 | 0.85 | 1.26 | 4.06 | 14.48 | 1.00 | 1.15 | 3.76 | 14.93 | 0.90 | 1.25 |
| Composite | 106.11 | 141.76 | 18.84 | 92.28 | 29.18 | 121.00 | 13.34 | 83.66 | 30.41 | 138.03 | 2.57 | 12.35 |

B - bilingual
SD - Spanish-dominant
ED - English-dominant
1 - took Spanish version of test (experimental)
2 - took English version of test (control)

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